

SIEMENS

MICROMASTER 440

Parameter List

Issue 12/01



Getting Started Guide

Is for quick commissioning with SDP and BOP.



Operating Instructions

Gives information about features of the MM440, Installation, Commissioning, Control modes, System Parameter structure, Troubleshooting, Specifications and available options of the MM440.



Parameter List

The Parameterlist contains the description of all Parameters structured in functional order and a detailed description. The Parameter list also includes a series of function plans.



Reference Manual

The reference Manual gives elaborate information about engineering communication troubleshooting and maintenance.



Catalogues

In the catalogue you will find all needs to select a certain inverter, as well as filters chokes, operator panels or communications options.





Warning

Please refer to all Definitions and Warnings contained in the Operating Instructions. You will find the Operating Instructions on the Docu CD delivered with your inverter. If the CD is lost, it can be ordered via your local Siemens department under the Order No. 6SE6400-5FA00-1AG00.

Further information can be obtained from Internet website:
<http://www.siemens.de/micromaster>

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Other functions not described in this document may be available. However, this fact shall not constitute an obligation to supply such functions with a new control, or when servicing.

We have checked that the contents of this document correspond to the hardware and software described. There may be discrepancies nevertheless, and no guarantee can be given that they are completely identical. The information contained in this document is reviewed regularly and any necessary changes will be included in the next edition. We welcome suggestions for improvement.

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Parameters MICROMASTER 440

This Parameter List must only be used together with the Operating Instructions or the Reference Manual of the MICROMASTER 440. Please pay special attention to the Warnings, Cautions, Notices and Notes contained in these manuals.

Table of Contents

1	Parameters	7
1.1	Introduction to MICROMASTER 440 System Parameters	7
1.2	Quick commissioning (P0010=1)	9
1.3	Command and Drive Datasets - Overview.....	11
1.4	Parameter Description.....	15
2	Function Diagrams	195
3	Faults and Alarms	229
3.1	Fault messages	229
3.2	Alarm messages.....	233

1 Parameters

1.1 Introduction to MICROMASTER 440 System Parameters

The layout of the parameter description is as follows.

1 Par number [index]	2 Parameter name 3 CStat: 4 P-Group:	5 Datatype 6 active:	7 Unit: 8 Quick Comm:	9 Min: 10 Def: 11 Max:	12 Level: 2
13	Description:				

1. Parameter number

Indicates the relevant parameter number. The numbers used are 4-digit numbers in the range 0000 to 9999. Numbers prefixed with an “r” indicate that the parameter is a “read-only” parameter, which displays a particular value but cannot be changed directly by specifying a different value via this parameter number (in such cases, dashes “-” are entered at the points “Unit”, “Min”, “Def” and “Max” in the header of the parameter description.

All other parameters are prefixed with a “P”. The values of these parameters can be changed directly in the range indicated by the “Min” and “Max” settings in the header.

[index] indicates that the parameter is an indexed parameter and specifies the number of indices available.

2. Parameter name

Indicates the name of the relevant parameter. Certain parameter names include the following abbreviated prefixes: BI, BO, CI, and CO followed by a colon.

These abbreviations have the following meanings:

- BI = Binector input, i.e. parameter selects the source of a binary signal
- BO = Binector output, i.e. parameter connects as a binary signal
- CI = Connector input, i.e. parameter selects the source of an analog signal
- CO = Connector output, i.e. parameter connects as an analog signal
- CO/BO = Connector/Binector output, i.e. parameter connects as an analog signal and/or as a binary signal

To make use of BiCo you will need access to the full parameter list. At this level many new parameter settings are possible, including BiCo functionality. BiCo functionality is a different, more flexible way of setting and combining input and output functions. It can be used in most cases in conjunction with the simple, level 2 settings.

The BiCo system allows complex functions to be programmed. Boolean and mathematical relationships can be set up between inputs (digital, analog, serial etc.) and outputs (inverter current, frequency, analog output, relays, etc.).

3. **CStat**
Commissioning status of the parameter. Three states are possible:
Commissioning C
Ready to run U
Run T
This indicates when the parameter can be changed. One, two or all three states may be specified. If all three states are specified, this means that it is possible to change this parameter setting in all three inverter states
4. **P-Group**
Indicates the functional group of the particular.
-
- Note**
Parameter P0004 (parameter filter) acts as a filter and focuses access to parameters according to the functional group selected.
-
5. **Datatype**
The data types available are shown in the table below.
- | Notation | Meaning |
|----------|-----------------|
| U16 | 16-bit unsigned |
| U32 | 32-bit unsigned |
| I16 | 16-bit integer |
| I32 | 32-bit integer |
| Float | Floating point |
6. **Active**
Indicates whether
- ◆ Immediately changes to the parameter values take effective immediately after they have been entered, or
 - ◆ Confirm the “P” button on the operator panel (BOP or AOP) must be pressed before the changes take effect.
7. **Unit**
Indicates the unit of measure applicable to the parameter values
8. **QuickComm**
Indicates whether or not (Yes or No) a parameter can only be changed during quick commissioning, i.e. when P0010 (parameter groups for commissioning) is set to 1 (quick commissioning).
9. **Min**
Indicates the minimum value to which the parameter can be set.
10. **Def**
Indicates the default value, i.e. the value which applies if the user does not specify a particular value for the parameter.
11. **Max**
Indicates the maximum value to which the parameter can be set.
12. **Level**
Indicates the level of user access. There are four access levels: Standard, Extended, Expert and Service. The number of parameters that appear in each functional group depends on the access level set in P0003 (user access level).

13. Description

The parameter description consists of the sections and contents listed below. Some of these sections and contents are optional and will be omitted on a case-to-case basis if not applicable.

Description:	Brief explanation of the parameter function.
Diagram:	Where applicable, diagram to illustrate the effects of parameters on a characteristic curve, for example
Settings:	List of applicable settings. These include Possible settings, Most common settings, Index and Bitfields
Example:	Optional example of the effects of a particular parameter setting.
Dependency:	Any conditions that must be satisfied in connection with this parameter. Also any particular effects, which this parameter has on other parameter(s) or which other parameters have on this one.
Warning / Caution / Notice / Note:	Important information which must be heeded to prevent personal injury or damage to equipment / specific information which should be heeded in order to avoid problems / information which may be helpful to the user
More details:	Any sources of more detailed information concerning the particular parameter.

1.2 Quick commissioning (P0010=1)

The following parameters are necessary for quick commissioning (P0010=1).

No	Name	Access level	Cstat
P0100	Europe / North America	1	C
P0205	Inverter application	3	C
P0300	Select motor type	2	C
P0304	Motor voltage rating	1	C
P0305	Motor current rating	1	C
P0307	Motor power rating	1	C
P0308	Motor cosPhi rating	2	C
P0309	Motor efficiency rating	2	C
P0310	Motor frequency rating	1	C
P0311	Motor speed rating	1	C
P0320	Motor magnetizing current	3	CT
P0335	Motor cooling	2	CT
P0640	Motor overload factor [%]	2	CUT
P0700	Selection of command source	1	CT
P1000	Selection of frequency setpoint	1	CT
P1080	Min. speed	1	CUT
P1082	Max. speed	1	CT
P1120	Ramp-up time	1	CUT
P1121	Ramp-down time	1	CUT
P1135	OFF3 ramp-down time	2	CUT
P1300	Control mode	2	CT
P1500	Selection of torque setpoint	2	CT
P1910	Select motor data identification	2	CT
P3900	End of quick commissioning	1	C

When P0010=1 is chosen, P0003 (user access level) can be used to select the parameters to be accessed. This parameter also allows selection of a user-defined parameter list for quick commissioning.

At the end of the quick commissioning sequence, set P3900 = 1 to carry out the necessary motor calculations and clear all other parameters (not included in P0010=1) to their default settings.

Note

This applies only in Quick Commissioning mode.

Reset to Factory default

To reset all parameters to the factory default settings; the following parameters should be set as follows:

Set P0010=30.

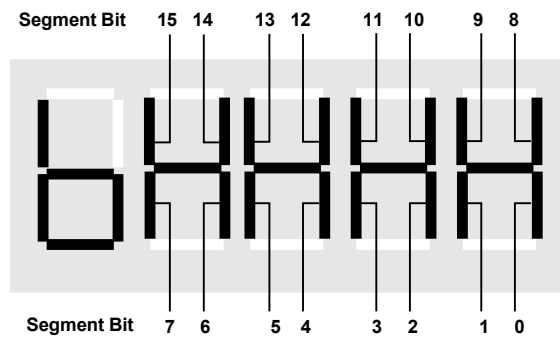
Set P0970=1.

Note

The reset process takes approximately 10 seconds to complete. Reset to Factory default

Seven-segment display

The seven-segment display is structured as follows:



The significance of the relevant bits in the display is described in the status and control word parameters.

1.3 Command and Drive Datasets - Overview

Command Datasets (CDS)

ParNr	ParText
0701[3]	Function of digital input 1
0702[3]	Function of digital input 2
0703[3]	Function of digital input 3
0704[3]	Function of digital input 4
0705[3]	Function of digital input 5
0706[3]	Function of digital input 6
0707[3]	Function of digital input 7
0708[3]	Function of digital input 8
0719[3]	Selection of cmd. & freq. setp.
0731[3]	BI: Function of digital output 1
0732[3]	BI: Function of digital output 2
0733[3]	BI: Function of digital output 3
0800[3]	BI: Download parameter set 0
0801[3]	BI: Download parameter set 1
0840[3]	BI: ON/OFF1
0842[3]	BI: ON reverse/OFF1
0844[3]	BI: 1. OFF2
0845[3]	BI: 2. OFF2
0848[3]	BI: 1. OFF3
0849[3]	BI: 2. OFF3
0852[3]	BI: Pulse enable
1000[3]	Selection of frequency setpoint
1020[3]	BI: Fixed freq. selection Bit 0
1021[3]	BI: Fixed freq. selection Bit 1
1022[3]	BI: Fixed freq. selection Bit 2
1023[3]	BI: Fixed freq. selection Bit 3
1026[3]	BI: Fixed freq. selection Bit 4
1028[3]	BI: Fixed freq. selection Bit 5
1035[3]	BI: Enable MOP (UP-command)
1036[3]	BI: Enable MOP (DOWN-command)
1055[3]	BI: Enable JOG right
1056[3]	BI: Enable JOG left
1070[3]	CI: Main setpoint
1071[3]	CI: Main setpoint scaling
1074[3]	BI: Disable additional setpoint
1075[3]	CI: Additional setpoint
1076[3]	CI: Additional setpoint scaling
1110[3]	BI: Inhibit neg. freq. setpoint
1113[3]	BI: Reverse
1124[3]	BI: Enable JOG ramp times

ParNr	ParText
1140[3]	BI: RFG enable
1141[3]	BI: RFG start
1142[3]	BI: RFG enable setpoint
1230[3]	BI: Enable DC braking
1330[3]	CI: Voltage setpoint
1477[3]	BI: Set integrator of n-ctrl.
1478[3]	CI: Set integrator value n-ctrl.
1500[3]	Selection of torque setpoint
1501[3]	BI: Change to torque control
1503[3]	CI: Torque setpoint
1511[3]	CI: Additional torque setpoint
1522[3]	CI: Upper torque limit
1523[3]	CI: Lower torque limit
2103[3]	BI: 1. Faults acknowledgement
2104[3]	BI: 2. Faults acknowledgement
2106[3]	BI: External fault
2151[3]	CI: Monitoring speed setpoint
2152[3]	CI: Act. monitoring speed
2200[3]	BI: Enable PID controller
2220[3]	BI: Fixed PID setp. select Bit 0
2221[3]	BI: Fixed PID setp. select Bit 1
2222[3]	BI: Fixed PID setp. select Bit 2
2223[3]	BI: Fixed PID setp. select Bit 3
2226[3]	BI: Fixed PID setp. select Bit 4
2228[3]	BI: Fixed PID setp. select Bit 5
2235[3]	BI: Enable PID-MOP (UP-cmd)
2236[3]	BI: Enable PID-MOP (DOWN-cmd)
2253[3]	CI: PID setpoint
2254[3]	CI: PID trim source
2264[3]	CI: PID feedback

Drive Datasets (DDS)

ParNr	ParText
0035[3]	CO: Act. motor temperature
0291[3]	Config. of inverter protection
0300[3]	Select motor type
0304[3]	Rated motor voltage
0305[3]	Rated motor current
0307[3]	Rated motor power
0308[3]	Rated motor cosPhi
0309[3]	Rated motor efficiency
0310[3]	Rated motor frequency
0311[3]	Rated motor speed
0313[3]	Motor pole pairs
0314[3]	Motor pole pair number
0320[3]	Motor magnetizing current
0330[3]	Rated motor slip
0331[3]	Rated magnetization current
0332[3]	Rated power factor
0333[3]	Rated motor torque
0335[3]	Motor cooling
0340[3]	Calculation of motor parameters
0341[3]	Motor inertia [kg*m^2]
0342[3]	Total/motor inertia ratio
0344[3]	Motor weight
0345[3]	Motor start-up time
0346[3]	Magnetization time
0347[3]	Demagnetization time
0350[3]	Stator resistance (line-to-line)
0352[3]	Cable resistance
0354[3]	Rotor resistance
0356[3]	Stator leakage inductance
0358[3]	Rotor leakage inductance
0360[3]	Main inductance
0362[3]	Magnetizing curve flux 1
0363[3]	Magnetizing curve flux 2
0364[3]	Magnetizing curve flux 3
0365[3]	Magnetizing curve flux 4
0366[3]	Magnetizing curve imag 1
0367[3]	Magnetizing curve imag 2
0368[3]	Magnetizing curve imag 3
0369[3]	Magnetizing curve imag 4
0370[3]	Stator resistance [%]
0372[3]	Cable resistance [%]
0373[3]	Rated stator resistance [%]
0374[3]	Rotor resistance [%]

ParNr	ParText
0376[3]	Rated rotor resistance [%]
0377[3]	Total leakage reactance [%]
0382[3]	Main reactance [%]
0384[3]	Rotor time constant
0386[3]	Total leakage time constant
0400[3]	Select encoder type
0408[3]	Encoder pulses per revolution
0491[3]	Reaction on speed signal loss
0492[3]	Allowed speed difference
0494[3]	Delay speed loss reaction
0500[3]	Technological application
0530[3]	Unit for positioning signal
0531[3]	Unit conversion
0601[3]	Motor temperature sensor
0604[3]	Threshold motor temperature
0625[3]	Ambient motor temperature
0626[3]	Overtemperature stator iron
0627[3]	Overtemperature stator winding
0628[3]	Overtemperature rotor winding
0630[3]	CO: Ambient temperature
0631[3]	CO: Stator iron temperature
0632[3]	CO: Stator winding temperature
0633[3]	CO: Rotor winding temperature
0640[3]	Motor overload factor [%]
1001[3]	Fixed frequency 1
1002[3]	Fixed frequency 2
1003[3]	Fixed frequency 3
1004[3]	Fixed frequency 4
1005[3]	Fixed frequency 5
1006[3]	Fixed frequency 6
1007[3]	Fixed frequency 7
1008[3]	Fixed frequency 8
1009[3]	Fixed frequency 9
1010[3]	Fixed frequency 10
1011[3]	Fixed frequency 11
1012[3]	Fixed frequency 12
1013[3]	Fixed frequency 13
1014[3]	Fixed frequency 14
1015[3]	Fixed frequency 15
1031[3]	Setpoint memory of the MOP
1040[3]	Setpoint of the MOP
1058[3]	JOG frequency right
1059[3]	JOG frequency left

ParNr	ParText
1060[3]	JOG ramp-up time
1061[3]	JOG ramp-down time
1080[3]	Min. frequency
1082[3]	Max. frequency
1091[3]	Skip frequency 1
1092[3]	Skip frequency 2
1093[3]	Skip frequency 3
1094[3]	Skip frequency 4
1101[3]	Skip frequency bandwidth
1120[3]	Ramp-up time
1121[3]	Ramp-down time
1130[3]	Ramp-up initial rounding time
1131[3]	Ramp-up final rounding time
1132[3]	Ramp-down initial rounding time
1133[3]	Ramp-down final rounding time
1134[3]	Rounding type
1135[3]	OFF3 ramp-down time
1202[3]	Motor-current: Flying start
1203[3]	Search rate: Flying start
1232[3]	DC braking current
1233[3]	Duration of DC braking
1234[3]	DC braking start frequency
1236[3]	Compound braking current
1240[3]	Configuration of Vdc controller
1243[3]	Dynamic factor of Vdc-max
1245[3]	Switch on level kin. buffering
1246[3]	CO:Switch-on level kin buffering
1247[3]	Dyn. factor of kinetic buffering
1250[3]	Gain of Vdc-controller
1251[3]	Integration time Vdc-controller
1252[3]	Differential time Vdc-controller
1253[3]	Vdc-controller output limitation
1256[3]	Reaction of kinetic buffering
1257[3]	Freq limit for kinetic buffering
1300[3]	Control mode
1310[3]	Continuous boost
1311[3]	Acceleration boost
1312[3]	Starting boost
1316[3]	Boost end frequency
1320[3]	Programmable V/f freq. coord. 1
1321[3]	Programmable V/f volt. coord. 1
1322[3]	Programmable V/f freq. coord. 2
1323[3]	Programmable V/f volt. coord. 2
1324[3]	Programmable V/f freq. coord. 3
1325[3]	Programmable V/f volt. coord. 3

ParNr	ParText
1333[3]	Start frequency for FCC
1335[3]	Slip compensation
1336[3]	Slip limit
1338[3]	Resonance damping gain V/f
1340[3]	Imax controller prop. gain
1341[3]	Imax controller integral time
1345[3]	Imax controller prop. gain
1346[3]	Imax controller integral time
1350[3]	Voltage soft start
1400[3]	Configuration of speed control
1442[3]	Filter time for act. speed
1452[3]	Filter time for act.speed (SLVC)
1460[3]	Gain speed controller
1462[3]	Integral time speed controller
1470[3]	Gain speed controller (SLVC)
1472[3]	Integral time n-ctrl. (SLVC)
1488[3]	Droop input source
1489[3]	Droop scaling
1492[3]	Enable droop
1496[3]	Scaling accel. precontrol
1499[3]	Scaling accel. torque control
1520[3]	CO: Upper torque limit
1521[3]	CO: Lower torque limit
1525[3]	Scaling lower torque limit
1530[3]	Motoring power limitation
1531[3]	Regenerative power limitation
1570[3]	CO: Fixed value flux setpoint
1574[3]	Dynamic voltage headroom
1580[3]	Efficiency optimization
1582[3]	Smooth time for flux setpoint
1596[3]	Int. time field weak. controller
1610[3]	Continuous torque boost (SLVC)
1611[3]	Acc. torque boost (SLVC)
1654[3]	Smooth time for Isq setpoint
1715[3]	Gain current controller
1717[3]	Integral time current controller
1750[3]	Control word of motor model
1755[3]	Start-freq. motor model (SLVC)
1756[3]	Hyst.-freq. motor model (SLVC)
1758[3]	T(wait) transit to feed-fwd-mode
1759[3]	T(wait) for n-adaption to settle
1764[3]	Kp of n-adaption (SLVC)
1767[3]	Tn of n-adaption (SLVC)
1780[3]	Control word of Rs/Rr-adaption
1781[3]	Tn of Rs-adaption

ParNr	ParText
1786[3]	Tn of Xm-adaption
1803[3]	Max. modulation
1820[3]	Reverse output phase sequence
1909[3]	Ctrl. word of motor data ident.
2000[3]	Reference frequency
2001[3]	Reference voltage
2002[3]	Reference current
2003[3]	Reference torque
2004[3]	Reference power
2150[3]	Hysteresis frequency f_hys
2153[3]	Time-constant speed filter
2155[3]	Threshold frequency f_1
2156[3]	Delay time of threshold freq f_1
2157[3]	Threshold frequency f_2
2158[3]	Delay time of threshold freq f_2
2159[3]	Threshold frequency f_3
2160[3]	Delay time of threshold freq f_3
2161[3]	Min. threshold for freq. setp.
2162[3]	Hysteresis freq. for overspeed
2163[3]	Entry freq. for perm. deviation
2164[3]	Hysteresis frequency deviation
2165[3]	Delay time permitted deviation
2166[3]	Delay time ramp up completed
2167[3]	Switch-off frequency f_off
2168[3]	Delay time T_off
2170[3]	Threshold current I_thresh
2171[3]	Delay time current
2172[3]	Threshold DC-link voltage
2173[3]	Delay time DC-link voltage
2174[3]	Torque threshold T_thresh
2176[3]	Delay time for torque threshold
2177[3]	Delay time for motor is blocked
2178[3]	Delay time for motor pulled out
2181[3]	Belt failure detection mode

ParNr	ParText
2182[3]	Belt threshold frequency 1
2183[3]	Belt threshold frequency 2
2184[3]	Belt threshold frequency 3
2185[3]	Upper torque threshold 1
2186[3]	Lower torque threshold 1
2187[3]	Upper torque threshold 2
2188[3]	Lower torque threshold 2
2189[3]	Upper torque threshold 3
2190[3]	Lower torque threshold 3
2192[3]	Time delay for belt failure
2201[3]	Fixed PID setpoint 1
2202[3]	Fixed PID setpoint 2
2203[3]	Fixed PID setpoint 3
2204[3]	Fixed PID setpoint 4
2205[3]	Fixed PID setpoint 5
2206[3]	Fixed PID setpoint 6
2207[3]	Fixed PID setpoint 7
2208[3]	Fixed PID setpoint 8
2209[3]	Fixed PID setpoint 9
2210[3]	Fixed PID setpoint 10
2211[3]	Fixed PID setpoint 11
2212[3]	Fixed PID setpoint 12
2213[3]	Fixed PID setpoint 13
2214[3]	Fixed PID setpoint 14
2215[3]	Fixed PID setpoint 15
2231[3]	Setpoint memory of PID-MOP
2240[3]	Setpoint of PID-MOP
2480[3]	Position mode
2481[3]	Gearbox ratio input
2482[3]	Gearbox ratio output
2484[3]	No. of shaft turns = 1 Unit
2487[3]	Positional error trim value
2488[3]	No. final shaft turns = 1 Unit

1.4 Parameter Description

Note:

Level 4 Parameters are not visible with BOP or AOP.

r0000	Drive display	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 1
	P-Group: ALWAYS				

Displays the user selected output as defined in P0005.

Note:

Pressing the "Fn" button for 2 seconds allows the user to view the values of DC link voltage, output frequency, output voltage, output current, and chosen r0000 setting (defined in P0005).

r0002	Drive state	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: COMMANDS				

Displays actual drive state.

Settings:

- 0 Commissioning mode (P0010 != 0)
- 1 Drive ready
- 2 Drive fault active
- 3 Drive starting (DC-link precharging)
- 4 Drive running
- 5 Stopping (ramping down)

Dependency:

State 3 visible only while precharging DC link, and when externally powered communications board is fitted.

P0003	User access level	Datatype: U16	Unit: -	Min: 0 Def: 1 Max: 4	Level: 1
	CStat: CUT	Active: first confirm	QuickComm. No		
	P-Group: ALWAYS				

Defines user access level to parameter sets. The default setting (standard) is sufficient for most simple applications.

Settings:

- 0 User defined parameter list - see P0013 for details on use
- 1 Standard: Allows access into most frequently used parameters.
- 2 Extended: Allows extended access e.g. to inverter I/O functions.
- 3 Expert: For expert use only.
- 4 Service: Only for use by authorized service personal - password protected.

P0004	Parameter filter	Datatype: U16	Unit: -	Min: 0 Def: 0 Max: 22	Level: 1
	CStat: CUT	Active: first confirm	QuickComm. No		
	P-Group: ALWAYS				

Filters available parameters according to functionality to enable a more focussed approach to commissioning.

Example:

P0004 = 22 specifies that only PID parameters will be visible.

Settings:

- 0 All parameters
- 2 Inverter
- 3 Motor
- 4 Speed sensor
- 5 Technol. application / units
- 7 Commands, binary I/O
- 8 ADC and DAC
- 10 Setpoint channel / RFG
- 12 Drive features
- 13 Motor control
- 20 Communication
- 21 Alarms / warnings / monitoring
- 22 Technology controller (e.g. PID)

Dependency:

Parameters marked "Quick Comm: Yes" in the parameter header can only be set when P0010 = 1 (Quick Commissioning).

Note:

The inverter will start with any setting of P0004.

P0005[3]	Display selection			Min: 2	Level: 2
	CStat: CUT	Datatype: U16	Unit: -	Def: 21	
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 2294	

Selects display for parameter r0000 (drive display).

Settings:

- 21 Actual frequency
- 25 Output voltage
- 26 DC link voltage
- 27 Output current

Index:

- P0005[0] : 1st. Drive data set (DDS)
- P0005[1] : 2nd. Drive data set (DDS)
- P0005[2] : 3rd. Drive data set (DDS)

Notice:

These settings refer to read only parameter numbers ("rxxxx").

Details:

See relevant "rxxxx" parameter descriptions.

P0006	Display mode			Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 2	
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 4	

Defines mode of display for r0000 (drive display).

Settings:

- 0 In Ready state alternate between setpoint and output freq. In run display output freq.
- 1 In Ready state display setpoint. In run display output freq.
- 2 In Ready state alternate between P0005 value and r0020 value. In run display P0005 value
- 3 In Ready state alternate between r0002 value and r0020 value. In run display r0002 value
- 4 In all states just display P0005

Note:

When inverter is not running, the display alternates between the values for "Not Running" and "Running".

Per default, the setpoint and actual frequency values are displayed alternately.

P0007	Backlight delay time			Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 0	
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 2000	

Defines time period after which the backlight display turns off if no operator keys have been pressed.

Value:

P0007 = 0 : Backlight always on (default state)

P0007 = 1-2000 : Number of seconds after which the backlight will turn off

P0010	Commissioning parameter				Min: 0	Level: 1
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: ALWAYS	Active: first confirm	QuickComm. No	Max: 30		

Filters parameters so that only those related to a particular functional group are selected.

Settings:

0	Ready
1	Quick commissioning
2	Inverter
29	Download
30	Factory setting

Dependency:

Reset to 0 for inverter to run.

P0003 (user access level) also determines access to parameters.

Note:

P0010 = 1

The inverter can be commissioned very quickly and easily by setting P0010 = 1. After that only the important parameters (e.g.: P0304, P0305, etc.) are visible. The value of these parameters must be entered one after the other. The end of quick commissioning and the start of internal calculation will be done by setting P3900 = 1 - 3. Afterward parameter P0010 will be reset to zero automatically.

P0010 = 2

For service purposes only.

P0010 = 29

To transfer a parameter file via PC tool (e.g.: DriveMonitor, STARTER) parameter P0010 will be set to 29 by the PC tool. When download has been finished PC tool resets parameter P0010 to zero.

P0010 = 30

When resetting the parameters of inverter P0010 must be set to 30. Resetting of the parameters will be started by setting parameter P0970 = 1. The inverter will automatically reset all its parameters to their default settings. This can prove beneficial if you experience problems during parameter setup and wish to start again. Duration of factory setting will take about 60 s.

If P3900 is not 0 (0 is the default value), this parameter is automatically reset to 0.

P0011	Lock for user defined parameter				Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 0		
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 65535		

Details:

See parameter P0013 (user defined parameter)

P0012	Key for user defined parameter				Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 0		
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 65535		

Details:

See parameter P0013 (user defined parameter).

P0013[20]	User defined parameter				Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 0		
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 65535		

Defines a limited set of parameters to which the end user will have access.

Instructions for use:

Step 1: Set P0003 = 3 (expert user)

Step 2: Go to P0013 indices 0 to 16 (user list)

Step 3: Enter into P0013 index 0 to 16 the parameters required to be visible in the user-defined list.

The following values are fixed and cannot be changed:

- P0013 index 19 = 12 (key for user defined parameter)

- P0013 index 18 = 10 (commissioning parameter filter)

- P0013 index 17 = 3 (user access level)

Step 4: Set P0003 = 0 to activate the user defined parameter.

Index:

P0013[0] : 1st user parameter
P0013[1] : 2nd user parameter
P0013[2] : 3rd user parameter
P0013[3] : 4th user parameter
P0013[4] : 5th user parameter
P0013[5] : 6th user parameter
P0013[6] : 7th user parameter
P0013[7] : 8th user parameter
P0013[8] : 9th user parameter
P0013[9] : 10th user parameter
P0013[10] : 11th user parameter
P0013[11] : 12th user parameter
P0013[12] : 13th user parameter
P0013[13] : 14th user parameter
P0013[14] : 15th user parameter
P0013[15] : 16th user parameter
P0013[16] : 17th user parameter
P0013[17] : 18th user parameter
P0013[18] : 19th user parameter
P0013[19] : 20th user parameter

Dependency:

First, set P0011 ("lock") to a different value than P0012 ("key") to prevent changes to user-defined parameter. Then, set P0003 to 0 to activate the user-defined list.

When locked and the user-defined parameter is activated, the only way to exit the user-defined parameter (and view other parameters) is to set P0012 ("key") to the value in P0011 ("lock").

Note:

Alternatively, set P0010 = 30 (commissioning parameter filter = factory setting) and P0970 = 1 (factory reset) to perform a complete factory reset.

The default values of P0011 ("lock") and P0012 ("key") are the same.

P0014[3]	Store mode			Min: 0	Level: 3
	CStat: UT	Datatype: U16	Unit: -	Def: 0	
	P-Group: -	Active: first confirm	QuickComm. No	Max: 1	

Sets the store mode for parameters ("volatile" (RAM) or "nonvolatile" (EEPROM)).

Settings:

- 0 volatile (RAM)
- 1 nonvolatile (EEPROM)

Index:

- P0014[0] : Serial interface COM link
- P0014[1] : Serial interface BOP link
- P0014[2] : PROFIBUS / CB

Note:

1. With the BOP the parameter will always be stored in the EEPROM.
2. P0014 itself will always be stored in the EEPROM.
3. P0014 will not be changed by performing a factory reset (P0010 = 30 and P0971 = 1).
4. P0014 can be transferred during a DOWNLOAD (P0010 = 29).
5. If "Store request via USS/CB = volatile (RAM)" and "P0014[x] = volatile (RAM)", you can make a transfer of all parameter values into the nonvolatile memory via P0971.
6. If "Store request via USS/CB" and P0014[x] are not consistent, the setting of P14[x] = "store nonvolatile (EEPROM)" has always higher priority.

Store request via USS/CB	Value of P0014[x]	Result
EEPROM	RAM	EEPROM
EEPROM	EEPROM	EEPROM
RAM	RAM	RAM
RAM	EEPROM	EEPROM

r0018	Firmware version			Min: -	Level: 1
	P-Group: INVERTER	Datatype: Float	Unit: -	Def: -	
				Max: -	

Displays version number of installed firmware.

r0019	CO/BO: BOP control word			Min: -	Level: 3
	P-Group: COMMANDS	Datatype: U16	Unit: -	Def: -	
				Max: -	

Displays status of operator panel commands.

The settings below are used as the "source" codes for keypad control when connecting to BICO input parameters.

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit08	JOG right	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motor potentiometer MOP up	0	NO
		1	YES
Bit14	Motor potentiometer MOP down	0	NO
		1	YES

Note:

When BICO technology is used to allocate functions to panel buttons, this parameter displays the actual status of the relevant command.

The following functions can be "connected" to individual buttons:

- ON/OFF1,
- OFF2,
- JOG,
- REVERSE,
- INCREASE,
- DECREASE

r0020	CO: Act. frequency setpoint			Min: -	Level: 3
	P-Group: CONTROL	Datatype: Float	Unit: Hz	Def: -	
				Max: -	

Displays actual frequency setpoint (output from ramp function generator).

r0021	CO: Act. frequency	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays actual inverter output frequency (r0024) excluding slip compensation, resonance damping and frequency limitation.				
r0022	Act. rotor speed	Datatype: Float	Unit: 1/min	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays calculated rotor speed based on inverter output frequency [Hz] x 120 / number of poles.				
	Note: This calculation makes no allowance for load-dependent slip.				
r0024	CO: Act. output frequency	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays actual output frequency (slip compensation, resonance damping and frequency limitation are included).				
r0025	CO: Act. output voltage	Datatype: Float	Unit: V	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays [rms] voltage applied to motor.				
r0026	CO: Act. DC-link voltage	Datatype: Float	Unit: V	Min: - Def: - Max: -	Level: 2
	P-Group: INVERTER				
	Displays DC-link voltage.				
r0027	CO: Act. output current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays [rms] value of motor current [A].				
r0029	CO: Flux gen. current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays flux-generating current component.				
	The flux-generating current component is based on the nominal flux, which is calculated from the motor parameters (P0340 - Calculation of motor parameters).				
	Dependency: Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.				
	Note: The flux-generating current component is generally constant up to the base speed of the motor; above base speed, this component is weakened (field weakening) thus enabling an increase in motor speed but at reduced torque.				
r0030	CO: Torque gen. current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays torque-generating current component.				
	The torque-generating current component is calculated from the torque setpoint values delivered by the speed regulator.				
	Dependency: Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.				
	Note: For asynchronous motors, a limit is calculated for the torque generating current component (in conjunction with the maximum possible output voltage (r0071), motor leakage and current field weakening (r0377)) and this prevents motor stalling.				
r0031	CO: Act. torque	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays motor torque.				

r0032	CO: Act. power	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays motor power.				
	Dependency: Value is displayed in [kW] or [hp] depending on setting for P0100 (operation for Europe / North America).				
r0035[3]	CO: Act. motor temperature	Datatype: Float	Unit: °C	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays measured motor temperature.				
	Index: r0035[0] : 1st. Drive data set (DDS) r0035[1] : 2nd. Drive data set (DDS) r0035[2] : 3rd. Drive data set (DDS)				
r0036	CO: Inverter overload utilization	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: INVERTER				
	Displays inverter overload utilization calculated via I2t model.				
	The actual I2t value relative to the max. possible I2t value supplies utilization in [%].				
	If the nominal current of the inverter is not exceeded, 0 % utilization will be displayed.				
	If the current exceeds the threshold for P0294 (inverter I2t overload warning), alarm A0504 (inverter overtemperature) is generated and the output current of the inverter reduced via P0290 (inverter overload reaction).				
	If 100 % utilization is exceeded, alarm F0005 (inverter I2T) is tripped.				
r0037[5]	CO: Inverter temperature [°C]	Datatype: Float	Unit: °C	Min: - Def: - Max: -	Level: 3
	P-Group: INVERTER				
	Displays measured heatsink temperature and calculated junction temperature of IGBTs based on thermal model.				
	Index: r0037[0] : Measured heat sink temperature r0037[1] : Chip temperature r0037[2] : Rectifier Temperature r0037[3] : Inv. ambient Temperature r0037[4] : Ebox Temperature				
r0038	CO: Act. power factor	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays actual power factor.				
	Dependency: Applies when V/f control is selected in P1300 (control mode); otherwise, the display shows the value zero.				
r0039	CO: Energy consumpt. meter [kWh]	Datatype: Float	Unit: kWh	Min: - Def: - Max: -	Level: 2
	P-Group: INVERTER				
	Displays electrical energy used by inverter since display was last reset (see P0040 - reset energy consumption meter).				
	Dependency: Value is reset when P3900 = 1 (end quick commissioning), P0970 = 1 (factory reset) or P0040 = 1 (reset energy consumption meter).				
P0040	Reset energy consumption meter	Datatype: U16	Unit: -	Min: 0 Def: 0 Max: 1	Level: 2
	CStat: CT	Active: first confirm	QuickComm. No		
	P-Group: INVERTER				
	Resets value of parameter r0039 (energy consumption meter) to zero.				
	Settings: 0 No reset 1 Reset r0039 to 0				
	Dependency: No reset until "P" is pressed.				

r0050	CO: Active command data set	Datatype: U16	Unit: -	Min: -	Level: 2
	P-Group: COMMANDS			Def: - Max: -	

Displays currently selected and active binector and connector (BICO) data set.

Settings:

0 1st. Command data set (CDS)
1 2nd. Command data set (CDS)
2 3rd. Command data set (CDS)

r0051[2]	CO: Active drive data set (DDS)	Datatype: U16	Unit: -	Min: -	Level: 2
	P-Group: COMMANDS			Def: - Max: -	

Displays currently selected and active drive data set.

Settings:

0 1st. Drive data set (DDS)
1 2nd. Drive data set (DDS)
2 3rd. Drive data set (DDS)

Index:

r0051[0] : Selected drive data set
r0051[1] : Active drive data set

r0052	CO/BO: Act. status word 1	Datatype: U16	Unit: -	Min: -	Level: 2
	P-Group: COMMANDS			Def: - Max: -	

Displays first active status word of inverter (bit format) and can be used to diagnose inverter status. The display segments for the status word are shown in the "Introduction to MICROMASTER System Parameters".

Bitfields:

Bit00	Drive ready	0	NO
		1	YES
Bit01	Drive ready to run	0	NO
		1	YES
Bit02	Drive running	0	NO
		1	YES
Bit03	Drive fault active	0	NO
		1	YES
Bit04	OFF2 active	0	YES
		1	NO
Bit05	OFF3 active	0	YES
		1	NO
Bit06	ON inhibit active	0	NO
		1	YES
Bit07	Drive warning active	0	NO
		1	YES
Bit08	Deviation setp. / act. value	0	YES
		1	NO
Bit09	PZD control	0	NO
		1	YES
Bit10	Maximum frequency reached	0	NO
		1	YES
Bit11	Warning: Motor current limit	0	YES
		1	NO
Bit12	Motor holding brake active	0	NO
		1	YES
Bit13	Motor overload	0	YES
		1	NO
Bit14	Motor runs direction right	0	NO
		1	YES
Bit15	Inverter overload	0	YES
		1	NO

Note:

Output of Bit3 (Fault) will be inverted on digital output (Low = Fault, High = No Fault).

r0053	CO/BO: Act. status word 2	Datatype: U16	Unit: -	Min: -	Level: 2
	P-Group: COMMANDS			Def: -	
				Max: -	

Displays second status word of inverter (in bit format).

Bitfields:

Bit00	DC brake active	0	NO
		1	YES
Bit01	Act. freq. r0024 > P2167 (f_off)	0	NO
		1	YES
Bit02	Act. freq. r0024 > P1080 (f_min)	0	NO
		1	YES
Bit03	Act. current r0027 >= P2170	0	NO
		1	YES
Bit04	Act. freq. r0024 >= P2155 (f_1)	0	NO
		1	YES
Bit05	Act. freq. r0024 < P2155 (f_1)	0	NO
		1	YES
Bit06	Act. freq. r0024 >= setpoint	0	NO
		1	YES
Bit07	Act. Vdc r0026 < P2172	0	NO
		1	YES
Bit08	Act. Vdc r0026 > P2172	0	NO
		1	YES
Bit09	Ramping finished	0	NO
		1	YES
Bit10	PID output r2294 < P2291	0	NO
		1	YES
Bit11	PID output r2294 >= P2291	0	NO
		1	YES
Bit14	Download data set 0 from AOP	0	NO
		1	YES
Bit15	Download data set 1 from AOP	0	NO
		1	YES

Details:

See description of seven-segment display given in the "Introduction to MICROMASTER System Parameters" in this manual.

r0054	CO/BO: Act. control word 1	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMMANDS			Def: -	
				Max: -	

Displays first control word of inverter and can be used to diagnose which commands are active.

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motor potentiometer MOP up	0	NO
		1	YES
Bit14	Motor potentiometer MOP down	0	NO
		1	YES
Bit15	CDS Bit 0 (Local/Remote)	0	NO
		1	YES

Details:

See description of seven-segment display given in the "Introduction to MICROMASTER System Parameters" in this manual.

r0055	CO/BO: Add. act. control word	Min: -	Level: 3
	Datatype: U16	Def: -	
	Unit: -	Max: -	
P-Group: COMMANDS			

Displays additional control word of inverter and can be used to diagnose which commands are active.

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit03	Fixed frequency Bit 3	0	NO
		1	YES
Bit04	Drive data set (DDS) Bit 0	0	NO
		1	YES
Bit05	Drive data set (DDS) Bit 1	0	NO
		1	YES
Bit08	PID enabled	0	NO
		1	YES
Bit09	DC brake enabled	0	NO
		1	YES
Bit11	Droop	0	NO
		1	YES
Bit12	Torque control	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO
Bit15	Command data set (CDS) Bit 1	0	NO
		1	YES

Details:

See description of seven-segment display given in the "Introduction to MICROMASTER System Parameters" in this handbook.

r0056	CO/BO: Status of motor control	Min: -	Level: 3
	Datatype: U16	Def: -	
	Unit: -	Max: -	
P-Group: CONTROL			

Displays status of motor control (MM420: V/f status), which can be used to diagnose inverter status.

Bitfields:

Bit00	Init. control finished	0	NO
		1	YES
Bit01	Motor demagnetizing finished	0	NO
		1	YES
Bit02	Pulses enabled	0	NO
		1	YES
Bit03	Voltage soft start select	0	NO
		1	YES
Bit04	Motor excitation finished	0	NO
		1	YES
Bit05	Starting boost active	0	NO
		1	YES
Bit06	Acceleration boost active	0	NO
		1	YES
Bit07	Frequency is negative	0	NO
		1	YES
Bit08	Field weakening active	0	NO
		1	YES
Bit09	Volts setpoint limited	0	NO
		1	YES
Bit10	Slip frequency limited	0	NO
		1	YES
Bit11	F_out > F_max Freq. limited	0	NO
		1	YES
Bit12	Phase reversal selected	0	NO
		1	YES
Bit13	I-max controller active	0	NO
		1	YES
Bit14	Vdc-max controller active	0	NO
		1	YES
Bit15	KIB (Vdc-min control) active	0	NO
		1	YES

Details:

See description of seven-segment display given in the introduction.

r0061	CO: Act. rotor speed	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays current speed detected by encoder.				
r0062	CO: Freq. setpoint	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays speed setpoint of vector controller.				
r0063	CO: Act. frequency	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays actual speed.				
r0064	CO: Dev. frequency controller	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays actual deviation of speed controller.				
	This value is calculated from the speed setpoint (r0062) and the actual speed (r0063).				
	Dependency: Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.				
r0065	CO: Slip frequency	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays slip frequency of motor in [%] relative to the rated motor frequency (P0310).				
	Details: For V/f control, see also P1335 (slip compensation).				
r0066	CO: Act. output frequency	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays actual output frequency.				
	Note: The output frequency is limited by the values entered in P1080 (min. frequency) and P1082 (max. frequency).				
r0067	CO: Act. output current limit	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays valid maximum output current of drive.				
	This value is influenced by P0640 (max. output current), the derating characteristics and the thermal motor and inverter protection.				
	Dependency: P0610 (motor I2t temperature reaction) defines reaction when limit is reached.				
	Note: Normally, current limit = rated motor current (P0305) x motor current limit (P0640). It is less than or equal to maximum inverter current r0209.				
	The current limit may be reduced if the motor thermal model calculation indicates that overheating will occur.				
r0068	CO: Output current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays unfiltered [rms] value of motor current [A].				
	Note: Used for process control purposes (in contrast to r0027 (output current), which is filtered and is used to display the value on the BOP/AOP).				

r0069[6]	CO: Act. phase currents	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
	Displays phase currents.				
	Index:	r0069[0] : U_phase r0069[1] : V_phase r0069[2] : W_phase r0069[3] : Offset U_phase r0069[4] : Offset V_phase r0069[5] : Offset W_phase			
r0070	CO: Act. DC-link voltage	Datatype: Float	Unit: V	Min: - Def: - Max: -	Level: 3
	P-Group: INVERTER				
	Displays (unfiltered) DC-link voltage.				
	Note:	Used for process control purposes (in contrast to r0026 (actual DC-link voltage), which is filtered and is used to display the value on the BOP/AOP).			
r0071	CO: Max. output voltage	Datatype: Float	Unit: V	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays maximum output voltage.				
	Dependency:	Actual maximum output voltage depends on the actual input supply voltage.			
r0072	CO: Act. output voltage	Datatype: Float	Unit: V	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays output voltage.				
r0074	CO: Actual modulation	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
	Displays actual modulation index.				
	The modulation index is defined as ratio between the magnitude of the fundamental component in the inverter phase output voltage and half of the dc-link voltage.				
r0075	CO: Current setpoint Isd	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays setpoint of flux generating current component.				
	Dependency:	Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.			
r0076	CO: Act. current Isd	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays flux generating current component.				
	Dependency:	Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.			
r0077	CO: Current setpoint Isq	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays setpoint for component of torque generating current.				
	Dependency:	Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.			
r0078	CO: Act. current Isq	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays component of torque generating current.				

r0079	CO: Torque setpoint (total)	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays total torque setpoint.				
	Dependency: Applies when vector control is selected in P1300 (control mode); otherwise, the display shows the value zero.				
r0080	CO: Actual torque	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
	Displays actual torque.				
r0084	CO: Act. air gap flux	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
	Displays air gap flux in [%] relative to the rated motor flux.				
r0086	CO: Act. active current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays active (real part) of motor current.				
	Dependency: Applies when V/f control is selected in P1300 (control mode); otherwise, the display shows the value zero.				
r0090	CO: Act. rotor angle	Datatype: Float	Unit: °	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays current position detected by encoder.				
P0095[10]	CI: Display PZD signals	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CT				
	P-Group: CONTROL				
	Active: first confirm				
	QuickComm. No				
	Selects source of display for PZD signals.				
	Index: P0095[0] : 1st PZD signal P0095[1] : 2nd PZD signal P0095[2] : 3rd PZD signal P0095[3] : 4th PZD signal P0095[4] : 5th PZD signal P0095[5] : 6th PZD signal P0095[6] : 7th PZD signal P0095[7] : 8th PZD signal P0095[8] : 9th PZD signal P0095[9] : 10th PZD signal				
r0096[10]	PZD signals	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays PZD signals in [%].				
	Index: r0096[0] : 1st PZD signal r0096[1] : 2nd PZD signal r0096[2] : 3rd PZD signal r0096[3] : 4th PZD signal r0096[4] : 5th PZD signal r0096[5] : 6th PZD signal r0096[6] : 7th PZD signal r0096[7] : 8th PZD signal r0096[8] : 9th PZD signal r0096[9] : 10th PZD signal				
	Note: r0096 = 100 % corresponds to 4000 hex.				

P0100	Europe / North America				Min: 0	Level: 1
	CStat: C	Datatype: U16	Unit: -	Def: 0		
	P-Group: QUICK	Active: first confirm	QuickComm. Yes	Max: 2		

Determines whether power settings (e.g. nominal rating plate power - P0307) are expressed in [kW] or [hp].

The default settings for the nominal rating plate frequency (P0310) and maximum motor frequency (P1082) are also set automatically here, in addition to reference frequency (P2000).

Settings:

- 0 Europe [kW], frequency default 50 Hz
- 1 North America [hp], frequency default 60 Hz
- 2 North America [kW], frequency default 60 Hz

Dependency:

The setting of DIP switch 2 under the I/O board determines the validity of settings 0 and 1 for P0100 according to the table below:

DIP2 setting	Meaning		P0100 setting	Meaning
OFF	Power [kW] frequency default 50 [Hz]	overwrites	1	Power [hp] frequency default 60 [Hz]
ON	Power [hp] frequency default 60 [Hz]	overwrites	0	Power [kW] frequency default 50 [Hz]

Stop drive first (i.e. disable all pulses) before you change this parameter.

P0010 = 1 (commissioning mode) enables changes to be made.

Changing P0100 resets all rated motor parameters as well as other parameters that depend on the rated motor parameters (see P0340 - calculation of motor parameters).

Notice:

P0100 setting 2 (==> [kW], frequency default 60 [Hz]) is not overwritten by the setting of DIP switch 2 (see table above).

P0199	Equipment system number				Min: 0	Level: 2
	CStat: UT	Datatype: U16	Unit: -	Def: 0		
	P-Group: -	Active: first confirm	QuickComm. No	Max: 255		

Equipment system number. This parameter has no operation effect.

r0200	Act. power stack code number	Min: -	Level: 3
	Datatype: U32	Unit: -	
P-Group: INVERTER		Max: -	

Identifies hardware variant as shown in table below.

Code No.	MM440 MLFB	Input Voltage & Frequency	CT Power kW	VT Power kW	Internal Filter	Protection Degree
41	6SE6440-2UC11-2AA0	1/3AC200-240V +10% -15% 47-63Hz	0,12	0,12	no	IP20
42	6SE6440-2UC12-5AA0	1/3AC200-240V +10% -15% 47-63Hz	0,25	0,25	no	IP20
43	6SE6440-2UC13-7AA0	1/3AC200-240V +10% -15% 47-63Hz	0,37	0,37	no	IP20
44	6SE6440-2UC15-5AA0	1/3AC200-240V +10% -15% 47-63Hz	0,55	0,55	no	IP20
45	6SE6440-2UC17-5AA0	1/3AC200-240V +10% -15% 47-63Hz	0,75	0,75	no	IP20
46	6SE6440-2AB11-2AA0	1AC200-240V +10% -15% 47-63Hz	0,12	0,12	Cl. A	IP20
47	6SE6440-2AB12-5AA0	1AC200-240V +10% -15% 47-63Hz	0,25	0,25	Cl. A	IP20
48	6SE6440-2AB13-7AA0	1AC200-240V +10% -15% 47-63Hz	0,37	0,37	Cl. A	IP20
49	6SE6440-2AB15-5AA0	1AC200-240V +10% -15% 47-63Hz	0,55	0,55	Cl. A	IP20
50	6SE6440-2AB17-5AA0	1AC200-240V +10% -15% 47-63Hz	0,75	0,75	Cl. A	IP20
51	6SE6440-2UC21-1BA0	1/3AC200-240V +10% -15% 47-63Hz	1,1	1,1	no	IP20
52	6SE6440-2UC21-5BA0	1/3AC200-240V +10% -15% 47-63Hz	1,5	1,5	no	IP20
53	6SE6440-2UC22-2BA0	1/3AC200-240V +10% -15% 47-63Hz	2,2	2,2	no	IP20
54	6SE6440-2AB21-1BA0	1AC200-240V +10% -15% 47-63Hz	1,1	1,1	Cl. A	IP20
55	6SE6440-2AB21-5BA0	1AC200-240V +10% -15% 47-63Hz	1,5	1,5	Cl. A	IP20
56	6SE6440-2AB22-2BA0	1AC200-240V +10% -15% 47-63Hz	2,2	2,2	Cl. A	IP20
57	6SE6440-2UC23-0CA0	1/3AC200-240V +10% -15% 47-63Hz	3	4	no	IP20
58	6SE6440-2UC24-0CA0	3AC200-240V +10% -15% 47-63Hz	4	5,5	no	IP20
59	6SE6440-2UC25-5CA0	3AC200-240V +10% -15% 47-63Hz	5,5	7,5	no	IP20
60	6SE6440-2AB23-0CA0	1AC200-240V +10% -15% 47-63Hz	3	3	Cl. A	IP20
61	6SE6440-2AC23-0CA0	3AC200-240V +10% -15% 47-63Hz	3	4	Cl. A	IP20
62	6SE6440-2AC24-0CA0	3AC200-240V +10% -15% 47-63Hz	4	5,5	Cl. A	IP20
63	6SE6440-2AC25-5CA0	3AC200-240V +10% -15% 47-63Hz	5,5	7,5	Cl. A	IP20
64	6SE6440-2UC27-5DA0	3AC200-240V +10% -15% 47-63Hz	7,5	11	no	IP20
65	6SE6440-2UC31-1DA0	3AC200-240V +10% -15% 47-63Hz	11	15	no	IP20
66	6SE6440-2UC31-5DA0	3AC200-240V +10% -15% 47-63Hz	15	18,5	no	IP20
70	6SE6440-2UC31-8EA0	3AC200-240V +10% -15% 47-63Hz	18,5	22	no	IP20
71	6SE6440-2UC32-2EA0	3AC200-240V +10% -15% 47-63Hz	22	30	no	IP20
74	6SE6440-2UC33-0FA0	3AC200-240V +10% -15% 47-63Hz	30	37	no	IP20
75	6SE6440-2UC33-7FA0	3AC200-240V +10% -15% 47-63Hz	37	45	no	IP20
76	6SE6440-2UC34-5FA0	3AC200-240V +10% -15% 47-63Hz	45	45	no	IP20
80	6SE6440-2UD13-7AA0	3AC380-480V +10% -10% 47-63Hz	0,37	0,37	no	IP20
81	6SE6440-2UD15-5AA0	3AC380-480V +10% -10% 47-63Hz	0,55	0,55	no	IP20
82	6SE6440-2UD17-5AA0	3AC380-480V +10% -10% 47-63Hz	0,75	0,75	no	IP20
83	6SE6440-2UD21-1AA0	3AC380-480V +10% -10% 47-63Hz	1,1	1,1	no	IP20
84	6SE6440-2UD21-5AA0	3AC380-480V +10% -10% 47-63Hz	1,5	1,5	no	IP20
85	6SE6440-2UD22-2BA0	3AC380-480V +10% -10% 47-63Hz	2,2	2,2	no	IP20
86	6SE6440-2UD23-0BA0	3AC380-480V +10% -10% 47-63Hz	3	3	no	IP20
87	6SE6440-2UD24-0BA0	3AC380-480V +10% -10% 47-63Hz	4	4	no	IP20

Code-No.	MM440 MLFB	Input Voltage & Frequency	CT Power kW	VT Power kW	Internal Filter	Protection Degree
88	6SE6440-2AD22-2BA0	3AC380-480V +10% -10% 47-63Hz	2,2	2,2	Cl. A	IP20
89	6SE6440-2AD23-0BA0	3AC380-480V +10% -10% 47-63Hz	3	3	Cl. A	IP20
90	6SE6440-2AD24-0BA0	3AC380-480V +10% -10% 47-63Hz	4	4	Cl. A	IP20
91	6SE6440-2UD25-5CA0	3AC380-480V +10% -10% 47-63Hz	5,5	7,5	no	IP20
92	6SE6440-2UD27-5CA0	3AC380-480V +10% -10% 47-63Hz	7,5	11	no	IP20
93	6SE6440-2UD31-1CA0	3AC380-480V +10% -10% 47-63Hz	11	15	no	IP20
94	6SE6440-2AD25-5CA0	3AC380-480V +10% -10% 47-63Hz	5,5	7,5	Cl. A	IP20
95	6SE6440-2AD27-5CA0	3AC380-480V +10% -10% 47-63Hz	7,5	11	Cl. A	IP20
96	6SE6440-2AD31-1CA0	3AC380-480V +10% -10% 47-63Hz	11	15	Cl. A	IP20
97	6SE6440-2UD31-5DA0	3AC380-480V +10% -10% 47-63Hz	15	18,5	no	IP20
98	6SE6440-2UD31-8DA0	3AC380-480V +10% -10% 47-63Hz	18,5	22	no	IP20
99	6SE6440-2UD32-2DA0	3AC380-480V +10% -10% 47-63Hz	22	30	no	IP20
100	6SE6440-2AD31-5DA0	3AC380-480V +10% -10% 47-63Hz	15	18,5	Cl. A	IP20
101	6SE6440-2AD31-8DA0	3AC380-480V +10% -10% 47-63Hz	18,5	22	Cl. A	IP20
102	6SE6440-2AD32-2DA0	3AC380-480V +10% -10% 47-63Hz	22	30	Cl. A	IP20
103	6SE6440-2UD33-0EA0	3AC380-480V +10% -10% 47-63Hz	30	37	no	IP20
104	6SE6440-2UD33-7EA0	3AC380-480V +10% -10% 47-63Hz	37	45	no	IP20
105	6SE6440-2AD33-0EA0	3AC380-480V +10% -10% 47-63Hz	30	37	Cl. A	IP20
106	6SE6440-2AD33-7EA0	3AC380-480V +10% -10% 47-63Hz	37	45	Cl. A	IP20
107	6SE6440-2UD34-5FA0	3AC380-480V +10% -10% 47-63Hz	45	55	no	IP20
108	6SE6440-2UD35-5FA0	3AC380-480V +10% -10% 47-63Hz	55	75	no	IP20
109	6SE6440-2UD37-5FA0	3AC380-480V +10% -10% 47-63Hz	75	90	no	IP20
110	6SE6440-2AD34-5FA0	3AC380-480V +10% -10% 47-63Hz	45	55	Cl. A	IP20
111	6SE6440-2AD35-5FA0	3AC380-480V +10% -10% 47-63Hz	55	75	Cl. A	IP20
112	6SE6440-2AD37-5FA0	3AC380-480V +10% -10% 47-63Hz	75	90	Cl. A	IP20
113	6SE6440-2UE17-5CA0	3AC500-600V +10% -10% 47-63Hz	0,75	1,5	no	IP20
114	6SE6440-2UE21-5CA0	3AC500-600V +10% -10% 47-63Hz	1,5	2,2	no	IP20
115	6SE6440-2UE22-2CA0	3AC500-600V +10% -10% 47-63Hz	2,2	4	no	IP20
116	6SE6440-2UE24-0CA0	3AC500-600V +10% -10% 47-63Hz	4	5,5	no	IP20
117	6SE6440-2UE25-5CA0	3AC500-600V +10% -10% 47-63Hz	5,5	7,5	no	IP20
118	6SE6440-2UE27-5CA0	3AC500-600V +10% -10% 47-63Hz	7,5	11	no	IP20
119	6SE6440-2UE31-1CA0	3AC500-600V +10% -10% 47-63Hz	11	15	no	IP20
120	6SE6440-2UE31-5DA0	3AC500-600V +10% -10% 47-63Hz	15	18,5	no	IP20
121	6SE6440-2UE31-8DA0	3AC500-600V +10% -10% 47-63Hz	18,5	22	no	IP20
122	6SE6440-2UE32-2DA0	3AC500-600V +10% -10% 47-63Hz	22	30	no	IP20
123	6SE6440-2UE33-0EA0	3AC500-600V +10% -10% 47-63Hz	30	37	no	IP20
124	6SE6440-2UE33-7EA0	3AC500-600V +10% -10% 47-63Hz	37	45	no	IP20
125	6SE6440-2UE34-5FA0	3AC500-600V +10% -10% 47-63Hz	45	55	no	IP20
126	6SE6440-2UE35-5FA0	3AC500-600V +10% -10% 47-63Hz	55	75	no	IP20
127	6SE6440-2UE37-5FA0	3AC500-600V +10% -10% 47-63Hz	75	90	no	IP20

Notice:

Parameter r0200 = 0 indicates that no power stack has been identified.

P0201	Power stack code number				Level:
	CStat: C	Datatype: U16	Unit: -	Min: 0	3
	P-Group: INVERTER	Active: first confirm	QuickComm. No	Def: 0 Max: 65535	

Confirms actual power stack identified.

r0203	Act. inverter type	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: INVERTER			Def: - Max: -	

Type number of actual power stack identified.

Settings:

1	MICROMASTER 420
2	MICROMASTER 440
3	MICRO- / COMBIMASTER 411
4	MICROMASTER 410
5	Reserved
6	MICROMASTER 440 PX
7	MICROMASTER 430

r0204	Power stack features	Datatype: U32	Unit: -	Min: -	Level: 3
	P-Group: INVERTER			Def: - Max: -	

Displays hardware features of power stack.

Bitfields:

Bit00	DC input voltage	0	NO
		1	YES
Bit01	RFI filter	0	NO
		1	YES

Note:

Parameter r0204 = 0 indicates that no power stack has been identified.

P0205	Inverter application	Min: 0	Level: 3	
	CStat: C	Datatype: U16		Unit: -
	P-Group: INVERTER	Active: first confirm		QuickComm. Yes
		Def: 0		
		Max: 1		

Selects inverter application. The inverter and motor requirements are determined by the speed range and torque requirements of the load. The relationship between speed and torque for different loads (constant torque loads or variable torque loads).

Constant torque (CT):

CT is used if the application needs a constant torque on the whole frequency range. Many loads can be considered to be constant torque loads. Typical constant torque loads are conveyors, compressors and positive displacement pumps (see diagram).

Variable torque (VT):

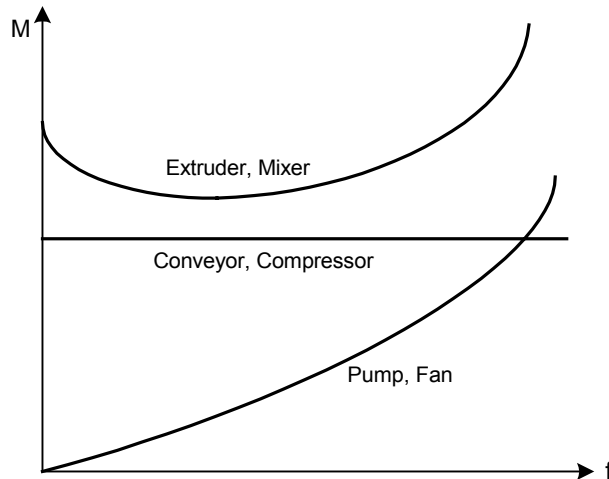
VT is used if the application has a parabolic frequency-torque characteristic like many fans and pumps.

Variable torque allows with the same inverter:

- * Higher rated inverter current r0207
- * Higher rated inverter power r0206
- * Higher threshold for I2t protection

If P0205 is modified in quick commissioning it immediately calculates various motor parameters:

1. P0305 Rated motor current
2. P0307 Rated motor power
3. P0640 Motor overload factor
4. P1300 Control mode



It is recommended to modify P0205 first. Afterwards motor parameter may be adapted. Motor parameter will be overridden by changing this sequence.

Settings:

- 0 Constant torque
- 1 Variable torque

Note:

The parameter value is not reset by the factory setting (see P0970).

To set P0205 = 1 (variable torque) is not possible for all inverters.

Notice:

Use setting 1 (variable torque) only for variable-torque applications (e.g. pumps and fans). If used for constant-load applications, I2t warning will be produced too late, causing overheating in the motor.

r0206	Rated inverter power [kW] / [hp]	Min: -	Level: 2	
		Datatype: Float		Unit: -
	P-Group: INVERTER			Max: -
		Def: -		
		Max: -		

Displays nominal rated motor power from inverter.

Dependency:

Value is displayed in [kW] or [hp] depending on setting for P0100 (operation for Europe / North America).

r0207	Rated inverter current	Min: -	Level: 2	
		Datatype: Float		Unit: A
	P-Group: INVERTER			Max: -
		Def: -		
		Max: -		

Displays maximum continuous output current of inverter.

r0208	Rated inverter voltage	Datatype: U32	Unit: V	Min: - Def: - Max: -	Level: 2
	P-Group: INVERTER				
Displays nominal AC supply voltage of inverter.					
Value:					
r0208 = 230 : 200 - 240 V +/- 10 %					
r0208 = 400 : 380 - 480 V +/- 10 %					
r0208 = 575 : 500 - 600 V +/- 10 %					
r0209	Maximum inverter current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 2
	P-Group: INVERTER				
Displays maximum output current of inverter.					
P0210	Supply voltage	Datatype: U16	Unit: V	Min: 0 Def: 230 Max: 1000	Level: 3
	CStat: CT P-Group: INVERTER	Active: Immediately	QuickComm. No		
Optimizes Vdc controller, which extends the ramp-down time if regenerative energy from motor would otherwise cause DC link overvoltage trips.					
Reducing the value enables controller to cut in earlier and reduce the risk of overvoltage.					
Dependency:					
Set P1254 ("Auto detect Vdc switch-on levels") = 0. Cut-in levels for Vdc-controller and compound braking are then derived directly from P0210 (supply voltage).					
Vdc_min switch-on level = $P1245 \cdot V_{mains}$					
Vdc_max switch-on level = $1.15 \cdot \sqrt{2} \cdot V_{mains}$					
Compound braking switch-on level = $1.13 \cdot \sqrt{2} \cdot V_{mains}$					
Dynamic braking switch-on level = $1.13 \cdot \sqrt{2} \cdot V_{mains}$					
Note:					
If mains voltage is higher than value entered, automatic deactivation of the Vdc controller may occur to avoid acceleration of the motor. An alarm will be issued in this case (A0910).					
r0231[2]	Max. cable length	Datatype: U16	Unit: m	Min: - Def: - Max: -	Level: 3
	P-Group: INVERTER				
Indexed parameter to display maximum allowable cable length between inverter and motor.					
Index:					
r0231[0] : Max. allowed unscreened cable length					
r0231[1] : Max. allowed screened cable length					
Notice:					
For full EMC compliance, the screened cable must not exceed 25 m in length when an EMC filter is fitted.					
P0290	Inverter overload reaction	Datatype: U16	Unit: -	Min: 0 Def: 2 Max: 3	Level: 3
	CStat: CT P-Group: INVERTER	Active: first confirm	QuickComm. No		
Selects reaction of inverter to an internal over-temperature.					
Settings:					
0 Reduce output frequency (usually only effective on variable torque appl.)					
1 Trip (F0004)					
2 Reduce pulse frequency and output frequency					
3 Reduce pulse frequency then trip (F0004)					
Notice:					
A trip will always result eventually, if the action taken does not sufficiently reduce internal temperature.					
The pulse frequency is normally reduced only if higher than 2 kHz (see P0291 - configuration of inverter protection).					

P0291[3]	Config. of inverter protection				Min: 0	Level: 4
	CStat: CT	Datatype: U16	Unit: -	Def: 1		
	P-Group: INVERTER	Active: Immediately	QuickComm. No	Max: 7		

Control bit for enabling/disabling automatic pulse frequency reduction at output frequencies below 2 Hz. Bit2 shows if phase loss is enabled after factory reset. Depends on framsize.

Bitfields:

Bit00	Pulse freq reduced below 2Hz	0	NO
		1	YES
Bit01	Dead time compensation	0	NO
		1	YES
Bit02	Phase loss detection enable	0	NO
		1	YES

Index:

P0291[0] : 1st. Drive data set (DDS)
P0291[1] : 2nd. Drive data set (DDS)
P0291[2] : 3rd. Drive data set (DDS)

Details:

See P0290 (inverter overload reaction)

P0292	Inverter overload warning				Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: °C	Def: 15		
	P-Group: INVERTER	Active: first confirm	QuickComm. No	Max: 25		

Defines temperature difference (in [°C]) between inverter over-temperature trip and warning thresholds.

P0294	Inverter I2t overload warning				Min: 10.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: %	Def: 95.0		
	P-Group: INVERTER	Active: first confirm	QuickComm. No	Max: 100.0		

Defines the [%] value at which alarm A0504 (inverter overtemperature) is generated.

Inverter I2t calculation is used to estimate a maximum tolerable period for inverter overload. The I2t calculation value is deemed = 100 % when this maximum tolerable period is reached.

Dependency:

Motor overload factor (P0640) reduced to 100 % at this point.

Note:

P0294 = 100 % corresponds to stationary nominal load.

P0295	Inverter fan off delay time				Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: s	Def: 0		
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 3600		

Defines inverter fan switch off delay time in seconds after drive has stopped.

Note:

Setting to 0, inverter fan will switch off when the drive stops, that is no delay.

P0300[3]	Select motor type	Min: 1	Level: 2	
	CStat: C	Datatype: U16		Unit: -
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes

Selects motor type.

This parameter is required during commissioning to select motor type and optimize inverter performance. Most motors are asynchronous; if in doubt, use the formula below.
(rated motor frequency (P0310) * 60) / rated motor speed (P0311)

If the result is a whole number, the motor is synchronous.

Settings:

- 1 Asynchronous rotational motor
- 2 Synchronous rotational motor

Index:

- P0300[0] : 1st. Drive data set (DDS)
- P0300[1] : 2nd. Drive data set (DDS)
- P0300[2] : 3rd. Drive data set (DDS)

Dependency:

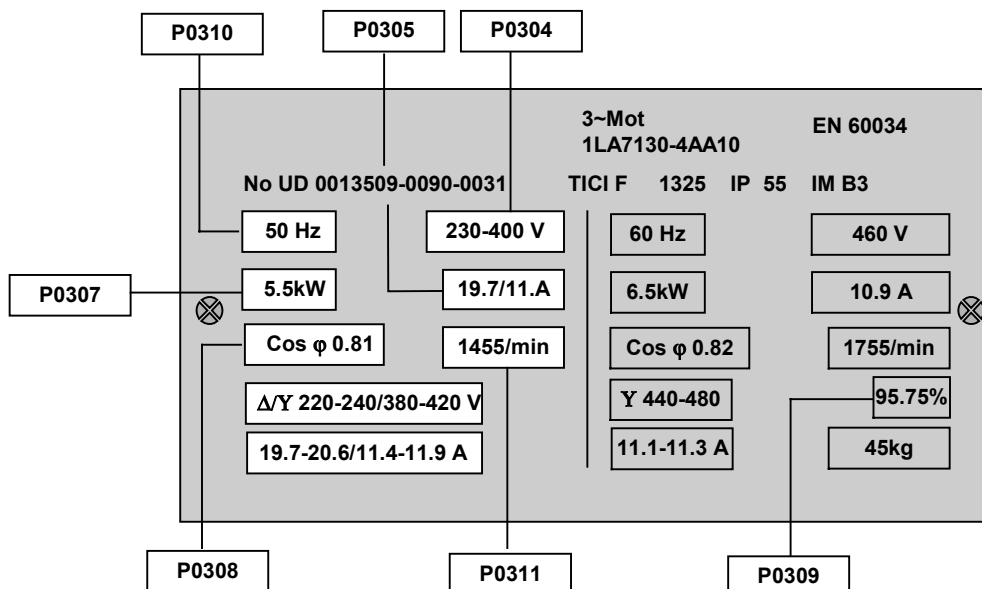
Changeable only when P0010 = 1 (quick commissioning).

If synchronous motor is selected, the following functions are not available:

- P0308 Power factor
- P0309 Motor efficiency
- P0346 Magnetization time
- P0347 Demagnetization time
- P1335 Slip compensation
- P1336 Slip limit
- P0320 Motor magnetizing current
- P0330 Rated motor slip
- P0331 Rated magnetization current
- P0332 Rated power factor
- P0384 Rotor time constant
- P1200, P1202, P1203 Flying start
- P1230, P1232, P1233 DC braking

P0304[3]	Rated motor voltage	Min: 10	Level: 1	
	CStat: C	Datatype: U16		Unit: V
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes

Nominal motor voltage [V] from rating plate. Following diagram shows a typical rating plate with the locations of the relevant motor data.



Index:

- P0304[0] : 1st. Drive data set (DDS)
- P0304[1] : 2nd. Drive data set (DDS)
- P0304[2] : 3rd. Drive data set (DDS)

Dependency:

Changeable only when P0010 = 1 (quick commissioning).

P0305[3]	Rated motor current	Min: 0.01	Level: 1	
	CStat: C	Datatype: Float		Unit: A
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes

Nominal motor current [A] from rating plate - see diagram in P0304.

Index:

P0305[0] : 1st. Drive data set (DDS)
P0305[1] : 2nd. Drive data set (DDS)
P0305[2] : 3rd. Drive data set (DDS)

Dependency:

Changeable only when P0010 = 1 (quick commissioning).

Depends also on P0320 (motor magnetization current).

Note:

For asynchronous motors, the maximum value is defined as the maximum inverter current (r0209).

For synchronous motors, the maximum value is defined as twice the maximum inverter current (r0209).

The minimum value is defined as 1/32 times inverter rated current (r0207).

P0307[3]	Rated motor power	Min: 0.01	Level: 1	
	CStat: C	Datatype: Float		Unit: -
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes

Nominal motor power [kW/hp] from rating plate.

Index:

P0307[0] : 1st. Drive data set (DDS)
P0307[1] : 2nd. Drive data set (DDS)
P0307[2] : 3rd. Drive data set (DDS)

Dependency:

If P0100 = 1 ([kW], frequency default 50 Hz), values will be in [hp] - see diagram P0304 (rating plate).

Changeable only when P0010 = 1 (quick commissioning).

P0308[3]	Rated motor cosPhi	Min: 0.000	Level: 2	
	CStat: C	Datatype: Float		Unit: -
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes

Nominal motor power factor (cosPhi) from rating plate - see diagram P0304.

Index:

P0308[0] : 1st. Drive data set (DDS)
P0308[1] : 2nd. Drive data set (DDS)
P0308[2] : 3rd. Drive data set (DDS)

Dependency:

Changeable only when P0010 = 1 (quick commissioning).

Visible only when P0100 = 0 or 2, (motor power entered in [kW]).

Setting 0 causes internal calculation of value (see r0332).

P0309[3]	Rated motor efficiency	Min: 0.0	Level: 2	
	CStat: C	Datatype: Float		Unit: %
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes

Nominal motor efficiency in [%] from rating plate.

Index:

P0309[0] : 1st. Drive data set (DDS)
P0309[1] : 2nd. Drive data set (DDS)
P0309[2] : 3rd. Drive data set (DDS)

Dependency:

Changeable only when P0010 = 1 (quick commissioning).

Visible only when P0100 = 1, (i.e. motor power entered in [hp]).

Setting 0 causes internal calculation of value (see r0332).

Note:

P0309 = 100 % corresponds to superconducting.

Details:

See diagram in P0304 (rating plate).

P0310[3]	Rated motor frequency	Min: 12.00	Level: 1	
	CStat: C	Datatype: Float		Unit: Hz
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes
		Def: 50.00		
		Max: 650.00		

Nominal motor frequency [Hz] from rating plate.

Index:

- P0310[0] : 1st. Drive data set (DDS)
- P0310[1] : 2nd. Drive data set (DDS)
- P0310[2] : 3rd. Drive data set (DDS)

Dependency:

Changeable only when P0010 = 1 (quick commissioning).

Pole pair number recalculated automatically if parameter is changed.

Details:

See diagram in P0304 (rating plate)

P0311[3]	Rated motor speed	Min: 0	Level: 1	
	CStat: C	Datatype: U16		Unit: 1/min
	P-Group: MOTOR	Active: first confirm		QuickComm. Yes
		Def: 0		
		Max: 40000		

Nominal motor speed [rpm] from rating plate.

Index:

- P0311[0] : 1st. Drive data set (DDS)
- P0311[1] : 2nd. Drive data set (DDS)
- P0311[2] : 3rd. Drive data set (DDS)

Dependency:

Changeable only when P0010 = 1 (quick commissioning).

Setting 0 causes internal calculation of value.

Required for vector control and V/f control with speed controller.

Slip compensation in V/f control requires rated motor speed for correct operation.

Pole pair number recalculated automatically if parameter is changed.

Details:

See diagram in P0304 (rating plate)

r0313[3]	Motor pole pairs	Min: -	Level: 3	
		Datatype: U16		Unit: -
	P-Group: MOTOR			QuickComm. No
		Def: -		
		Max: -		

Displays number of motor pole pairs that the inverter is currently using for internal calculations.

Value:

- r0313 = 1 : 2-pole motor
- r0313 = 2 : 4-pole motor
- etc.

Index:

- r0313[0] : 1st. Drive data set (DDS)
- r0313[1] : 2nd. Drive data set (DDS)
- r0313[2] : 3rd. Drive data set (DDS)

Dependency:

Recalculated automatically when P0310 (rated motor frequency) or P0311 (rated motor speed) is changed.

P0314[3]	Motor pole pair number	Min: 0	Level: 4	
	CStat: C	Datatype: U16		Unit: -
	P-Group: MOTOR	Active: first confirm		QuickComm. No
		Def: 0		
		Max: 99		

Specifies number of pole pairs of motor.

Value:

- P0314 = 1 : 2-pole motor
- P0314 = 2 : 4-pole motor
- etc.

Index:

- P0314[0] : 1st. Drive data set (DDS)
- P0314[1] : 2nd. Drive data set (DDS)
- P0314[2] : 3rd. Drive data set (DDS)

Dependency:

Recalculated automatically when P0310 (rated motor frequency) or P0311 (rated motor speed) is changed.

P0320[3]	Motor magnetizing current	Min: 0.0	Level:
CStat: CT	Datatype: Float	Unit: %	Def: 0.0
P-Group: MOTOR	Active: Immediately	QuickComm. Yes	Max: 99.0
			3
Defines motor magnetization current in [%] relative to P0305 (rated motor current).			
Index:			
P0320[0] : 1st. Drive data set (DDS)			
P0320[1] : 2nd. Drive data set (DDS)			
P0320[2] : 3rd. Drive data set (DDS)			
Dependency:			
Affected by P0366 - P0369 (magnetizing curve imag. 1 - 4); Setting 0 causes calculation by P0340 = 1 (data entered from rating plate) or by P3900 = 1 or 2 (end of quick commissioning).			
r0330[3]	Rated motor slip	Min: -	Level:
	Datatype: Float	Unit: %	Def: -
P-Group: MOTOR		Max: -	3
Displays nominal motor slip in [%] relative to P0310 (rated motor frequency) and P0311 (rated motor speed).			
$r0330 [\%] = \frac{P0310 - \frac{P0311}{60} \cdot r0313}{P0310} \cdot 100$			
Index:			
r0330[0] : 1st. Drive data set (DDS)			
r0330[1] : 2nd. Drive data set (DDS)			
r0330[2] : 3rd. Drive data set (DDS)			
r0331[3]	Rated magnetization current	Min: -	Level:
	Datatype: Float	Unit: A	Def: -
P-Group: MOTOR		Max: -	3
Displays calculated magnetizing current of motor in [A].			
Index:			
r0331[0] : 1st. Drive data set (DDS)			
r0331[1] : 2nd. Drive data set (DDS)			
r0331[2] : 3rd. Drive data set (DDS)			
r0332[3]	Rated power factor	Min: -	Level:
	Datatype: Float	Unit: -	Def: -
P-Group: MOTOR		Max: -	3
Displays power factor for motor			
Index:			
r0332[0] : 1st. Drive data set (DDS)			
r0332[1] : 2nd. Drive data set (DDS)			
r0332[2] : 3rd. Drive data set (DDS)			
Dependency:			
Value is calculated internally if P0308 (rated motor cosPhi) set to 0; otherwise, value entered in P0308 is displayed.			
r0333[3]	Rated motor torque	Min: -	Level:
	Datatype: Float	Unit: Nm	Def: -
P-Group: MOTOR		Max: -	3
Displays rated motor torque.			
Index:			
r0333[0] : 1st. Drive data set (DDS)			
r0333[1] : 2nd. Drive data set (DDS)			
r0333[2] : 3rd. Drive data set (DDS)			
Dependency:			
Value is calculated from P0310 (rated motor power) and P0311 (rated motor speed).			
P0335[3]	Motor cooling	Min: 0	Level:
CStat: CT	Datatype: U16	Unit: -	Def: 0
P-Group: MOTOR	Active: first confirm	QuickComm. Yes	Max: 3
			2
Selects motor cooling system used.			
Settings:			
0 Self-cooled: Using shaft mounted fan attached to motor			
1 Force-cooled: Using separately powered cooling fan			
2 Self-cooled and internal fan			
3 Force-cooled and internal fan			
Index:			
P0335[0] : 1st. Drive data set (DDS)			
P0335[1] : 2nd. Drive data set (DDS)			
P0335[2] : 3rd. Drive data set (DDS)			
Notice:			
Motors of series 1LA1 and 1LA8 have an internal fan. This internal motor fan must not be confused with the fan at the end of the motor shaft.			

P0340[3]	Calculation of motor parameters	Min: 0	Level: 2
	CStat: CT Datatype: U16 Unit: - Def: 0		
	P-Group: MOTOR Active: first confirm QuickComm. No Max: 4		

Calculates various motor parameters, including:

- P0344 Motor weight
- P0346 Magnetization time
- P0347 Demagnetization time
- P0350 Stator resistance
- P2000 Reference frequency
- P2002 Reference current

Settings:

- 0 No calculation
- 1 Complete parameterization
- 2 Calc. equivalent circuit data
- 3 Calc. V/f and vector control
- 4 Calc. only controller setting

Index:

- P0340[0] : 1st. Drive data set (DDS)
- P0340[1] : 2nd. Drive data set (DDS)
- P0340[2] : 3rd. Drive data set (DDS)

Note:

This parameter is required during commissioning to optimize inverter performance.

P0341[3]	Motor inertia [kg*m^2]	Min: 0.00010	Level: 3
	CStat: CUT Datatype: Float Unit: - Def: 0.00180		
	P-Group: MOTOR Active: Immediately QuickComm. No Max: 1000.0		

Sets no-load inertia of motor.

Together with P0342 (inertia ratio total/motor) and P1496 (scaling factor acceleration), this value produces the acceleration torque (r1517), which can be added to any additional torque produced from a BICO source (P1511), and incorporated in the torque control function.

Index:

- P0341[0] : 1st. Drive data set (DDS)
- P0341[1] : 2nd. Drive data set (DDS)
- P0341[2] : 3rd. Drive data set (DDS)

Note:

The result of P0341 * P0342 is included in the speed controller calculation.
P0341 * P0342 (inertia ratio total/motor) = total motor inertia

P1496 (scaling factor acceleration) = 100 % activates acceleration pre-control for the speed controller and calculates the torque from P0341 (motor inertia) and P0342 (inertia ratio total/motor).

P0342[3]	Total/motor inertia ratio	Min: 1.000	Level: 3
	CStat: CUT Datatype: Float Unit: - Def: 1.000		
	P-Group: MOTOR Active: Immediately QuickComm. No Max: 400.000		

Specifies ratio between total inertia (load + motor) and motor inertia.

Index:

- P0342[0] : 1st. Drive data set (DDS)
- P0342[1] : 2nd. Drive data set (DDS)
- P0342[2] : 3rd. Drive data set (DDS)

P0344[3]	Motor weight	Min: 1.0	Level: 3
	CStat: CUT Datatype: Float Unit: kg Def: 9.4		
	P-Group: MOTOR Active: Immediately QuickComm. No Max: 6500.0		

Specifies motor weight [kg].

Index:

- P0344[0] : 1st. Drive data set (DDS)
- P0344[1] : 2nd. Drive data set (DDS)
- P0344[2] : 3rd. Drive data set (DDS)

Note:

This value is used in the motor thermal model.

It is normally calculated automatically from P0340 (motor parameters) but can also be entered manually.

r0345[3]	Motor start-up time	Datatype: Float	Unit: s	Min: -	Level: 3
	P-Group: MOTOR			Def: - Max: -	

Displays motor start-up time. This time corresponds to the standardized motor inertia.

The start-up time is the time taken to reach rated motor speed from standstill at acceleration with rated motor torque (r0333).

Index:

- r0345[0] : 1st. Drive data set (DDS)
- r0345[1] : 2nd. Drive data set (DDS)
- r0345[2] : 3rd. Drive data set (DDS)

P0346[3]	Magnetization time	Datatype: Float	Unit: s	Min: 0.000	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 1.000 Max: 20.000	

Sets magnetization time [s], i.e. waiting time between pulse enable and start of ramp-up. Motor magnetization builds up during this time.

Magnetization time is normally calculated automatically from the motor data and corresponds to the rotor time constant (r0384).

Index:

- P0346[0] : 1st. Drive data set (DDS)
- P0346[1] : 2nd. Drive data set (DDS)
- P0346[2] : 3rd. Drive data set (DDS)

Note:

If boost settings are higher than 100 %, magnetization may be reduced.

Notice:

An excessive reduction of this time can result in insufficient motor magnetization.

P0347[3]	Demagnetization time	Datatype: Float	Unit: s	Min: 0.000	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 1.000 Max: 20.000	

Changes time allowed after OFF2 / fault condition, before pulses can be re-enabled.

Index:

- P0347[0] : 1st. Drive data set (DDS)
- P0347[1] : 2nd. Drive data set (DDS)
- P0347[2] : 3rd. Drive data set (DDS)

Note:

The demagnetization time is approximately 2.5 x rotor time constant (r0384) in seconds.

Notice:

Not active following a normally completed ramp-down, e.g. after OFF1, OFF3 or JOG.

Overcurrent trips will occur if the time is decreased excessively.

P0350[3]	Stator resistance (line-to-line)	Datatype: Float	Unit: Ohm	Min: 0.00001	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 4.0 Max: 2000.0	

Stator resistance value in [Ohms] for connected motor (from line-to-line). The parameter value includes the cable resistance.

There are three ways to determine the value for this parameter:

1. Calculate using P0340 = 1 (data entered from rating plate) or P3900 = 1, 2 or 3 (end of quick commissioning).
2. Measure using P1910 = 1 (motor data identification - value for stator resistance is overwritten).
3. Measure manually using an Ohmmeter.

Index:

- P0350[0] : 1st. Drive data set (DDS)
- P0350[1] : 2nd. Drive data set (DDS)
- P0350[2] : 3rd. Drive data set (DDS)

Note:

Since measured line-to-line, this value may appear to be higher (up to 2 times higher) than expected.

The value entered in P0350 (stator resistance) is the one obtained by the method last used.

P0352[3]	Cable resistance	Min: 0.0	Level: 3	
	CStat: CUT	Datatype: Float		Unit: Ohm
	P-Group: MOTOR	Active: Immediately		QuickComm. No

Def: 0.0
Max: 120.0

Describes cable resistance between inverter and motor for one phase.

The value corresponds to the resistance of the cable between the inverter and the motor, relative to the rated impedance.

Index:

P0352[0] : 1st. Drive data set (DDS)
P0352[1] : 2nd. Drive data set (DDS)
P0352[2] : 3rd. Drive data set (DDS)

P0354[3]	Rotor resistance	Min: 0.0	Level: 4	
	CStat: CUT	Datatype: Float		Unit: Ohm
	P-Group: MOTOR	Active: Immediately		QuickComm. No

Def: 10.0
Max: 300.0

Sets rotor resistance of motor equivalent circuit (phase value).

Index:

P0354[0] : 1st. Drive data set (DDS)
P0354[1] : 2nd. Drive data set (DDS)
P0354[2] : 3rd. Drive data set (DDS)

Dependency:

Calculated automatically using the motor model or determined using P1910 (motor identification).

P0356[3]	Stator leakage inductance	Min: 0.00001	Level: 4	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: MOTOR	Active: Immediately		QuickComm. No

Def: 10.0
Max: 1000.0

Sets stator leakage inductance [mH] of motor equivalent circuit (phase value).

Index:

P0356[0] : 1st. Drive data set (DDS)
P0356[1] : 2nd. Drive data set (DDS)
P0356[2] : 3rd. Drive data set (DDS)

Dependency:

Calculated automatically using the motor model or determined using P1910 (motor identification).

P0358[3]	Rotor leakage inductance	Min: 0.0	Level: 4	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: MOTOR	Active: Immediately		QuickComm. No

Def: 10.0
Max: 1000.0

Sets rotor leakage inductance [mH] of motor equivalent circuit (phase value).

Index:

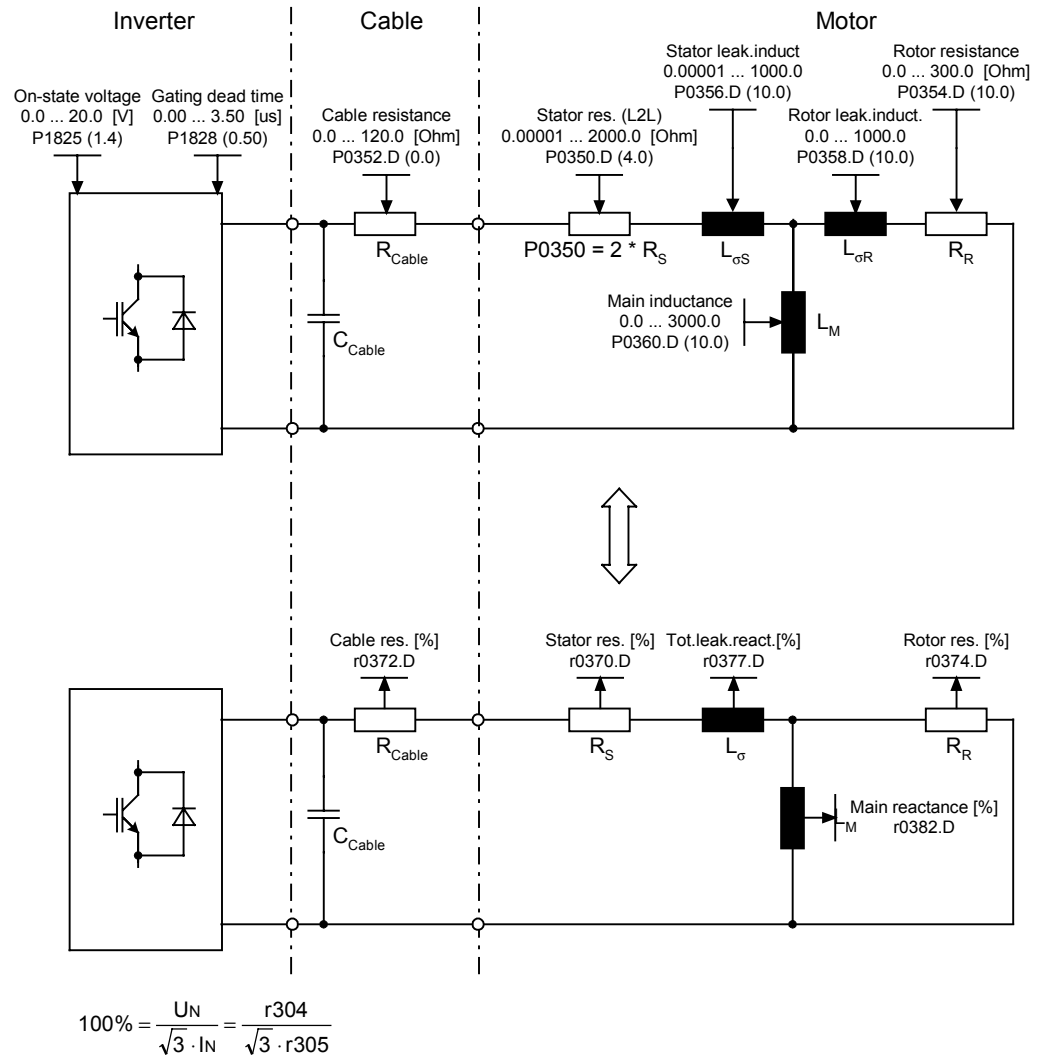
P0358[0] : 1st. Drive data set (DDS)
P0358[1] : 2nd. Drive data set (DDS)
P0358[2] : 3rd. Drive data set (DDS)

Dependency:

Calculated automatically using the motor model or determined using P1910 (motor identification).

P0360[3]	Main inductance	Datatype: Float	Unit: -	Min: 0.0	Level: 4
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 10.0	
	P-Group: MOTOR			Max: 3000.0	

Sets main inductance [mH] of the motor equivalent circuit (phase value), see diagram below.



Index:

- P0360[0] : 1st. Drive data set (DDS)
- P0360[1] : 2nd. Drive data set (DDS)
- P0360[2] : 3rd. Drive data set (DDS)

Dependency:

Calculated automatically using the motor model or determined using P1910 (motor identification).

P0362[3]	Magnetizing curve flux 1	Datatype: Float	Unit: %	Min: 0.0	Level: 4
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 60.0	
	P-Group: MOTOR			Max: 300.0	

Specifies first (lowest) flux value of saturation characteristic in [%] relative to rated motor voltage (P0304).

Index:

- P0362[0] : 1st. Drive data set (DDS)
- P0362[1] : 2nd. Drive data set (DDS)
- P0362[2] : 3rd. Drive data set (DDS)

Note:

P0362 = 100 % corresponds to rated motor flux

Rated flux = rated EMF

Notice:

The value belongs to the first magnetizing current value and must be smaller than or equal to magnetizing curve flux 2 (P0363).

Details:

See P0365 (magnetizing curve flux 4).

P0363[3]	Magnetizing curve flux 2	Min: 0.0	Level: 4	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: MOTOR	Active: Immediately		QuickComm. No
		Def: 85.0		
		Max: 300.0		

Specifies second flux value of saturation characteristic in [%] relative to rated motor voltage (P0304).

Index:

- P0363[0] : 1st. Drive data set (DDS)
- P0363[1] : 2nd. Drive data set (DDS)
- P0363[2] : 3rd. Drive data set (DDS)

Note:

P0363 = 100 % corresponds to rated motor flux

Rated flux = rated EMF

Notice:

The value belongs to the second magnetizing current value and must be smaller than or equal to magnetizing curve flux 3 (P0364) and greater than or equal to magnetizing curve flux 1 (P0362).

Details:

See P0365 (magnetizing curve flux 4).

P0364[3]	Magnetizing curve flux 3	Min: 0.0	Level: 4	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: MOTOR	Active: Immediately		QuickComm. No
		Def: 115.0		
		Max: 300.0		

Specifies third (highest) flux value of saturation characteristic in [%] relative to rated motor voltage (P0304).

Index:

- P0364[0] : 1st. Drive data set (DDS)
- P0364[1] : 2nd. Drive data set (DDS)
- P0364[2] : 3rd. Drive data set (DDS)

Note:

P0364 = 100 % corresponds to rated motor flux

Rated flux = rated EMF

Notice:

The value belongs to the third magnetizing current value and must be smaller than or equal to magnetizing curve flux 4 (P0365) and greater than or equal to magnetizing curve flux 2 (P0363).

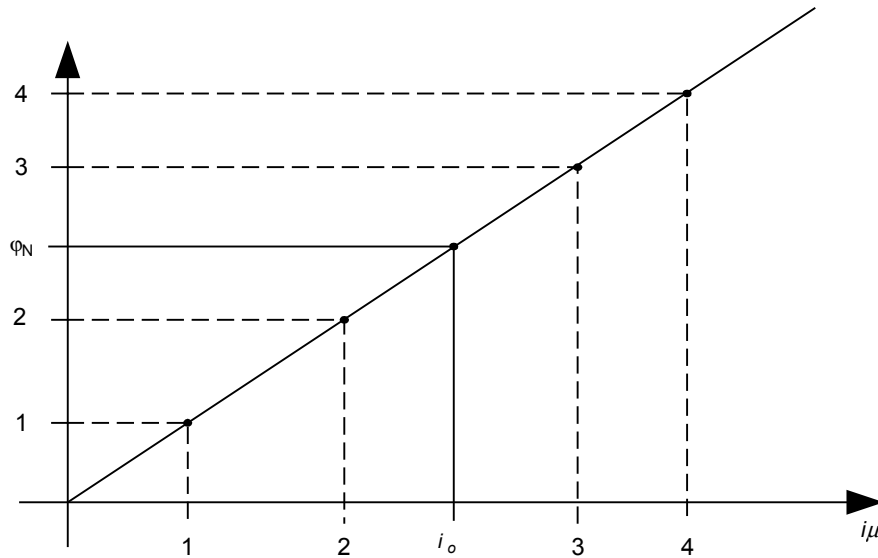
Details:

See P0365 (magnetizing curve flux 4).

P0365[3]	Magnetizing curve flux 4			Min: 0.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: %	Def: 125.0	
	P-Group: MOTOR	Active: Immediately	QuickComm. No	Max: 300.0	

Specifies fourth (highest) flux value of saturation characteristic in [%] relative to rated motor voltage (P0304).

The parameter settings for the values of imag 1 to imag 4 are illustrated in the diagram below.



Index:

- P0365[0] : 1st. Drive data set (DDS)
- P0365[1] : 2nd. Drive data set (DDS)
- P0365[2] : 3rd. Drive data set (DDS)

Note:

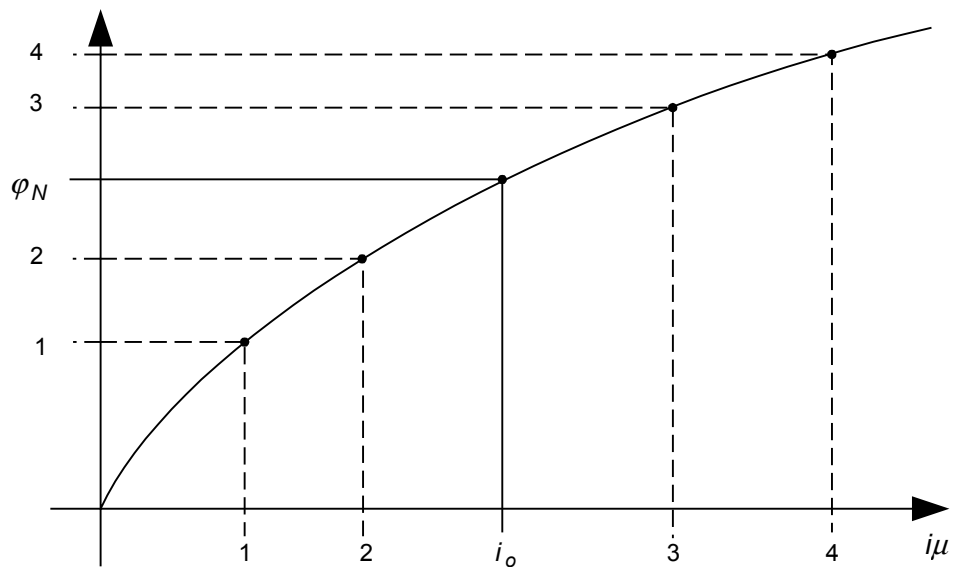
P0365 = 100 % corresponds to rated motor flux

Rated flux = rated EMF

Notice:

The value belongs to the third magnetizing current value and must be greater than or equal to magnetizing curve flux 3 (P0364).

If the magnetization values entered in P0362 to P0365 do not match, a linear characteristic is applied internally as shown in the following diagram:



P0366[3]	Magnetizing curve imag 1				Min: 0.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: %	Def: 50.0		
	P-Group: MOTOR	Active: Immediately	QuickComm. No	Max: 500.0		

Specifies first (lowest) magnetizing current value of the saturation characteristic in [%] relative to the rated magnetizing current (P0331).

Index:

P0366[0] : 1st. Drive data set (DDS)
P0366[1] : 2nd. Drive data set (DDS)
P0366[2] : 3rd. Drive data set (DDS)

Dependency:

Affects P0320 (motor magnetizing current).

Notice:

The value belongs to the first flux value and must be less than or equal to magnetizing curve imag 2 (P0367).

Details:

See P0369 (magnetizing curve imag 4).

P0367[3]	Magnetizing curve imag 2				Min: 0.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: %	Def: 75.0		
	P-Group: MOTOR	Active: Immediately	QuickComm. No	Max: 500.0		

Specifies second magnetizing current value of saturation characteristic in [%] relative to rated magnetizing current (P0331).

Index:

P0367[0] : 1st. Drive data set (DDS)
P0367[1] : 2nd. Drive data set (DDS)
P0367[2] : 3rd. Drive data set (DDS)

Dependency:

Affects P0320 (motor magnetizing current).

Notice:

The value belongs to the second flux value and must be less than or equal to magnetizing curve imag 3 (P0368) and greater than or equal to magnetizing curve imag 1 (P0366).

Details:

See diagram in P0369 (magnetizing curve imag 4).

P0368[3]	Magnetizing curve imag 3				Min: 0.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: %	Def: 135.0		
	P-Group: MOTOR	Active: Immediately	QuickComm. No	Max: 500.0		

Specifies third (lowest) magnetizing current value of saturation characteristic in [%] relative to rated magnetizing current (P0331).

Index:

P0368[0] : 1st. Drive data set (DDS)
P0368[1] : 2nd. Drive data set (DDS)
P0368[2] : 3rd. Drive data set (DDS)

Dependency:

Affects P0320 (motor magnetizing current).

Notice:

The value belongs to the third flux value and must be less than or equal to magnetizing curve imag 4 (P0369) and greater than or equal to magnetizing curve imag 2 (P0367).

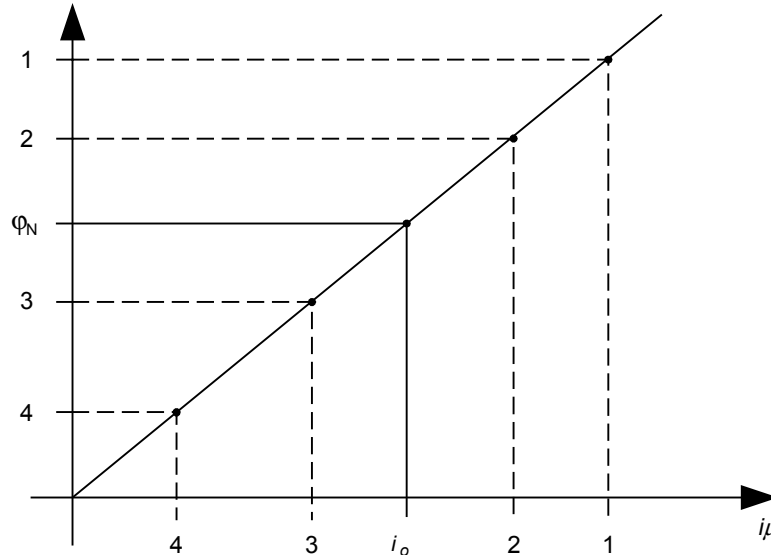
Details:

See P0369 (magnetizing curve imag 4).

P0369[3]	Magnetizing curve imag 4			Min: 0.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: %	Def: 170.0	
	P-Group: MOTOR	Active: Immediately	QuickComm. No	Max: 500.0	

Specifies fourth (lowest) magnetizing current value of saturation characteristic in [%] relative to rated magnetizing current (P0331).

The parameter settings for the values of imag 1 to imag 4 are illustrated in the diagram below.



Index:

- P0369[0] : 1st. Drive data set (DDS)
- P0369[1] : 2nd. Drive data set (DDS)
- P0369[2] : 3rd. Drive data set (DDS)

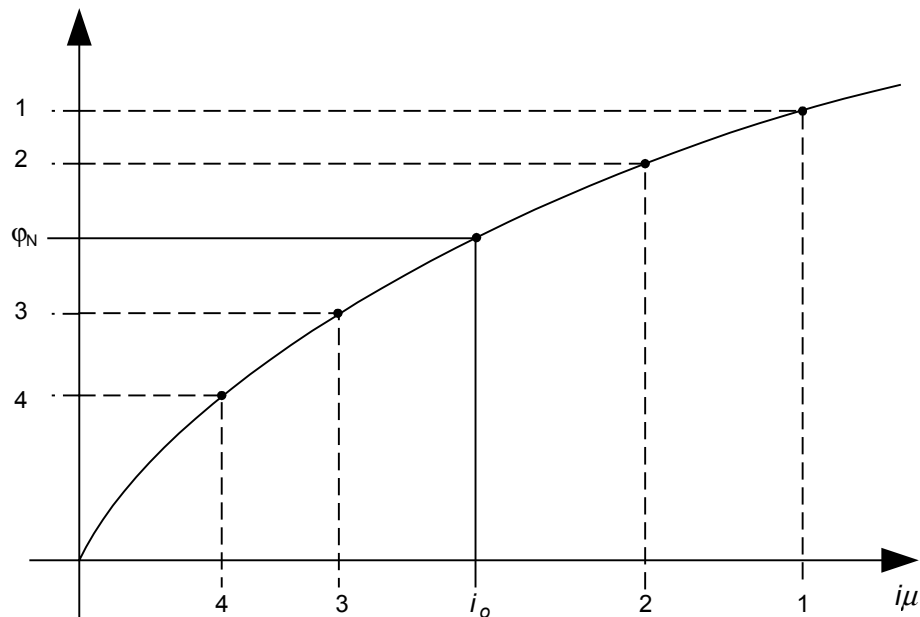
Dependency:

Affects P0320 (motor magnetizing current).

Notice:

The value belongs to the third flux value and must be less than or equal to magnetizing curve imag 3 (P0368).

If the magnetization values entered in P0366 to P0369 do not match, a linear characteristic is applied internally as shown in the following diagram:



r0370[3]	Stator resistance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays standardized stator resistance of motor equivalent circuit (phase value) in [%].				
Index:	r0370[0] : 1st. Drive data set (DDS) r0370[1] : 2nd. Drive data set (DDS) r0370[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0372[3]	Cable resistance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays standardized cable resistance of motor equivalent circuit (phase value) in [%]. It is estimated to be 20 % of the stator resistance.				
Index:	r0372[0] : 1st. Drive data set (DDS) r0372[1] : 2nd. Drive data set (DDS) r0372[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0373[3]	Rated stator resistance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays rated stator resistance of the motor equivalent circuit (phase value) in [%].				
Index:	r0373[0] : 1st. Drive data set (DDS) r0373[1] : 2nd. Drive data set (DDS) r0373[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0374[3]	Rotor resistance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays standardized rotor resistance of the motor equivalent circuit (phase value) in [%].				
Index:	r0374[0] : 1st. Drive data set (DDS) r0374[1] : 2nd. Drive data set (DDS) r0374[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0376[3]	Rated rotor resistance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays rated rotor resistance of the motor equivalent circuit (phase value) in [%].				
Index:	r0376[0] : 1st. Drive data set (DDS) r0376[1] : 2nd. Drive data set (DDS) r0376[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				

r0377[3]	Total leakage reactance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays standardized total leakage reactance of the motor equivalent circuit (phase value) in [%].				
Index:	r0377[0] : 1st. Drive data set (DDS) r0377[1] : 2nd. Drive data set (DDS) r0377[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0382[3]	Main reactance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays standardized main reactance of the motor equivalent circuit (phase value) in [%].				
Index:	r0382[0] : 1st. Drive data set (DDS) r0382[1] : 2nd. Drive data set (DDS) r0382[2] : 3rd. Drive data set (DDS)				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0384[3]	Rotor time constant	Datatype: Float	Unit: ms	Min: - Def: - Max: -	Level: 3
	P-Group: MOTOR				
	Displays calculated rotor time constant [ms].				
Index:	r0384[0] : 1st. Drive data set (DDS) r0384[1] : 2nd. Drive data set (DDS) r0384[2] : 3rd. Drive data set (DDS)				
r0386[3]	Total leakage time constant	Datatype: Float	Unit: ms	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays total leakage time constant of motor.				
Index:	r0386[0] : 1st. Drive data set (DDS) r0386[1] : 2nd. Drive data set (DDS) r0386[2] : 3rd. Drive data set (DDS)				
r0394	CO: Stator resistance IGBT [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 4
	P-Group: MOTOR				
	Displays stator resistance calculated in [%] from IGBT ON voltage and current amplitude.				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0395	CO: Total stator resistance [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 3
	P-Group: MOTOR				
	Displays stator resistance of motor as [%] of combined stator/cable resistance.				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
r0396	CO: Act. rotor resistance	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 3
	P-Group: MOTOR				
	Displays (adapted) rotor resistance of the motor equivalent circuit (phase value) in [%].				
Note:	100 % means : $Z_{\text{ratedmot}} \cdot \frac{P0304}{P0305}$				
Notice:	Values greater than 25 % tend to produce excessive motor slip. Check rated motor speed [rpm] value (P0311).				

P0400[3]	Select encoder type	Min: 0	Level: 2	
	CStat: CT	Datatype: U16		Def: 0
	P-Group: ENCODER	Active: Immediately		QuickComm. No Max: 12

Selects encoder type.

The term "quadrature" in settings 2 and 12 refers to two periodic functions separated by a quarter cycle or 90 degrees.

Settings:

0	Disabled
1	Single channel encoder
2	Quadrature encoder without zero pulse
3	External pulse train
12	Quadrature encoder with zero pulse

Index:

P0400[0] : 1st. Drive data set (DDS)
P0400[1] : 2nd. Drive data set (DDS)
P0400[2] : 3rd. Drive data set (DDS)

r0403	CO/BO: Encoder status word	Min: -	Level: 2	
	Datatype: U16	Unit: -		Def: -
	P-Group: COMMANDS	QuickComm. No		Max: -

Displays status word of encoder (in bit format).

Bitfields:

Bit00	Encoder module active	0	NO
		1	YES
Bit01	Encoder error	0	NO
		1	YES
Bit02	Signal o.k.	0	NO
		1	YES
Bit04	HW timer used	0	NO
		1	YES

Details:

See description of seven-segment display given in the "Introduction to MICROMASTER System Parameters" in this manual.

P0408[3]	Encoder pulses per revolution	Min: 2	Level: 2	
	CStat: CT	Datatype: U16		Def: 1024
	P-Group: ENCODER	Active: Immediately		QuickComm. No Max: 20000

Specifies the number of encoder pulses per revolution.

Index:

P0408[0] : 1st. Drive data set (DDS)
P0408[1] : 2nd. Drive data set (DDS)
P0408[2] : 3rd. Drive data set (DDS)

P0491[3]	Reaction on speed signal loss	Min: 0	Level: 2	
	CStat: CT	Datatype: U16		Def: 0
	P-Group: ENCODER	Active: first confirm		QuickComm. No Max: 1

Selects reaction on loss of speed signal.

Settings:

0	Do not change to SLVC
1	Change to SLVC

Index:

P0491[0] : 1st. Drive data set (DDS)
P0491[1] : 2nd. Drive data set (DDS)
P0491[2] : 3rd. Drive data set (DDS)

P0492[3]	Allowed speed difference	Min: 0	Level: 2	
	CStat: CT	Datatype: Float		Unit: Hz
	P-Group: ENCODER	Active: Immediately		QuickComm. No Max: 100.00

Selects the allowable difference in calculated speed signals between samples before it is considered to have lost the speed signal feedback.

Dependency:

This parameter is updated when P345 Motor start-up time is changed or when a speedloop optimisation is performed (P1960 = 1)

P0345 Motor start-up time

P0494[3]	Delay speed loss reaction	Min: 0	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 10		2
	P-Group: ENCODER Active: first confirm QuickComm. No Max: 10000		

Selects the delay from the detection of the speed signal loss before it is reacted on.

Index:

P0494[0] : 1st. Drive data set (DDS)
P0494[1] : 2nd. Drive data set (DDS)
P0494[2] : 3rd. Drive data set (DDS)

P0500[3]	Technological application	Min: 0	Level:
	CStat: CT Datatype: U16 Unit: - Def: 0		3
	P-Group: TECH_APL Active: first confirm QuickComm. Yes Max: 3		

Selects technological application. Sets control mode (P1300).

Settings:

0 Constant torque
1 Pumps and fans
3 Simple Positioning

Index:

P0500[0] : 1st. Drive data set (DDS)
P0500[1] : 2nd. Drive data set (DDS)
P0500[2] : 3rd. Drive data set (DDS)

P0530[3]	Unit for positioning signal	Min: 0	Level:
	CStat: CT Datatype: U16 Unit: - Def: 2		4
	P-Group: TECH_APL Active: first confirm QuickComm. Yes Max: 302		

Selects the Unit for conversion of motor shaft position.

Settings:

0 User defined units
1 Roundings
2 Degrees
3 Radians
101 Millimeters
102 Meters
301 Inches
302 Feet

Index:

P0530[0] : 1st. Drive data set (DDS)
P0530[1] : 2nd. Drive data set (DDS)
P0530[2] : 3rd. Drive data set (DDS)

P0531[3]	Unit conversion	Min: 0	Level:
	CStat: CT Datatype: U16 Unit: - Def: 0		4
	P-Group: TECH_APL Active: first confirm QuickComm. Yes Max: 1		

Switches On and Off the conversion of rotor position to user Units.

Settings:

0 No conversion of Units
1 Convert Units

Index:

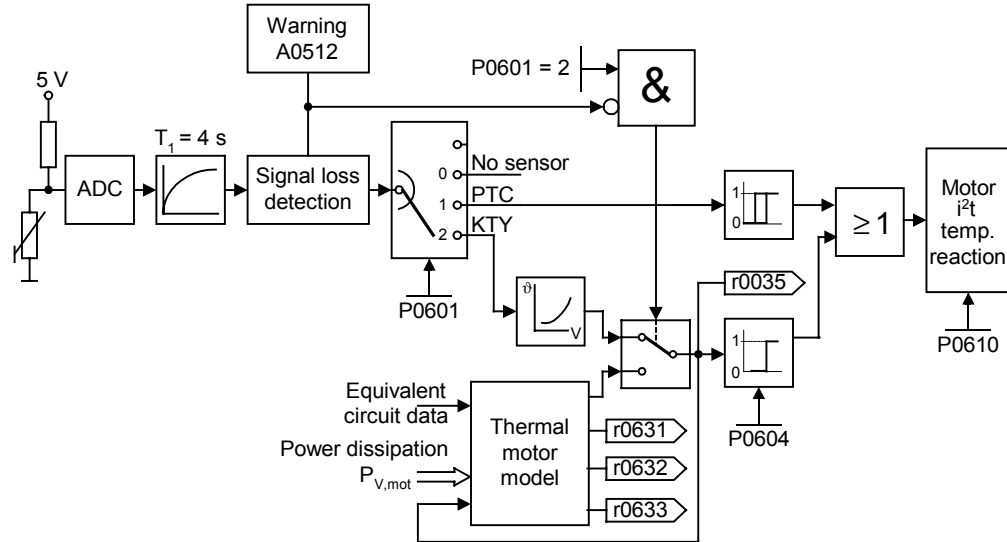
P0531[0] : 1st. Drive data set (DDS)
P0531[1] : 2nd. Drive data set (DDS)
P0531[2] : 3rd. Drive data set (DDS)

P0601[3]	Motor temperature sensor	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 0
	P-Group: MOTOR	Active: first confirm	QuickComm. No Max: 2
2			

Selects motor temperature sensor.

Settings:

- 0 No sensor
- 1 PTC thermistor
- 2 KTY84



Index:

- P0601[0] : 1st. Drive data set (DDS)
- P0601[1] : 2nd. Drive data set (DDS)
- P0601[2] : 3rd. Drive data set (DDS)

Dependency:

If "no sensor" is selected, the motor temperature monitoring will be done based on the estimated value of the thermal motor model.

P0604[3]	Threshold motor temperature	Min: 0.0	Level:
	CStat: CUT	Datatype: Float	Def: 130.0
	P-Group: MOTOR	Active: Immediately	QuickComm. No Max: 200.0
2			

Enters warning threshold for motor temperature protection. The trip temperature defined always 10 % higher than the warning level P0604. When act. motor temperature exceeds trip temperature than inverter trip as defined in P0610.

Index:

- P0604[0] : 1st. Drive data set (DDS)
- P0604[1] : 2nd. Drive data set (DDS)
- P0604[2] : 3rd. Drive data set (DDS)

Dependency:

Warning effective only when "Temperature sensor" chosen (i.e., no PTC).

Note:

Default value depends on P0300 (select motor type).

P0610[3]	Motor I2t temperature reaction	Min: 0	Level:
	CStat: CT	Datatype: U16	Def: 2
	P-Group: MOTOR	Active: first confirm	QuickComm. No Max: 2
3			

Defines reaction when motor temperature reaches warning threshold.

Settings:

- 0 No reaction, warning only
- 1 Warning and I_{max} reduction (results in reduced output freq.)
- 2 Warning and trip (F0011)

Index:

- P0610[0] : 1st. Drive data set (DDS)
- P0610[1] : 2nd. Drive data set (DDS)
- P0610[2] : 3rd. Drive data set (DDS)

Dependency:

Trip level = P0604 (motor temperature warning level) * 105 %

P0625[3]	Ambient motor temperature	Min: -40.0	Level:
	CStat: CUT Datatype: Float Unit: °C Def: 20.0 P-Group: MOTOR Active: Immediately QuickComm. No Max: 80.0		3
	Measures ambient temperature of motor at time of motor data identification.		
Index:	P0625[0] : 1st. Drive data set (DDS) P0625[1] : 2nd. Drive data set (DDS) P0625[2] : 3rd. Drive data set (DDS)		
P0626[3]	Overtemperature stator iron	Min: 20.0	Level:
	CStat: CUT Datatype: Float Unit: °C Def: 50.0 P-Group: MOTOR Active: Immediately QuickComm. No Max: 200.0		4
	Measures overtemperature of stator iron.		
Index:	P0626[0] : 1st. Drive data set (DDS) P0626[1] : 2nd. Drive data set (DDS) P0626[2] : 3rd. Drive data set (DDS)		
Note:	Temperature rises are valid for sinusoidal operations (line supply temperature rises). Temperature rises due to converter operation (modulation losses) and output filter are also considered.		
P0627[3]	Overtemperature stator winding	Min: 20.0	Level:
	CStat: CUT Datatype: Float Unit: °C Def: 80.0 P-Group: MOTOR Active: Immediately QuickComm. No Max: 200.0		4
	Measures overtemperature of the stator winding.		
Index:	P0627[0] : 1st. Drive data set (DDS) P0627[1] : 2nd. Drive data set (DDS) P0627[2] : 3rd. Drive data set (DDS)		
Note:	Temperature rises are valid for sinusoidal operations (line supply temperature rises). Temperature rises due to converter operation (modulation losses) and output filter are also considered.		
P0628[3]	Overtemperature rotor winding	Min: 20.0	Level:
	CStat: CUT Datatype: Float Unit: °C Def: 100.0 P-Group: MOTOR Active: Immediately QuickComm. No Max: 200.0		4
	Measures overtemperature of the rotor winding.		
Index:	P0628[0] : 1st. Drive data set (DDS) P0628[1] : 2nd. Drive data set (DDS) P0628[2] : 3rd. Drive data set (DDS)		
Note:	Temperature rises are valid for sinusoidal operations (line supply temperature rises). Temperature rises due to converter operation (modulation losses) and output filter are also considered.		
r0630[3]	CO: Ambient temperature	Min: -	Level:
	Datatype: Float Unit: °C Def: - P-Group: MOTOR Max: -		4
	Displays ambient temperature of motor mass model.		
Index:	r0630[0] : 1st. Drive data set (DDS) r0630[1] : 2nd. Drive data set (DDS) r0630[2] : 3rd. Drive data set (DDS)		
r0631[3]	CO: Stator iron temperature	Min: -	Level:
	Datatype: Float Unit: °C Def: - P-Group: MOTOR Max: -		4
	Displays iron temperature of motor mass model.		
Index:	r0631[0] : 1st. Drive data set (DDS) r0631[1] : 2nd. Drive data set (DDS) r0631[2] : 3rd. Drive data set (DDS)		
r0632[3]	CO: Stator winding temperature	Min: -	Level:
	Datatype: Float Unit: °C Def: - P-Group: MOTOR Max: -		4
	Displays stator winding temperature of motor mass model.		
Index:	r0632[0] : 1st. Drive data set (DDS) r0632[1] : 2nd. Drive data set (DDS) r0632[2] : 3rd. Drive data set (DDS)		

r0633[3]	CO: Rotor winding temperature	Datatype: Float	Unit: °C	Min: -	Level: 4
	P-Group: MOTOR			Def: - Max: -	

Displays rotor winding temperature of motor mass model.

Index:

- r0633[0] : 1st. Drive data set (DDS)
- r0633[1] : 2nd. Drive data set (DDS)
- r0633[2] : 3rd. Drive data set (DDS)

P0640[3]	Motor overload factor [%]	Datatype: Float	Unit: %	Min: 10.0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. Yes	Def: 150.0 Max: 400.0	

Defines motor overload current limit in [%] relative to P0305 (rated motor current).

Index:

- P0640[0] : 1st. Drive data set (DDS)
- P0640[1] : 2nd. Drive data set (DDS)
- P0640[2] : 3rd. Drive data set (DDS)

Dependency:

Limited to maximum inverter current or to 400 % of rated motor current (P0305), whichever is the lower.

Details:

See function diagram for current limitation.

P0700[3]	Selection of command source	Datatype: U16	Unit: -	Min: 0	Level: 1
	CStat: CT	Active: first confirm	QuickComm. Yes	Def: 2 Max: 6	

Selects digital command source.

Settings:

- 0 Factory default setting
- 1 BOP (keypad)
- 2 Terminal
- 4 USS on BOP link
- 5 USS on COM link
- 6 CB on COM link

Index:

- P0700[0] : 1st. Command data set (CDS)
- P0700[1] : 2nd. Command data set (CDS)
- P0700[2] : 3rd. Command data set (CDS)

Note:

Changing this parameter resets (to default) all settings on item selected. For example: Changing from 1 to 2 resets all digital inputs to default settings.

P0701[3]	Function of digital input 1	Datatype: U16	Unit: -	Min: 0	Level: 2
	CStat: CT	Active: first confirm	QuickComm. No	Def: 1 Max: 99	

Selects function of digital input 1.

Settings:

- 0 Digital input disabled
- 1 ON/OFF1
- 2 ON reverse /OFF1
- 3 OFF2 - coast to standstill
- 4 OFF3 - quick ramp-down
- 9 Fault acknowledge
- 10 JOG right
- 11 JOG left
- 12 Reverse
- 13 MOP up (increase freq.)
- 14 MOP down (decrease freq.)
- 15 Fixed setpoint (Direct selection)
- 16 Fixed setpoint (Direct selection + ON)
- 17 Fixed setpoint (Binary coded selection + ON)
- 25 DC brake enable
- 29 External trip
- 33 Disable additional freq setpoint
- 99 Enable BICO parameterization

Index:

- P0701[0] : 1st. Command data set (CDS)
- P0701[1] : 2nd. Command data set (CDS)
- P0701[2] : 3rd. Command data set (CDS)

Dependency:

Setting 99 (enable BICO parameterization) requires P0700 (command source) or P3900 (end of quick commissioning) = 1, 2 or P0970 (factory reset) = 1 in order to reset.

Notice:

Setting 99 (BICO) for expert use only.

P0702[3]	Function of digital input 2				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 12		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 2.

Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
15	Fixed setpoint (Direct selection)
16	Fixed setpoint (Direct selection + ON)
17	Fixed setpoint (Binary coded selection + ON)
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

Index:

P0702[0] : 1st. Command data set (CDS)
P0702[1] : 2nd. Command data set (CDS)
P0702[2] : 3rd. Command data set (CDS)

Details:

See P0701 (function of digital input1).

P0703[3]	Function of digital input 3				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 9		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 3.

Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
15	Fixed setpoint (Direct selection)
16	Fixed setpoint (Direct selection + ON)
17	Fixed setpoint (Binary coded selection + ON)
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

Index:

P0703[0] : 1st. Command data set (CDS)
P0703[1] : 2nd. Command data set (CDS)
P0703[2] : 3rd. Command data set (CDS)

Details:

See P0701 (function of digital input 1).

P0704[3]	Function of digital input 4				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 15		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 4.

Settings:

- 0 Digital input disabled
- 1 ON/OFF1
- 2 ON reverse /OFF1
- 3 OFF2 - coast to standstill
- 4 OFF3 - quick ramp-down
- 9 Fault acknowledge
- 10 JOG right
- 11 JOG left
- 12 Reverse
- 13 MOP up (increase freq.)
- 14 MOP down (decrease freq.)
- 15 Fixed setpoint (Direct selection)
- 16 Fixed setpoint (Direct selection + ON)
- 17 Fixed setpoint (Binary coded selection + ON)
- 25 DC brake enable
- 29 External trip
- 33 Disable additional freq setpoint
- 99 Enable BICO parameterization

Index:

- P0704[0] : 1st. Command data set (CDS)
- P0704[1] : 2nd. Command data set (CDS)
- P0704[2] : 3rd. Command data set (CDS)

Details:

See P0701 (function of digital input 1).

P0705[3]	Function of digital input 5				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 15		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 5 (via analog input).

Settings:

- 0 Digital input disabled
- 1 ON/OFF1
- 2 ON reverse /OFF1
- 3 OFF2 - coast to standstill
- 4 OFF3 - quick ramp-down
- 9 Fault acknowledge
- 10 JOG right
- 11 JOG left
- 12 Reverse
- 13 MOP up (increase freq.)
- 14 MOP down (decrease freq.)
- 15 Fixed setpoint (Direct selection)
- 16 Fixed setpoint (Direct selection + ON)
- 17 Fixed setpoint (Binary coded selection + ON)
- 25 DC brake enable
- 29 External trip
- 33 Disable additional freq setpoint
- 99 Enable BICO parameterization

Index:

- P0705[0] : 1st. Command data set (CDS)
- P0705[1] : 2nd. Command data set (CDS)
- P0705[2] : 3rd. Command data set (CDS)

Details:

See P0701 (function of digital input 1).

P0706[3]	Function of digital input 6				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 15		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 6 (via analog input)

Settings:

- 0 Digital input disabled
- 1 ON/OFF1
- 2 ON reverse /OFF1
- 3 OFF2 - coast to standstill
- 4 OFF3 - quick ramp-down
- 9 Fault acknowledge
- 10 JOG right
- 11 JOG left
- 12 Reverse
- 13 MOP up (increase freq.)
- 14 MOP down (decrease freq.)
- 15 Fixed setpoint (Direct selection)
- 16 Fixed setpoint (Direct selection + ON)
- 17 Fixed setpoint (Binary coded selection + ON)
- 25 DC brake enable
- 29 External trip
- 33 Disable additional freq setpoint
- 99 Enable BICO parameterization

Index:

- P0706[0] : 1st. Command data set (CDS)
- P0706[1] : 2nd. Command data set (CDS)
- P0706[2] : 3rd. Command data set (CDS)

Details:

See P0701 (function of digital input 1).

P0707[3]	Function of digital input 7				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 7 (via analog input).

Settings:

- 0 Digital input disabled
- 1 ON/OFF1
- 2 ON reverse /OFF1
- 3 OFF2 - coast to standstill
- 4 OFF3 - quick ramp-down
- 9 Fault acknowledge
- 10 JOG right
- 11 JOG left
- 12 Reverse
- 13 MOP up (increase freq.)
- 14 MOP down (decrease freq.)
- 25 DC brake enable
- 29 External trip
- 33 Disable additional freq setpoint
- 99 Enable BICO parameterization

Index:

- P0707[0] : 1st. Command data set (CDS)
- P0707[1] : 2nd. Command data set (CDS)
- P0707[2] : 3rd. Command data set (CDS)

Note:

Signals above 4 V are active, signals below 1,6 V are inactive.

Details:

See P0701 (function of digital input 1).

P0708[3]	Function of digital input 8				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 99		

Selects function of digital input 8 (via analog input)

Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

Index:

P0708[0]	: 1st. Command data set (CDS)
P0708[1]	: 2nd. Command data set (CDS)
P0708[2]	: 3rd. Command data set (CDS)

Note:

Signals above 4 V are active, signals below 1,6 V are inactive.

Details:

See P0701 (function of digital input 1).

P0719[3]	Selection of cmd. & freq. setp.				Min: 0	Level: 3
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 66		

Central switch to select control command source for inverter.

Switches command and setpoint source between freely programmable BICO parameters and fixed command/setpoint profiles. Command and setpoint sources can be changed independently.

The tens digit chooses the command source and the units digit chooses the setpoint source.

Settings:

0	Cmd = BICO parameter	Setpoint = BICO parameter
1	Cmd = BICO parameter	Setpoint = MOP setpoint
2	Cmd = BICO parameter	Setpoint = Analog setpoint
3	Cmd = BICO parameter	Setpoint = Fixed frequency
4	Cmd = BICO parameter	Setpoint = USS on BOP link
5	Cmd = BICO parameter	Setpoint = USS on COM link
6	Cmd = BICO parameter	Setpoint = CB on COM link
10	Cmd = BOP	Setpoint = BICO parameter
11	Cmd = BOP	Setpoint = MOP setpoint
12	Cmd = BOP	Setpoint = Analog setpoint
13	Cmd = BOP	Setpoint = Fixed frequency
15	Cmd = BOP	Setpoint = USS on COM link
16	Cmd = BOP	Setpoint = CB on COM link
40	Cmd = USS on BOP link	Setpoint = BICO parameter
41	Cmd = USS on BOP link	Setpoint = MOP setpoint
42	Cmd = USS on BOP link	Setpoint = Analog setpoint
43	Cmd = USS on BOP link	Setpoint = Fixed frequency
44	Cmd = USS on BOP link	Setpoint = USS on BOP link
45	Cmd = USS on BOP link	Setpoint = USS on COM link
46	Cmd = USS on BOP link	Setpoint = CB on COM link
50	Cmd = USS on COM link	Setpoint = BICO parameter
51	Cmd = USS on COM link	Setpoint = MOP setpoint
52	Cmd = USS on COM link	Setpoint = Analog setpoint
53	Cmd = USS on COM link	Setpoint = Fixed frequency
54	Cmd = USS on COM link	Setpoint = USS on BOP link
55	Cmd = USS on COM link	Setpoint = USS on COM link
60	Cmd = CB on COM link	Setpoint = BICO parameter
61	Cmd = CB on COM link	Setpoint = MOP setpoint
62	Cmd = CB on COM link	Setpoint = Analog setpoint
63	Cmd = CB on COM link	Setpoint = Fixed frequency
64	Cmd = CB on COM link	Setpoint = USS on BOP link
66	Cmd = CB on COM link	Setpoint = CB on COM link

Index:

- P0719[0] : 1st. Command data set (CDS)
- P0719[1] : 2nd. Command data set (CDS)
- P0719[2] : 3rd. Command data set (CDS)

Note:

If set to a value other than 0 (i.e. BICO parameter is not the setpoint source), P0844 / P0848 (first source of OFF2 / OFF3) are not effective; instead, P 0845 / P0849 (second source of OFF2 / OFF3) apply and the OFF commands are obtained via the particular source defined.

BICO connections made previously remain unchanged.

r0720	Number of digital inputs				Min: -	Level: 3
			Datatype: U16	Unit: -	Def: -	
	P-Group: COMMANDS				Max: -	

Displays number of digital inputs.

r0722	CO/BO: Binary input values	Datatype: U16	Unit: -	Min: -	Level: 2
	P-Group: COMMANDS			Def: - Max: -	

Displays status of digital inputs.

Bitfields:

Bit00	Digital input 1	0	OFF
		1	ON
Bit01	Digital input 2	0	OFF
		1	ON
Bit02	Digital input 3	0	OFF
		1	ON
Bit03	Digital input 4	0	OFF
		1	ON
Bit04	Digital input 5	0	OFF
		1	ON
Bit05	Digital input 6	0	OFF
		1	ON
Bit06	Digital input 7 (via ADC 1)	0	OFF
		1	ON
Bit07	Digital input 8 (via ADC 2)	0	OFF
		1	ON

Note:

Segment is lit when signal is active.

P0724	Debounce time for digital inputs	Datatype: U16	Unit: -	Min: 0	Level: 3
	CStat: CT	Active: Immediately	QuickComm. No	Def: 3 Max: 3	

Defines debounce time (filtering time) used for digital inputs.

Settings:

0	No debounce time
1	2.5 ms debounce time
2	8.2 ms debounce time
3	12.3 ms debounce time

P0725	PNP / NPN digital inputs	Datatype: U16	Unit: -	Min: 0	Level: 3
	CStat: CT	Active: Immediately	QuickComm. No	Def: 1 Max: 1	

Switches between active high (PNP) and active low (NPN). This is valid for all digital inputs simultaneously.

The following is valid by using the internal supply:

Value:

NPN: Terminals 5/6/7/8/16/17 must be connected via terminal 28 (0 V).
PNP: Terminals 5/6/7/8/16/17 must be connected via terminal 9 (24 V).

Settings:

0	NPN mode ==> low active
1	PNP mode ==> high active

r0730	Number of digital outputs	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMMANDS			Def: - Max: -	

Displays number of digital outputs (relays).

P0731[3]	BI: Function of digital output 1				Min: 0:0	Level: 2
	CStat: CUT	Datatype: U32	Unit: -	Def: 52:3		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of digital output 1.

Settings:

52.0	Drive ready	0	Closed
52.1	Drive ready to run	0	Closed
52.2	Drive running	0	Closed
52.3	Drive fault active	0	Closed
52.4	OFF2 active	1	Closed
52.5	OFF3 active	1	Closed
52.6	Switch on inhibit active	0	Closed
52.7	Drive warning active	0	Closed
52.8	Deviation setpoint/actual value	1	Closed
52.9	PZD control (Process Data Control)	0	Closed
52.A	Maximum frequency reached	0	Closed
52.B	Warning: Motor current limit	1	Closed
52.C	Motor holding brake (MHB) active	0	Closed
52.D	Motor overload	1	Closed
52.E	Motor running direction right	0	Closed
52.F	Inverter overload	1	Closed
53.0	DC brake active	0	Closed
53.1	Inverter freq. less switch off freq. P2167	0	Closed
53.2	Inverter freq. less minimum freq. P1080	0	Closed
53.3	Current greater or equal than limit	0	Closed
53.4	Act. freq. greater comparison freq. P2155	0	Closed
53.5	Act. freq. less comparison freq. P2155	0	Closed
53.6	Act. freq. greater/equal setpoint	0	Closed
53.7	Voltage less than threshold	0	Closed
53.8	Voltage greater than threshold	0	Closed
53.A	PID output at lower limit (P2292)	0	Closed
53.B	PID output at upper limit (P2291)	0	Closed

Index:

P0731[0] : 1st. Command data set (CDS)
P0731[1] : 2nd. Command data set (CDS)
P0731[2] : 3rd. Command data set (CDS)

P0732[3]	BI: Function of digital output 2				Min: 0:0	Level: 2
	CStat: CUT	Datatype: U32	Unit: -	Def: 52:7		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of digital output 2.

Settings:

52.0	Drive ready	0	Closed
52.1	Drive ready to run	0	Closed
52.2	Drive running	0	Closed
52.3	Drive fault active	0	Closed
52.4	OFF2 active	1	Closed
52.5	OFF3 active	1	Closed
52.6	Switch on inhibit active	0	Closed
52.7	Drive warning active	0	Closed
52.8	Deviation setpoint/actual value	1	Closed
52.9	PZD control (Process Data Control)	0	Closed
52.A	Maximum frequency reached	0	Closed
52.B	Warning: Motor current limit	1	Closed
52.C	Motor holding brake (MHB) active	0	Closed
52.D	Motor overload	1	Closed
52.E	Motor running direction right	0	Closed
52.F	Inverter overload	1	Closed
53.0	DC brake active	0	Closed
53.1	Inverter freq. less switch off freq. P2167	0	Closed
53.2	Inverter freq. less minimum freq. P1080	0	Closed
53.3	Current greater or equal than limit	0	Closed
53.4	Act. freq. greater comparison freq. P2155	0	Closed
53.5	Act. freq. less comparison freq. P2155	0	Closed
53.6	Act. freq. greater/equal setpoint	0	Closed
53.7	Voltage less than threshold	0	Closed
53.8	Voltage greater than threshold	0	Closed
53.A	PID output at lower limit (P2292)	0	Closed
53.B	PID output at upper limit (P2291)	0	Closed

Index:

P0732[0] : 1st. Command data set (CDS)
P0732[1] : 2nd. Command data set (CDS)
P0732[2] : 3rd. Command data set (CDS)

Note:

Other settings are possible in "Expert" mode (see P0003 - user access level).

P0733[3]	BI: Function of digital output 3	Min: 0:0	Level: 2
	CStat: CUT Datatype: U32 Unit: - Def: 0:0		
	P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		

Defines source of digital output 2.

Settings:

52.0	Drive ready	0	Closed
52.1	Drive ready to run	0	Closed
52.2	Drive running	0	Closed
52.3	Drive fault active	0	Closed
52.4	OFF2 active	1	Closed
52.5	OFF3 active	1	Closed
52.6	Switch on inhibit active	0	Closed
52.7	Drive warning active	0	Closed
52.8	Deviation setpoint/actual value	1	Closed
52.9	PZD control (Process Data Control)	0	Closed
52.A	Maximum frequency reached	0	Closed
52.B	Warning: Motor current limit	1	Closed
52.C	Motor holding brake (MHB) active	0	Closed
52.D	Motor overload	1	Closed
52.E	Motor running direction right	0	Closed
52.F	Inverter overload	1	Closed
53.0	DC brake active	0	Closed
53.1	Inverter freq. less switch off freq. P2167	0	Closed
53.2	Inverter freq. less minimum freq. P1080	0	Closed
53.3	Current greater or equal than limit	0	Closed
53.4	Act. freq. greater comparison freq. P2155	0	Closed
53.5	Act. freq. less comparison freq. P2155	0	Closed
53.6	Act. freq. greater/equal setpoint	0	Closed
53.7	Voltage less than threshold	0	Closed
53.8	Voltage greater than threshold	0	Closed
53.A	PID output at lower limit (P2292)	0	Closed
53.B	PID output at upper limit (P2291)	0	Closed

Index:

P0733[0] : 1st. Command data set (CDS)
 P0733[1] : 2nd. Command data set (CDS)
 P0733[2] : 3rd. Command data set (CDS)

Note:

Other settings are possible in "Expert" mode (see P0003 - user access level).

r0747	CO/BO: State of digital outputs	Min: -	Level: 3
	Datatype: U16 Unit: - Def: -		
	P-Group: COMMANDS Max: -		

Displays status of digital outputs (also includes inversion of digital outputs via P0748).

Bitfields:

Bit00	Digital output 1 energized	0	NO
		1	YES
Bit01	Digital output 2 energized	0	NO
		1	YES
Bit02	Digital output 3 energized	0	NO
		1	YES

Dependency:

Bit 0 = 0 :
Relay de-energized / contacts open

Bit 0 = 1 :
Relay energized / contacts closed

P0748	Invert digital outputs	Min: 0	Level: 3
	CStat: CUT Datatype: U16 Unit: - Def: 0		
	P-Group: COMMANDS Active: first confirm QuickComm. No Max: 7		

Defines high and low states of relay for a given function.

Bitfields:

Bit00	Invert digital output 1	0	NO
		1	YES
Bit01	Invert digital output 2	0	NO
		1	YES
Bit02	Invert digital output 3	0	NO
		1	YES

r0750	Number of ADCs	Min: -	Level: 3
	Datatype: U16 Unit: - Def: -		
	P-Group: TERMINAL Max: -		

Displays number of analog inputs available.

r0751	BO: Status word of ADC	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 4
	P-Group: TERMINAL				
	Displays status of analog input.				
	Bitfields:				
	Bit00	Signal lost on ADC 1	0	NO	
			1	YES	
	Bit01	Signal lost on ADC 2	0	NO	
			1	YES	
r0752[2]	Act. input of ADC [V] or [mA]	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: TERMINAL				
	Displays smoothed analog input value in volts before the characteristic block.				
	Index:				
	r0752[0] : Analog input 1 (ADC 1)				
	r0752[1] : Analog input 2 (ADC 2)				
P0753[2]	Smooth time ADC	Datatype: U16	Unit: ms	Min: 0 Def: 3 Max: 10000	Level: 3
	CStat: CUT				
	P-Group: TERMINAL				
	Active: first confirm				
	QuickComm. No				
	Defines filter time (PT1 filter) in [ms] for analog input.				
	Index:				
	P0753[0] : Analog input 1 (ADC 1)				
	P0753[1] : Analog input 2 (ADC 2)				
	Note:				
	Increasing this time (smooth) reduces jitter but slows down response to the analog input.				
	P0753 = 0 : No filtering				
r0754[2]	Act. ADC value after scaling [%]	Datatype: Float	Unit: %	Min: - Def: - Max: -	Level: 2
	P-Group: TERMINAL				
	Shows smoothed value of analog input in [%] after scaling block.				
	Index:				
	r0754[0] : Analog input 1 (ADC 1)				
	r0754[1] : Analog input 2 (ADC 2)				
	Dependency:				
	P0757 to P0760 define range (ADC scaling).				
r0755[2]	CO: Act. ADC after scal. [4000h]	Datatype: I16	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: TERMINAL				
	Displays analog input, scaled using ASPmin and ASPmax.				
	Analog setpoint (ASP) from the analog scaling block can vary from min. analog setpoint (ASPmin) to a max. analog setpoint (ASPmax) as shown in P0757 (ADC scaling).				
	The largest magnitude (value without sign) of ASPmin and ASPmax defines the scaling of 16384.				
	Example:				
	ASPmin = 300 %, ASPmax = 100 % then 16384 represents 300 %.				
	This parameter will vary from 5461 to 16364				
	ASPmin = -200 %, ASPmax = 100 % then 16384 represents 200 %.				
	This parameter will vary from -16384 to +8192				
	Index:				
	r0755[0] : Analog input 1 (ADC 1)				
	r0755[1] : Analog input 2 (ADC 2)				
	Note:				
	This value is used as an input to analog BICO connectors.				
	ASPmax represents the highest analog setpoint (this may be at 10 V).				
	ASPmin represents the lowest analog setpoint (this may be at 0 V).				
	Details:				
	See parameters P0757 to P0760 (ADC scaling)				

P0756[2]	Type of ADC				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 4		

Defines type of analog input and also enables analog input monitoring.

To switch over from voltage to current analog input it is not sufficient to merely modify parameter P0756. Rather, the DIPs on the terminal board must also be set to the correct position. The DIP settings are as follows:

- OFF = voltage input (10 V)
- ON = current input (20 mA)

Allocation of DIPs to analog inputs is as follows:

- DIP on left (DIP 1) = Analog input 1
- DIP on right (DIP 2) = Analog input 2

Settings:

- 0 Unipolar voltage input (0 to +10 V)
- 1 Unipolar voltage input with monitoring (0 to 10 V)
- 2 Unipolar current input (0 to 20 mA)
- 3 Unipolar current input with monitoring (0 to 20 mA)
- 4 Bipolar voltage input (-10 V to +10 V)

Index:

- P0756[0] : Analog input 1 (ADC 1)
- P0756[1] : Analog input 2 (ADC 2)

Dependency:

Function disabled if analog scaling block programmed to output negative setpoints (see P0757 to P0760).

Notice:

When monitoring is enabled and a deadband defined (P0761), a fault condition will be generated (F0080) if the analog input voltage falls below 50 % of the deadband voltage.

On account of h/w restriction it is not possible to select the bipolar voltage (see Enum declaration) for analog input 2 (P0756[1] = 4).

Details:

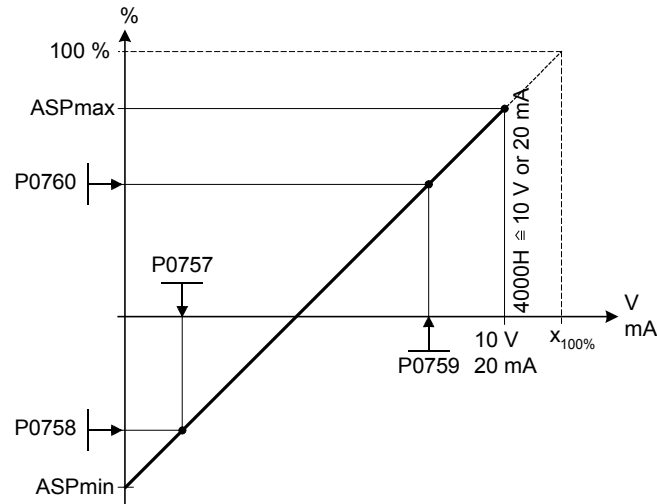
See P0757 to P0760 (ADC scaling).

P0757[2]	Value x1 of ADC scaling [V / mA]			Min: -20	Level: 2
	CStat: CUT	Datatype: Float	Unit: -	Def: 0	
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 20	

Parameters P0757 - P0760 configure the input scaling as shown in the diagram:

P0756 = 0 ... 3

P0761 = 0



Where:

Analog setpoints represent a [%] of the normalized frequency in P2000.

Analog setpoints may be larger than 100 %.

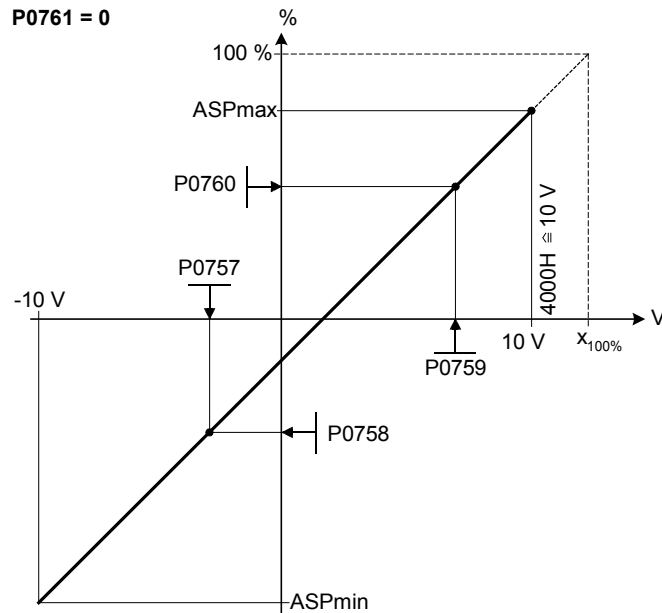
ASPmax represents highest analog setpoint (this may be at 10 V or 20 mA).

ASPmin represents lowest analog setpoint (this may be at 0 V or 20 mA).

Default values provide a scaling of 0 V or 0 mA = 0 %, and 10 V or 20 mA = 100 %.

P0756 = 4

P0761 = 0



Index:

P0757[0] : Analog input 1 (ADC 1)

P0757[1] : Analog input 2 (ADC 2)

P0758[2]	Value y1 of ADC scaling	Min: -99999.9	Level: 2	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 0.0		
		Max: 99999.9		

Sets value of Y1 in [%] as described in P0757 (ADC scaling)

Index:

P0758[0] : Analog input 1 (ADC 1)

P0758[1] : Analog input 2 (ADC 2)

Dependency:

Affects P2000 to P2003 (reference frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0759[2]	Value x2 of ADC scaling [V / mA]	Min: -20	Level: 2	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 10		
		Max: 20		

Sets value of X2 as described in P0757 (ADC scaling)

Index:

P0759[0] : Analog input 1 (ADC 1)

P0759[1] : Analog input 2 (ADC 2)

P0760[2]	Value y2 of ADC scaling	Min: -99999.9	Level: 2	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 100.0		
		Max: 99999.9		

Sets value of Y2 in [%] as described in P0757 (ADC scaling).

Index:

P0760[0] : Analog input 1 (ADC 1)

P0760[1] : Analog input 2 (ADC 2)

Dependency:

Affects P2000 to P2003 (reference frequency, voltage, current or torque) depending on which setpoint is to be generated.

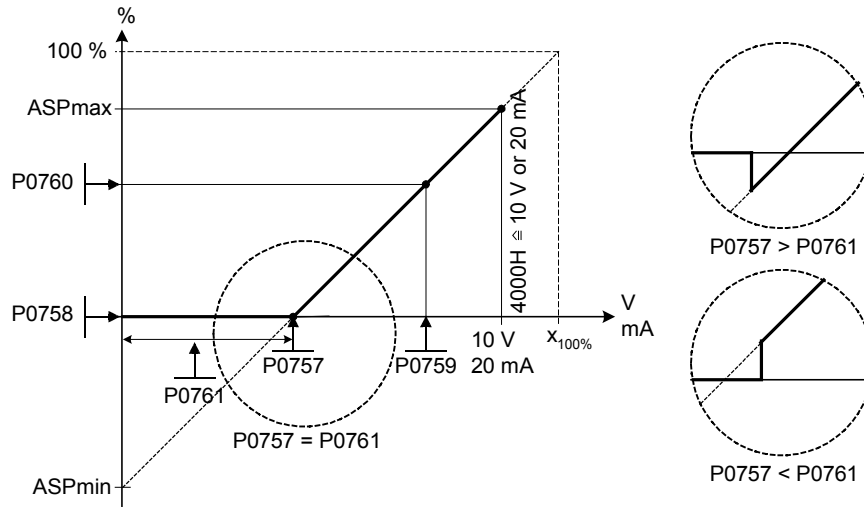
P0761[2]	Width of ADC deadband [V / mA]			Min: 0	Level: 2
	CStat: CUT	Datatype: Float	Unit: -	Def: 0	
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 20	

Defines width of deadband on analog input. The diagrams below explain its use.

Example:

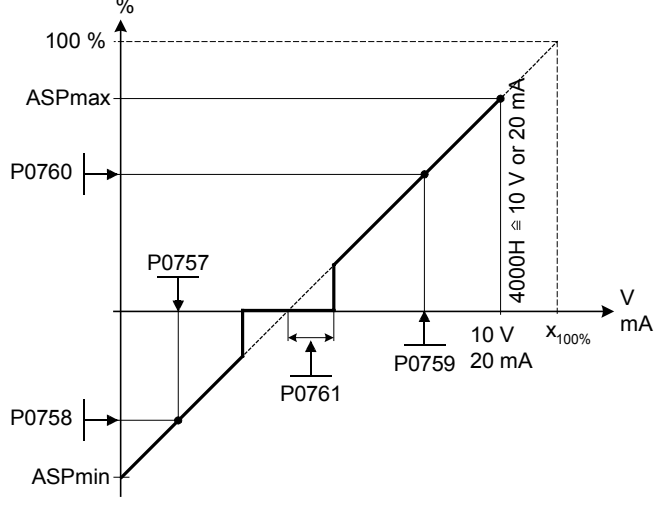
ADC value 2 to 10 V (0 to 50 Hz)
 The below example produces a 2 to 10 V analog input (0 to 50 Hz):
 P2000 = 50 Hz
 P0759 = 8 V P0760 = 75 %
 P0757 = 2 V P0758 = 0 %
 P0761 = 2 V
 P0756 = 0 or 1

P0761 > 0
0 < P0758 < P0760 || 0 > P0758 > P0760



ADC value 0 to 10 V (-50 to +50 Hz):
 The below example produces a 0 to 10 V analog input (-50 to +50 Hz) with center zero and a "holding point" 0.2 V wide (0.1 V to each side of center).
 P2000 = 50 Hz
 P0759 = 8 V P0760 = 75 %
 P0757 = 2 V P0758 = -75 %
 P0761 = 0.1 V
 P0756 = 0 or 1

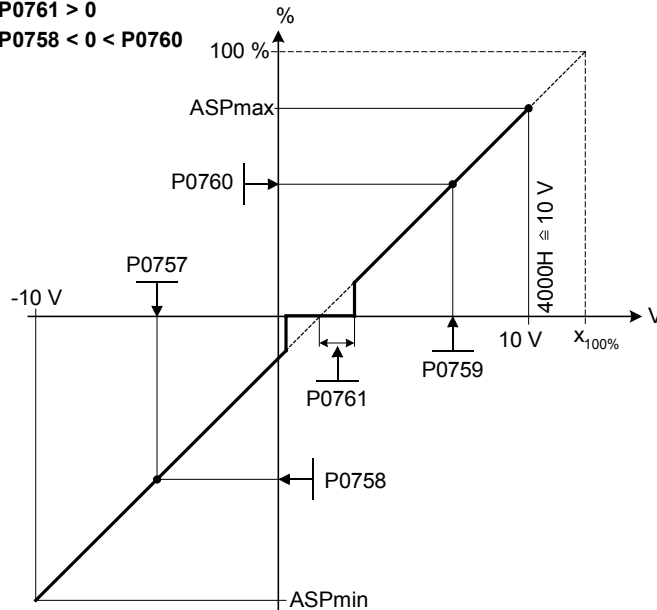
P0761 > 0
P0758 < 0 < P0760



ADC value -10 to +10 V (-50 to +50 Hz):

The below example produces a -10 to +10 V analog input (-50 to +50 Hz) with center zero and a "holding point" 0.2 V wide (0.1 V to each side of center).

P0756 = 4
P0761 > 0
P0758 < 0 < P0760



Index:

P0761[0] : Analog input 1 (ADC 1)
 P0761[1] : Analog input 2 (ADC 2)

Note:

P0761[x] = 0 : No deadband active.

Notice:

Deadband starts from 0 V to value of P0761, if both values of P0758 and P0760 (y coordinates of ADC scaling) are positive or negative respectively. However, deadband is active in both directions from point of intersection (x axis with ADC scaling curve), if sign of P0758 and P0760 are opposite.

Fmin (P1080) should be zero when using center zero setup. There is no hysteresis at the end of the deadband.

P0762[2]	Delay for loss of signal action	Min: 0	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 10	Max: 10000	3
	P-Group: TERMINAL Active: Immediately QuickComm. No		

Defines time delay between loss of analog setpoint and appearance of fault code F0080.

Index:

P0762[0] : Analog input 1 (ADC 1)
 P0762[1] : Analog input 2 (ADC 2)

Note:

Expert users can choose the desired reaction to F0080 (default is OFF2).

r0770	Number of DACs	Datatype: U16 Unit: -	Min: -	Level:
	P-Group: TERMINAL	Def: -	Max: -	3

Displays number of analog outputs available.

P0771[2]	CI: DAC	Min: 0:0	Level:
	CStat: CUT Datatype: U32 Unit: -	Def: 21:0	2
	P-Group: TERMINAL Active: first confirm QuickComm. No	Max: 4000:0	

Defines function of the 0 - 20 mA analog output.

Settings:

- 21 CO: Act. frequency (scaled to P2000)
- 24 CO: Act. output frequency (scaled to P2000)
- 25 CO: Act. output voltage (scaled to P2001)
- 26 CO: Act. DC-link voltage (scaled to P2001)
- 27 CO: Act. output current (scaled to P2002)

Index:

P0771[0] : Analog output 1 (DAC 1)
 P0771[1] : Analog output 2 (DAC 2)

P0773[2]	Smooth time DAC			Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: ms	Def: 2	
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 1000	

Defines smoothing time [ms] for analog output signal. This parameter enables smoothing for DAC input using a PT1 filter.

Index:

P0773[0] : Analog output 1 (DAC 1)
P0773[1] : Analog output 2 (DAC 2)

Dependency:

P0773 = 0: Deactivates filter.

r0774[2]	Act. DAC value [V] or [mA]			Min: -	Level: 2
		Datatype: Float	Unit: -	Def: -	
	P-Group: TERMINAL			Max: -	

Shows value of analog output in [V] or [mA] after filtering and scaling.

Index:

r0774[0] : Analog output 1 (DAC 1)
r0774[1] : Analog output 2 (DAC 2)

P0776[2]	Type of DAC			Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0	
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 1	

Defines type of analog output.

Settings:

0 Current output
1 Voltage output

Index:

P0776[0] : Analog output 1 (DAC 1)
P0776[1] : Analog output 2 (DAC 2)

Note:

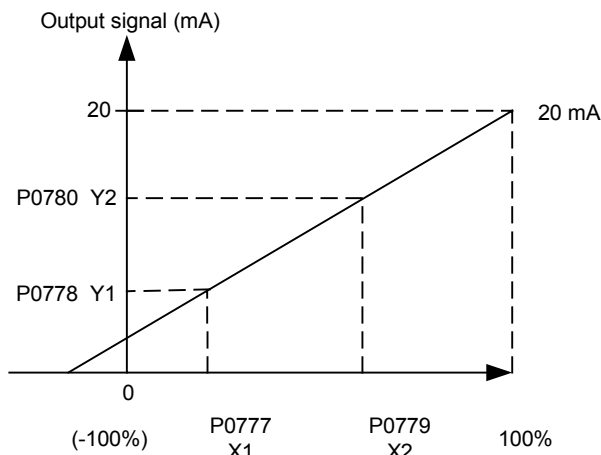
The analog output is designed as a current output with a range of 0...20 mA.

For a voltage output with a range of 0...10 V an external resistor of 500 Ohms has to be connected at the terminals (12/13 or 26/27).

P0777[2]	Value x1 of DAC scaling	Min: -99999.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 0.0		
		Max: 99999.0		

Defines x1 output characteristic in [%]. Scaling block is responsible for adjustment of output value defined in P0771 (DAC connector input).

Parameters of DAC scaling block (P0777 ... P0781) work as follows:



Where:
Points P1 (x1, y1) and P2 (x2, y2) can be chosen freely.

Example:

The default values of the scaling block provides a scaling of:
P1: 0.0 % = 0 mA or 0 V and
P2: 100.0 % = 20 mA or 20 V.

Index:

P0777[0] : Analog output 1 (DAC 1)
P0777[1] : Analog output 2 (DAC 2)

Dependency:

Affects P2000 to P2003 (referency frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0778[2]	Value y1 of DAC scaling	Min: 0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 0		
		Max: 20		

Defines y1 of output characteristic.

Index:

P0778[0] : Analog output 1 (DAC 1)
P0778[1] : Analog output 2 (DAC 2)

P0779[2]	Value x2 of DAC scaling	Min: -99999.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 100.0		
		Max: 99999.0		

Defines x2 of output characteristic in [%].

Index:

P0779[0] : Analog output 1 (DAC 1)
P0779[1] : Analog output 2 (DAC 2)

Dependency:

Affects P2000 to P2003 (referency frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0780[2]	Value y2 of DAC scaling	Min: 0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: TERMINAL	Active: first confirm		QuickComm. No
		Def: 20		
		Max: 20		

Defines y2 of output characteristic.

Index:

P0780[0] : Analog output 1 (DAC 1)
P0780[1] : Analog output 2 (DAC 2)

P0781[2]	Width of DAC deadband				Min: 0	Level: 2
	CStat: CUT	Datatype: Float	Unit: -	Def: 0		
	P-Group: TERMINAL	Active: first confirm	QuickComm. No	Max: 20		

Sets width of dead-band in [mA] or [V] for analog output.

Index:

P0781[0] : Analog output 1 (DAC 1)
P0781[1] : Analog output 2 (DAC 2)

P0800[3]	BI: Download parameter set 0				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of command to start download of parameter set 0 from attached AOP. The first three digits describe the parameter number of the command source, the last digit refers to the bit setting for that parameter.

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

P0800[0] : 1st. Command data set (CDS)
P0800[1] : 2nd. Command data set (CDS)
P0800[2] : 3rd. Command data set (CDS)

Note:

Signal of digital input:
0 = No download
1 = Start download parameter set 0 from AOP.

P0801[3]	BI: Download parameter set 1				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines sources of command to start download of parameter set 1 from attached AOP. The first three digits describe the parameter number of the command source, the last digit refers to the bit setting for that parameter.

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

P0801[0] : 1st. Command data set (CDS)
P0801[1] : 2nd. Command data set (CDS)
P0801[2] : 3rd. Command data set (CDS)

Note:

Signal of digital input:
0 = No download
1 = Start download parameter set 1 from AOP.

P0809[3]	Copy command data set (CDS)				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 2		

Calls 'Copy command data set' function.

Index:

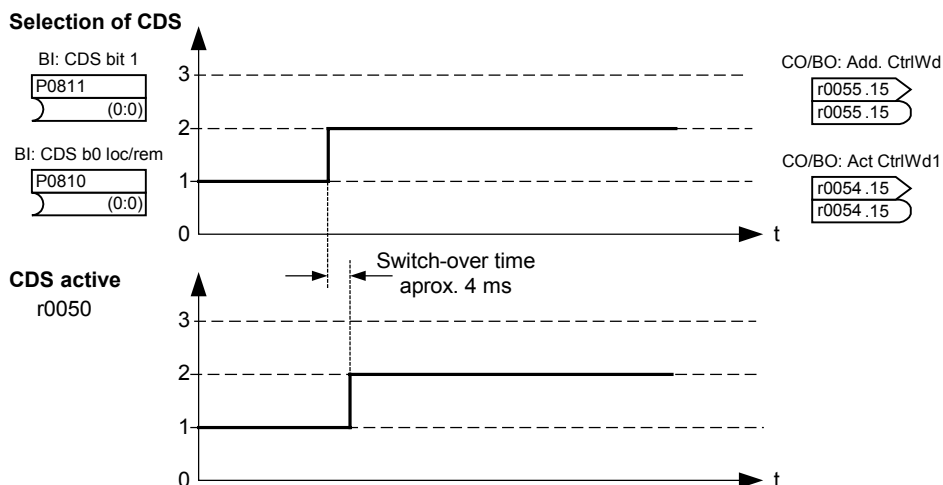
P0809[0] : Copy from CDS
P0809[1] : Copy to CDS
P0809[2] : Start copy

Note:

Start value in index 2 is automatically reset to '0' after execution of function.

P0810	BI: CDS bit 0 (Local / Remote)	Min: 0:0	Level: 2	
	CStat: CUT	Datatype: U32		Unit: -
	P-Group: COMMANDS	Active: first confirm		QuickComm. No
		Def: 0:0		
		Max: 4095:0		

Selects command source from which to read Bit 0 for selecting a command data set (CDS).



The actual active command data set (CDS) is displayed in parameter r0050.

	selected CDS		active CDS
	r0055 Bit15	r0054 Bit15	r0050
1. CDS	0	0	0
2. CDS	0	1	1
3. CDS	1	0	2
3. CDS	1	1	2

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Note:

P0811 is also relevant for command data set (CDS) set selection.

P0811	BI: CDS bit 1	Min: 0:0	Level: 2	
	CStat: CUT	Datatype: U32		Unit: -
	P-Group: COMMANDS	Active: first confirm		QuickComm. No
		Def: 0:0		
		Max: 4095:0		

Selects command source from which to read Bit 1 for selecting a command data set (see P0810).

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Note:

P0810 is also relevant for command data set (CDS) selection.

P0819[3]	Copy drive data set (DDS)	Min: 0	Level:
	CStat: CT	Datatype: U16	Def: 0
	P-Group: COMMANDS	Active: first confirm	QuickComm. No Max: 2

Calls 'Copy drive data set' function.

Index:

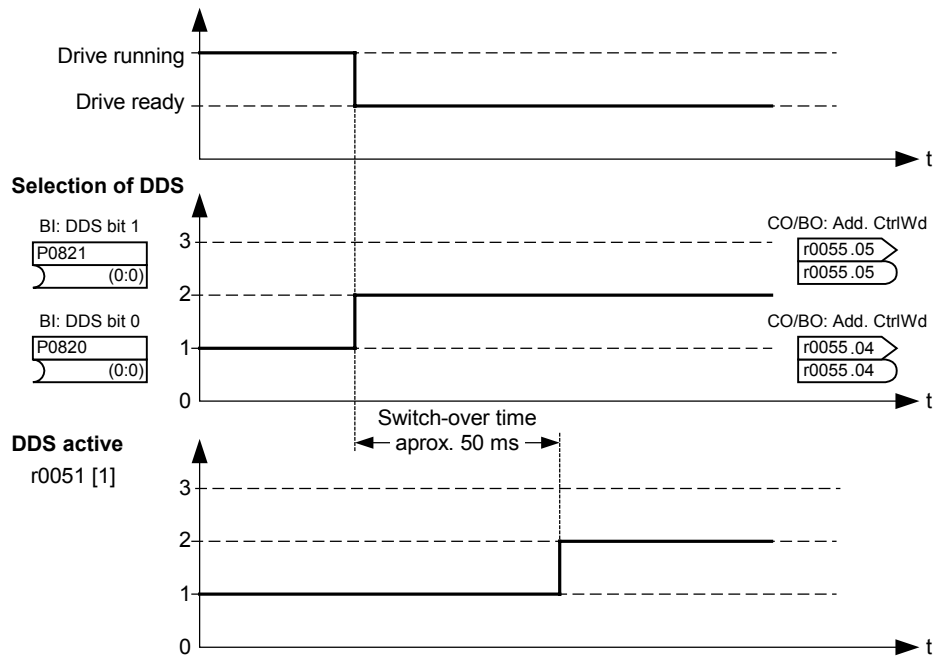
- P0819[0] : Copy from DDS
- P0819[1] : Copy to DDS
- P0819[2] : Start copy

Note:

Start value in index 2 is automatically reset to '0' after execution of function.

P0820	BI: DDS bit 0	Min: 0:0	Level:
	CStat: CT	Datatype: U32	Def: 0:0
	P-Group: COMMANDS	Active: first confirm	QuickComm. No Max: 4095:0

Selects command source from which to read Bit 0 for selecting a drive data set (DDS).



The actual active drive data set (DDS) is displayed in parameter r0051[1].

	selected DDS			active DDS
	r0055 Bit05	r0054 Bit04	r0051 [0]	r0051 [1]
1. DDS	0	0	0	0
2. DDS	0	1	1	1
3. DDS	1	0	2	2
3. DDS	1	1	2	2

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Note:

P0821 is also relevant for drive data set (DDS) selection.

P0821	BI: DDS bit 1			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4095:0	

Selects command source from which Bit 1 for selecting a drive data set is to be read in (see parameter P0820).

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Note:

P0820 is also relevant for drive data set (DDS) selection.

P0840[3]	BI: ON/OFF1			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 722:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Allows ON/OFF1 command source to be selected using BICO. The first three digits describe the parameter number of the command source; the last digit denotes the bit setting for that parameter.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.0 = ON/OFF1 via BOP

Index:

- P0840[0] : 1st. Command data set (CDS)
- P0840[1] : 2nd. Command data set (CDS)
- P0840[2] : 3rd. Command data set (CDS)

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).

BICO requires P0700 set to 2 (enable BICO).

The default setting (ON right) is digital input 1 (722.0). Alternative source possible only when function of digital input 1 is changed (via P0701) before changing value of P0840.

P0842[3]	BI: ON reverse/OFF1			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Allows ON/OFF1 reverse command source to be selected using BICO. The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.0 = ON/OFF1 via BOP

Index:

- P0842[0] : 1st. Command data set (CDS)
- P0842[1] : 2nd. Command data set (CDS)
- P0842[2] : 3rd. Command data set (CDS)

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).

P0844[3]	BI: 1. OFF2			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 1:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Defines first source of OFF2 when P0719 = 0 (BICO). The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.0 = ON/OFF1 via BOP
 19.1 = OFF2: Electrical stop via BOP

Index:

P0844[0] : 1st. Command data set (CDS)
 P0844[1] : 2nd. Command data set (CDS)
 P0844[2] : 3rd. Command data set (CDS)

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).

If one of the digital inputs is selected for OFF2, the inverter will not run unless the digital input is active.

Note:

OFF2 means immediate pulse-disabling; the motor is coasting.

OFF2 is low-active, i.e. :
 0 = Pulse disabling.
 1 = Operating condition.

P0845[3]	BI: 2. OFF2			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 19:1	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Defines second source of OFF2. The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.0 = ON/OFF1 via BOP

Index:

P0845[0] : 1st. Command data set (CDS)
 P0845[1] : 2nd. Command data set (CDS)
 P0845[2] : 3rd. Command data set (CDS)

Dependency:

In contrast to P0844 (first source of OFF2), this parameter is always active, independent of P0719 (selection of command and frequency setpoint).

If one of the digital inputs is selected for OFF2, the inverter will not run unless the digital input is active.

Note:

OFF2 means immediate pulse-disabling; the motor is coasting.

OFF2 is low-active, i.e. :
 0 = Pulse disabling.
 1 = Operating condition.

P0848[3]	BI: 1. OFF3			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 1:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Defines first source of OFF3 when P0719 = 0 (BICO). The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.0 = ON/OFF1 via BOP

Index:

- P0848[0] : 1st. Command data set (CDS)
- P0848[1] : 2nd. Command data set (CDS)
- P0848[2] : 3rd. Command data set (CDS)

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).

If one of the digital inputs is selected for OFF3, the inverter will not run unless the digital input is active.

Note:

OFF3 means fast ramp-down to 0.

OFF3 is low-active, i.e.
 0 = Ramp-down.
 1 = Operating condition.

P0849[3]	BI: 2. OFF3			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 1:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Defines second source of OFF3. The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.0 = ON/OFF1 via BOP

Index:

- P0849[0] : 1st. Command data set (CDS)
- P0849[1] : 2nd. Command data set (CDS)
- P0849[2] : 3rd. Command data set (CDS)

Dependency:

In contrast to P0848 (first source of OFF3), this parameter is always active, independent of P0719 (selection of command and frequency setpoint).

If one of the digital inputs is selected for OFF3, the inverter will not run unless the digital input is active.

Note:

OFF3 means fast ramp-down to 0.

OFF3 is low-active, i.e.
 0 = Ramp-down.
 1 = Operating condition.

P0852[3]	BI: Pulse enable			Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 1:0	
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0	

Defines source of pulse enable/disable signal.

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Index:

P0852[0] : 1st. Command data set (CDS)
 P0852[1] : 2nd. Command data set (CDS)
 P0852[2] : 3rd. Command data set (CDS)

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).

P0918	CB address			Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 3	
	P-Group: COMM	Active: first confirm	QuickComm. No	Max: 65535	

Defines address of CB (communication board) or address of the other option modules.

There are two ways to set the bus address:
 1 via DIP switches on the PROFIBUS module
 2 via a user-entered value

Note:

Possible PROFIBUS settings:
 1 ... 125
 0, 126, 127 are not allowed

The following applies when a PROFIBUS module is used:
 DIP switch = 0 Address defined in P0918 (CB address) is valid
 DIP switch not = 0 DIP switch setting has priority and P0918 indicates DIP switch setting.

P0927	Parameter changeable via			Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: -	Def: 15	
	P-Group: COMM	Active: first confirm	QuickComm. No	Max: 15	

Specifies the interfaces which can be used to change parameters.

Example:

"b - - n n" (bits 0, 1, 2 and 3 set) in the default setting means that parameters can be changed via any interface.

"b - - r n" (bits 0, 1 and 3 set) would specify that parameters can be changed via PROFIBUS/CB, BOP and USS on COM link (RS485 USS) but not via USS on BOP link (RS232).

Bitfields:

Bit00	PROFIBUS / CB	0	NO
		1	YES
Bit01	BOP	0	NO
		1	YES
Bit02	USS on BOP link	0	NO
		1	YES
Bit03	USS on COM link	0	NO
		1	YES

Details:

The seven-segment display is explained in the "Introduction to MICROMASTER System Parameters" in this handbook.

r0947[8]	Last fault code	Datatype: U16	Unit: -	Min: -	Level: 2
	P-Group: ALARMS			Def: - Max: -	

Displays fault history according to the diagram below

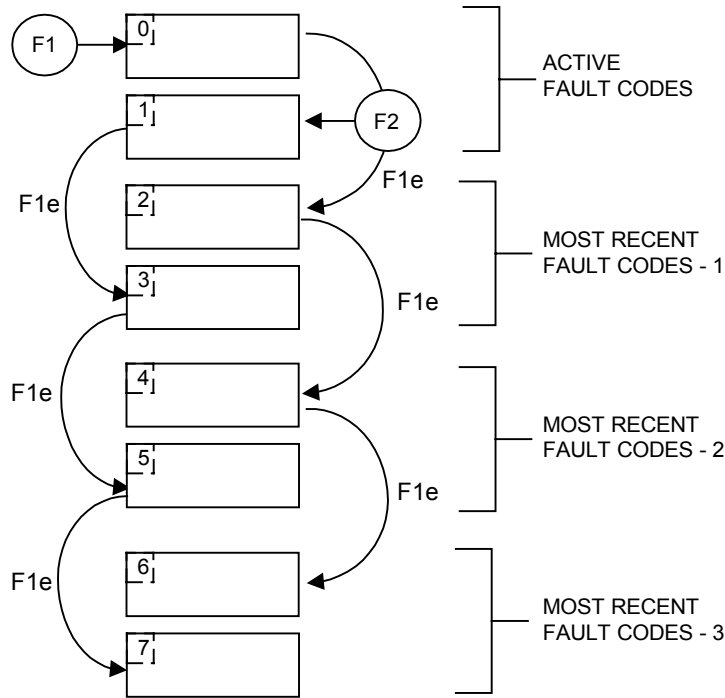
where:

"F1" is the first active fault (not yet acknowledged).

"F2" is the second active fault (not yet acknowledged).

"F1e" is the occurrence of the fault acknowledgement for F1 & F2.

This moves the value in the 2 indices down to the next pair of indices, where they are stored. Indices 0 & 1 contain the active faults. When faults are acknowledged, indices 0 & 1 are reset to 0.



Example:

If the inverter trips on undervoltage and then receives an external trip before the undervoltage is acknowledged, you will obtain:

Index 0 = 3 Undervoltage

Index 1 = 85 External trip

Whenever a fault in index 0 is acknowledged (F1e), the fault history shifts as indicated in the diagram above.

Index:

- r0947[0] : Recent fault trip --, fault 1
- r0947[1] : Recent fault trip --, fault 2
- r0947[2] : Recent fault trip -1, fault 3
- r0947[3] : Recent fault trip -1, fault 4
- r0947[4] : Recent fault trip -2, fault 5
- r0947[5] : Recent fault trip -2, fault 6
- r0947[6] : Recent fault trip -3, fault 7
- r0947[7] : Recent fault trip -3, fault 8

Dependency:

Index 2 used only if second fault occurs before first fault is acknowledged.

Details:

See "Faults and Warnings"

r0948[12]	Fault time	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: ALARMS				

Time stamp to indicate when the fault has occurred. P2114 (run-time counter) or P2115 (real time clock) are the possible sources of the time stamp.

Example:

The time is taken from P2115 if this parameter has been updated with the real time. If not, P2114 is used.

Index:

- r0948[0] : Recent fault trip --, fault time seconds+minutes
- r0948[1] : Recent fault trip --, fault time hours+days
- r0948[2] : Recent fault trip --, fault time month+year
- r0948[3] : Recent fault trip -1, fault time seconds+minutes
- r0948[4] : Recent fault trip -1, fault time hours+days
- r0948[5] : Recent fault trip -1, fault time month+year
- r0948[6] : Recent fault trip -2, fault time seconds+minutes
- r0948[7] : Recent fault trip -2, fault time hours+days
- r0948[8] : Recent fault trip -2, fault time month+year
- r0948[9] : Recent fault trip -3, fault time seconds+minutes
- r0948[10] : Recent fault trip -3, fault time hours+days
- r0948[11] : Recent fault trip -3, fault time month+year

Note:

P2115 can be updated via AOP, Starter, DriveMonitor, etc.

r0949[8]	Fault value	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: ALARMS				

Displays drive fault values. It is for service purposes and indicate the type of fault reported. The values are not documented. They are listed in the code where faults are reported.

Index:

- r0949[0] : Recent fault trip --, fault value 1
- r0949[1] : Recent fault trip --, fault value 2
- r0949[2] : Recent fault trip -1, fault value 3
- r0949[3] : Recent fault trip -1, fault value 4
- r0949[4] : Recent fault trip -2, fault value 5
- r0949[5] : Recent fault trip -2, fault value 6
- r0949[6] : Recent fault trip -3, fault value 7
- r0949[7] : Recent fault trip -3, fault value 8

P0952	Total number of faults			Min: 0 Def: 0 Max: 8	Level: 3
	CStat: CT	Datatype: U16	Unit: -		
	P-Group: ALARMS	Active: first confirm	QuickComm. No		

Displays number of faults stored in P0947 (last fault code).

Dependency:

Setting 0 resets fault history. (changing to 0 also resets parameter r0948 - fault time).

r0964[5]	Firmware version data	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				

Firmware version data.

Example:

r0964[0]	42	SIEMENS
r0964[1]	1001	MICROMASTER 420
	1002	MICROMASTER 440
	1003	MICRO- / COMBIMASTER 411
	1004	MICROMASTER 410
	1005	reserved
	1006	reserved
	1007	MICROMASTER 430
r0964[2]	105	Firmware V1.05
r0964[3]	2001	27.10.2001
r0964[4]	2710	

Index:

- r0964[0] : Company (Siemens = 42)
- r0964[1] : Product type
- r0964[2] : Firmware version
- r0964[3] : Firmware date (year)
- r0964[4] : Firmware date (day/month)

r0965	Profibus profile	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: -	
				Max: -	

Identification for PROFIDrive. Profile number and version.

r0967	Control word 1	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: -	
				Max: -	

Displays control word 1.

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motor potentiometer MOP up	0	NO
		1	YES
Bit14	Motor potentiometer MOP down	0	NO
		1	YES
Bit15	CDS Bit 0 (Local/Remote)	0	NO
		1	YES

r0968	Status word 1	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: -	
				Max: -	

Displays active status word of inverter (in binary) and can be used to diagnose which commands are active.

Bitfields:

Bit00	Drive ready	0	NO
		1	YES
Bit01	Drive ready to run	0	NO
		1	YES
Bit02	Drive running	0	NO
		1	YES
Bit03	Drive fault active	0	NO
		1	YES
Bit04	OFF2 active	0	YES
		1	NO
Bit05	OFF3 active	0	YES
		1	NO
Bit06	ON inhibit active	0	NO
		1	YES
Bit07	Drive warning active	0	NO
		1	YES
Bit08	Deviation setp. / act. value	0	YES
		1	NO
Bit09	PZD control	0	NO
		1	YES
Bit10	Maximum frequency reached	0	NO
		1	YES
Bit11	Warning: Motor current limit	0	YES
		1	NO
Bit12	Motor holding brake active	0	NO
		1	YES
Bit13	Motor overload	0	YES
		1	NO
Bit14	Motor runs direction right	0	NO
		1	YES
Bit15	Inverter overload	0	YES
		1	NO

P0970	Factory reset	Datatype: U16	Unit: -	Min: 0	Level: 1
	CStat: C			Def: 0	
	P-Group: PAR_RESET	Active: first confirm	QuickComm. No	Max: 1	

P0970 = 1 resets all parameters to their default values.

Settings:

0	Disabled
1	Parameter reset

Dependency:

First set P0010 = 30 (factory settings).

Stop drive (i.e. disable all pulses) before you can reset parameters to default values.

Note:

The following parameters retain their values after a factory reset:

P0918 CB address
P2010 USS baud rate
P2011 USS address

P0971	Transfer data from RAM to EEPROM	Datatype: U16	Unit: -	Min: 0	Level: 3
	CStat: CUT			Def: 0	
	P-Group: COMM	Active: first confirm	QuickComm. No	Max: 1	

Transfers values from RAM to EEPROM when set to 1.

Settings:

0	Disabled
1	Start transfer

Note:

All values in RAM are transferred to EEPROM.

Parameter is automatically reset to 0 (default) after successful transfer.

P1000[3]	Selection of frequency setpoint				Min: 0	Level: 1
	CStat: CT	Datatype: U16	Unit: -	Def: 2		
	P-Group: SETPOINT	Active: first confirm	QuickComm. Yes	Max: 77		

Selects frequency setpoint source. In the table of possible settings below, the main setpoint is selected from the least significant digit (i.e., 0 to 7) and any additional setpoint from the most significant digit (i.e., x0 through to x7).

Example:

Setting 12 selects main setpoint (2) derived from analog input with additional setpoint (1) taken from the motor potentiometer.

Settings:

- 1 Motor potentiometer setpoint
- 2 Analog input
- 3 Fixed frequency setpoint
- 4 USS on BOP link
- 5 USS on COM link
- 6 Communication board (CB) on COM link
- 7 Analog input 2

Other settings including an additional setpoint can be selected using the table below.

Settings:

- 0 No main setpoint
- 1 MOP setpoint
- 2 Analog setpoint
- 3 Fixed frequency
- 4 USS on BOP link
- 5 USS on COM link
- 6 CB on COM link
- 7 Analog setpoint 2
- 10 No main setpoint + MOP setpoint
- 11 MOP setpoint + MOP setpoint
- 12 Analog setpoint + MOP setpoint
- 13 Fixed frequency + MOP setpoint
- 14 USS on BOP link + MOP setpoint
- 15 USS on COM link + MOP setpoint
- 16 CB on COM link + MOP setpoint
- 17 Analog setpoint 2 + MOP setpoint
- 20 No main setpoint + Analog setpoint
- 21 MOP setpoint + Analog setpoint
- 22 Analog setpoint + Analog setpoint
- 23 Fixed frequency + Analog setpoint
- 24 USS on BOP link + Analog setpoint
- 25 USS on COM link + Analog setpoint
- 26 CB on COM link + Analog setpoint
- 27 Analog setpoint 2 + Analog setpoint
- 30 No main setpoint + Fixed frequency
- 31 MOP setpoint + Fixed frequency
- 32 Analog setpoint + Fixed frequency
- 33 Fixed frequency + Fixed frequency
- 34 USS on BOP link + Fixed frequency
- 35 USS on COM link + Fixed frequency
- 36 CB on COM link + Fixed frequency
- 37 Analog setpoint 2 + Fixed frequency
- 40 No main setpoint + USS on BOP link
- 41 MOP setpoint + USS on BOP link
- 42 Analog setpoint + USS on BOP link
- 43 Fixed frequency + USS on BOP link
- 44 USS on BOP link + USS on BOP link
- 45 USS on COM link + USS on BOP link
- 46 CB on COM link + USS on BOP link
- 47 Analog setpoint 2 + USS on BOP link
- 50 No main setpoint + USS on COM link
- 51 MOP setpoint + USS on COM link
- 52 Analog setpoint + USS on COM link
- 53 Fixed frequency + USS on COM link
- 54 USS on BOP link + USS on COM link
- 55 USS on COM link + USS on COM link
- 57 Analog setpoint 2 + USS on COM link
- 60 No main setpoint + CB on COM link
- 61 MOP setpoint + CB on COM link
- 62 Analog setpoint + CB on COM link
- 63 Fixed frequency + CB on COM link
- 64 USS on BOP link + CB on COM link
- 66 CB on COM link + CB on COM link
- 67 Analog setpoint 2 + CB on COM link
- 70 No main setpoint + Analog setpoint 2
- 71 MOP setpoint + Analog setpoint 2

- 72 Analog setpoint + Analog setpoint 2
- 73 Fixed frequency + Analog setpoint 2
- 74 USS on BOP link + Analog setpoint 2
- 75 USS on COM link + Analog setpoint 2
- 76 CB on COM link + Analog setpoint 2
- 77 Analog setpoint 2 + Analog setpoint 2

Index:

- P1000[0] : 1st. Command data set (CDS)
- P1000[1] : 2nd. Command data set (CDS)
- P1000[2] : 3rd. Command data set (CDS)

Note:

Single digits denote main setpoints that have no additional setpoint.

P1001[3]	Fixed frequency 1				Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 0.00		
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00		

Defines fixed frequency setpoint 1.

There are 3 types of fixed frequencies:

1. Direct selection
2. Direct selection + ON command
3. Binary coded selection + ON command

1. Direct selection (P0701 - P0706 = 15):
In this mode of operation 1 digital input selects 1 fixed frequency.
If several inputs are active together, the selected frequencies are summed.
E.g.: FF1 + FF2 + FF3 + FF4 + FF5 + FF6.

2. Direct selection + ON command (P0701 - P0706 = 16):
The fixed frequency selection combines the fixed frequencies with an ON command.
In this mode of operation 1 digital input selects 1 fixed frequency.
If several inputs are active together, the selected frequencies are summed.
E.g.: FF1 + FF2 + FF3 + FF4 + FF5 + FF6.

3. Binary coded selection + ON command (P0701 - P0706 = 17):
Up to 16 fixed frequencies can be selected using this method.
The fixed frequencies are selected according to the following table:

Example:

		DIN4	DIN3	DIN2	DIN1
	OFF	Inactive	Inactive	Inactive	Inactive
P1001	FF1	Inactive	Inactive	Inactive	Active
P1002	FF2	Inactive	Inactive	Active	Inactive
P1003	FF3	Inactive	Inactive	Active	Active
P1004	FF4	Inactive	Active	Inactive	Inactive
P1005	FF5	Inactive	Active	Inactive	Active
P1006	FF6	Inactive	Active	Active	Inactive
P1007	FF7	Inactive	Active	Active	Active
P1008	FF8	Active	Inactive	Inactive	Inactive
P1009	FF9	Active	Inactive	Inactive	Active
P1022	FF10	Active	Inactive	Active	Inactive
P1011	FF11	Active	Inactive	Active	Active
P1012	FF12	Active	Active	Inactive	Inactive
P1013	FF13	Active	Active	Inactive	Active
P1014	FF14	Active	Active	Active	Inactive
P1015	FF15	Active	Active	Active	Active

Index:

- P1001[0] : 1st. Drive data set (DDS)
- P1001[1] : 2nd. Drive data set (DDS)
- P1001[2] : 3rd. Drive data set (DDS)

Dependency:

Select fixed frequency operation (using P1000).

Inverter requires ON command to start in the case of direct selection (P0701 - P0706 = 15).

Note:

Fixed frequencies can be selected using the digital inputs, and can also be combined with an ON command.

P1002[3]	Fixed frequency 2	Min: -650.00	Level:
	CStat: CUT P-Group: SETPOINT	Datatype: Float Active: Immediately	Unit: Hz QuickComm. No
		Def: 5.00 Max: 650.00	2
Defines fixed frequency setpoint 2.			
Index: P1002[0] : 1st. Drive data set (DDS) P1002[1] : 2nd. Drive data set (DDS) P1002[2] : 3rd. Drive data set (DDS)			
Details: See parameter P1001 (fixed frequency 1).			
P1003[3]	Fixed frequency 3	Min: -650.00	Level:
	CStat: CUT P-Group: SETPOINT	Datatype: Float Active: Immediately	Unit: Hz QuickComm. No
		Def: 10.00 Max: 650.00	2
Defines fixed frequency setpoint 3.			
Index: P1003[0] : 1st. Drive data set (DDS) P1003[1] : 2nd. Drive data set (DDS) P1003[2] : 3rd. Drive data set (DDS)			
Details: See parameter P1001 (fixed frequency 1).			
P1004[3]	Fixed frequency 4	Min: -650.00	Level:
	CStat: CUT P-Group: SETPOINT	Datatype: Float Active: Immediately	Unit: Hz QuickComm. No
		Def: 15.00 Max: 650.00	2
Defines fixed frequency setpoint 4.			
Index: P1004[0] : 1st. Drive data set (DDS) P1004[1] : 2nd. Drive data set (DDS) P1004[2] : 3rd. Drive data set (DDS)			
Details: See parameter P1001 (fixed frequency 1).			
P1005[3]	Fixed frequency 5	Min: -650.00	Level:
	CStat: CUT P-Group: SETPOINT	Datatype: Float Active: Immediately	Unit: Hz QuickComm. No
		Def: 20.00 Max: 650.00	2
Defines fixed frequency setpoint 5.			
Index: P1005[0] : 1st. Drive data set (DDS) P1005[1] : 2nd. Drive data set (DDS) P1005[2] : 3rd. Drive data set (DDS)			
Details: See parameter P1001 (fixed frequency 1).			
P1006[3]	Fixed frequency 6	Min: -650.00	Level:
	CStat: CUT P-Group: SETPOINT	Datatype: Float Active: Immediately	Unit: Hz QuickComm. No
		Def: 25.00 Max: 650.00	2
Defines fixed frequency setpoint 6.			
Index: P1006[0] : 1st. Drive data set (DDS) P1006[1] : 2nd. Drive data set (DDS) P1006[2] : 3rd. Drive data set (DDS)			
Details: See parameter P1001 (fixed frequency 1).			
P1007[3]	Fixed frequency 7	Min: -650.00	Level:
	CStat: CUT P-Group: SETPOINT	Datatype: Float Active: Immediately	Unit: Hz QuickComm. No
		Def: 30.00 Max: 650.00	2
Defines fixed frequency setpoint 7.			
Index: P1007[0] : 1st. Drive data set (DDS) P1007[1] : 2nd. Drive data set (DDS) P1007[2] : 3rd. Drive data set (DDS)			
Details: See parameter P1001 (fixed frequency 1).			

P1008[3]	Fixed frequency 8			Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 35.00	
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00	

Defines fixed frequency setpoint 8.

Index:

P1008[0] : 1st. Drive data set (DDS)
P1008[1] : 2nd. Drive data set (DDS)
P1008[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1009[3]	Fixed frequency 9			Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 40.00	
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00	

Defines fixed frequency setpoint 9.

Index:

P1009[0] : 1st. Drive data set (DDS)
P1009[1] : 2nd. Drive data set (DDS)
P1009[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1010[3]	Fixed frequency 10			Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 45.00	
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00	

Defines fixed frequency setpoint 10.

Index:

P1010[0] : 1st. Drive data set (DDS)
P1010[1] : 2nd. Drive data set (DDS)
P1010[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1011[3]	Fixed frequency 11			Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 50.00	
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00	

Defines fixed frequency setpoint 11.

Index:

P1011[0] : 1st. Drive data set (DDS)
P1011[1] : 2nd. Drive data set (DDS)
P1011[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1012[3]	Fixed frequency 12			Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 55.00	
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00	

Defines fixed frequency setpoint 12.

Index:

P1012[0] : 1st. Drive data set (DDS)
P1012[1] : 2nd. Drive data set (DDS)
P1012[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1013[3]	Fixed frequency 13			Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 60.00	
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00	

Defines fixed frequency setpoint 13.

Index:

P1013[0] : 1st. Drive data set (DDS)
P1013[1] : 2nd. Drive data set (DDS)
P1013[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1014[3]	Fixed frequency 14	Min: -650.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: SETPOINT	Active: Immediately		QuickComm. No

Defines fixed frequency setpoint 14.

Index:

- P1014[0] : 1st. Drive data set (DDS)
- P1014[1] : 2nd. Drive data set (DDS)
- P1014[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1015[3]	Fixed frequency 15	Min: -650.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: SETPOINT	Active: Immediately		QuickComm. No

Defines fixed frequency setpoint 15.

Index:

- P1015[0] : 1st. Drive data set (DDS)
- P1015[1] : 2nd. Drive data set (DDS)
- P1015[2] : 3rd. Drive data set (DDS)

Details:

See parameter P1001 (fixed frequency 1).

P1016	Fixed frequency mode - Bit 0	Min: 1	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: SETPOINT	Active: first confirm		QuickComm. No

Fixed frequencies can be selected in three different modes. Parameter P1016 defines the mode of selection Bit 0.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

Details:

See table in P1001 (fixed frequency 1) for description of how to use fixed frequencies.

P1017	Fixed frequency mode - Bit 1	Min: 1	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: SETPOINT	Active: first confirm		QuickComm. No

Fixed frequencies can be selected in three different modes. Parameter P1017 defines the mode of selection Bit 1.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

Details:

See table in P1001 (fixed frequency 1) for description of how to use fixed frequencies.

P1018	Fixed frequency mode - Bit 2	Min: 1	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: SETPOINT	Active: first confirm		QuickComm. No

Fixed frequencies can be selected in three different modes. Parameter P1018 defines the mode of selection Bit 2.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

Details:

See table in P1001 (fixed frequency 1) for description of how to use fixed frequencies.

P1019	Fixed frequency mode - Bit 3	Min: 1	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: SETPOINT	Active: first confirm		QuickComm. No

Fixed frequencies can be selected in three different modes. Parameter P1019 defines the mode of selection Bit 3.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

Details:

See table in P1001 (fixed frequency 1) for description of how to use fixed frequencies.

P1020[3]	BI: Fixed freq. selection Bit 0	Min: 0:0	Level:
CStat: CT	Datatype: U32	Def: 0:0	3
P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0
Defines origin of fixed frequency selection.			
Settings:			
P1020 = 722.0 ==> Digital input 1			
P1021 = 722.1 ==> Digital input 2			
P1022 = 722.2 ==> Digital input 3			
P1023 = 722.3 ==> Digital input 4			
P1026 = 722.4 ==> Digital input 5			
P1028 = 722.5 ==> Digital input 6			
Index:			
P1020[0] : 1st. Command data set (CDS)			
P1020[1] : 2nd. Command data set (CDS)			
P1020[2] : 3rd. Command data set (CDS)			
Dependency:			
Accessible only if P0701 - P0706 = 99 (function of digital inputs = BICO)			
P1021[3]	BI: Fixed freq. selection Bit 1	Min: 0:0	Level:
CStat: CT	Datatype: U32	Def: 0:0	3
P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0
Defines origin of fixed frequency selection.			
Index:			
P1021[0] : 1st. Command data set (CDS)			
P1021[1] : 2nd. Command data set (CDS)			
P1021[2] : 3rd. Command data set (CDS)			
Dependency:			
Accessible only if P0701 - P0706 = 99 (function of digital inputs = BICO)			
Details:			
See P1020 (fixed frequency selection Bit 0) for most common settings			
P1022[3]	BI: Fixed freq. selection Bit 2	Min: 0:0	Level:
CStat: CT	Datatype: U32	Def: 0:0	3
P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0
Defines origin of fixed frequency selection.			
Index:			
P1022[0] : 1st. Command data set (CDS)			
P1022[1] : 2nd. Command data set (CDS)			
P1022[2] : 3rd. Command data set (CDS)			
Dependency:			
Accessible only if P0701 - P0706 = 99 (function of digital inputs = BICO)			
Details:			
See P1020 (fixed frequency selection Bit 0) for most common settings			
P1023[3]	BI: Fixed freq. selection Bit 3	Min: 0:0	Level:
CStat: CT	Datatype: U32	Def: 722:3	3
P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0
Defines origin of fixed frequency selection.			
Index:			
P1023[0] : 1st. Command data set (CDS)			
P1023[1] : 2nd. Command data set (CDS)			
P1023[2] : 3rd. Command data set (CDS)			
Dependency:			
Accessible only if P0701 - P0706 = 99 (function of digital inputs = BICO)			
Details:			
See P1020 (fixed frequency selection Bit 0) for most common settings			
r1024	CO: Act. fixed frequency	Min: -	Level:
	Datatype: Float	Unit: Hz	3
	P-Group: SETPOINT	Def: -	Max: -
Displays sum total of selected fixed frequencies.			
P1025	Fixed frequency mode - Bit 4	Min: 1	Level:
CStat: CT	Datatype: U16	Def: 1	3
P-Group: SETPOINT	Active: first confirm	QuickComm. No	Max: 2
Direct selection or direct selection + ON for bit 4			
Settings:			
1 Direct selection			
2 Direct selection + ON command			
Details:			
See parameter P1001 for description of how to use fixed frequencies.			

P1026[3]	BI: Fixed freq. selection Bit 4	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 722:4		
	P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		

Defines origin of fixed frequency selection.

Index:

- P1026[0] : 1st. Command data set (CDS)
- P1026[1] : 2nd. Command data set (CDS)
- P1026[2] : 3rd. Command data set (CDS)

Dependency:

Accessible only if P0701 - P0706 = 99 (function of digital inputs = BICO).

Details:

See P1020 (fixed frequency selection Bit 0) for most common settings.

P1027	Fixed frequency mode - Bit 5	Min: 1	Level: 3
	CStat: CT Datatype: U16 Unit: - Def: 1		
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 2		

direct selection or direct selection + ON for bit 5

Settings:

- 1 Direct selection
- 2 Direct selection + ON command

Details:

See parameter P1001 for description of how to use fixed frequencies.

P1028[3]	BI: Fixed freq. selection Bit 5	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 722:5		
	P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		

Defines origin of fixed frequency selection.

Index:

- P1028[0] : 1st. Command data set (CDS)
- P1028[1] : 2nd. Command data set (CDS)
- P1028[2] : 3rd. Command data set (CDS)

Dependency:

Accessible only if P0701 - P0706 = 99 (function of digital inputs = BICO).

Details:

See P1020 (fixed frequency selection Bit 0) for most common settings.

P1031[3]	Setpoint memory of the MOP	Min: 0	Level: 2
	CStat: CUT Datatype: U16 Unit: - Def: 0		
	P-Group: SETPOINT Active: Immediately QuickComm. No Max: 1		

Saves last motor potentiometer setpoint (MOP) that was active before OFF command or power down.

Settings:

- 0 MOP setpoint will not be stored
- 1 MOP setpoint will be stored (P1040 is updated)

Index:

- P1031[0] : 1st. Drive data set (DDS)
- P1031[1] : 2nd. Drive data set (DDS)
- P1031[2] : 3rd. Drive data set (DDS)

Note:

On next ON command, motor potentiometer setpoint will be the saved value in parameter P1040 (setpoint of the MOP).

P1032	Inhibit reverse direction of MOP	Min: 0	Level: 2
	CStat: CT Datatype: U16 Unit: - Def: 1		
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 1		

Inhibits reverse setpoint selection

Settings:

- 0 Reverse direction is allowed
- 1 Reverse direction inhibited

Dependency:

Motor potentiometer (P1040) must be chosen as main setpoint or additional setpoint (using P1000).

Note:

It is possible to change motor direction using the motor potentiometer setpoint (increase / decrease frequency either by using digital inputs or BOP/AOP keypad up / down).

P1035[3]	BI: Enable MOP (UP-command)				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 19:13		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source for motor potentiometer setpoint increase frequency.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.D = MOP up via BOP

Index:

- P1035[0] : 1st. Command data set (CDS)
- P1035[1] : 2nd. Command data set (CDS)
- P1035[2] : 3rd. Command data set (CDS)

P1036[3]	BI: Enable MOP (DOWN-command)				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 19:14		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source for motor potentiometer setpoint decrease frequency.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.E = MOP down via BOP

Index:

- P1036[0] : 1st. Command data set (CDS)
- P1036[1] : 2nd. Command data set (CDS)
- P1036[2] : 3rd. Command data set (CDS)

P1040[3]	Setpoint of the MOP				Min: -650.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 5.00		
	P-Group: SETPOINT	Active: Immediately	QuickComm. No	Max: 650.00		

Determines setpoint for motor potentiometer control (P1000 = 1).

Index:

- P1040[0] : 1st. Drive data set (DDS)
- P1040[1] : 2nd. Drive data set (DDS)
- P1040[2] : 3rd. Drive data set (DDS)

Note:

If motor potentiometer setpoint is selected either as main setpoint or additional setpoint, the reverse direction will be inhibited by default of P1032 (inhibit reverse direction of MOP).

To re-enable reverse direction, set P1032 = 0.

r1050	CO: Act. Output freq. of the MOP				Min: -	Level: 3
		Datatype: Float	Unit: Hz	Def: -		
	P-Group: SETPOINT			Max: -		

Displays output frequency of motor potentiometer setpoint ([Hz]).

P1055[3]	BI: Enable JOG right				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of JOG right when P0719 = 0 (remote selection of command/setpoint source).

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.8 = JOG right via BOP

Index:

P1055[0] : 1st. Command data set (CDS)
 P1055[1] : 2nd. Command data set (CDS)
 P1055[2] : 3rd. Command data set (CDS)

P1056[3]	BI: Enable JOG left				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of JOG left when P0719 = 0 (remote selection of command/setpoint source).

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.9 = JOG left via BOP

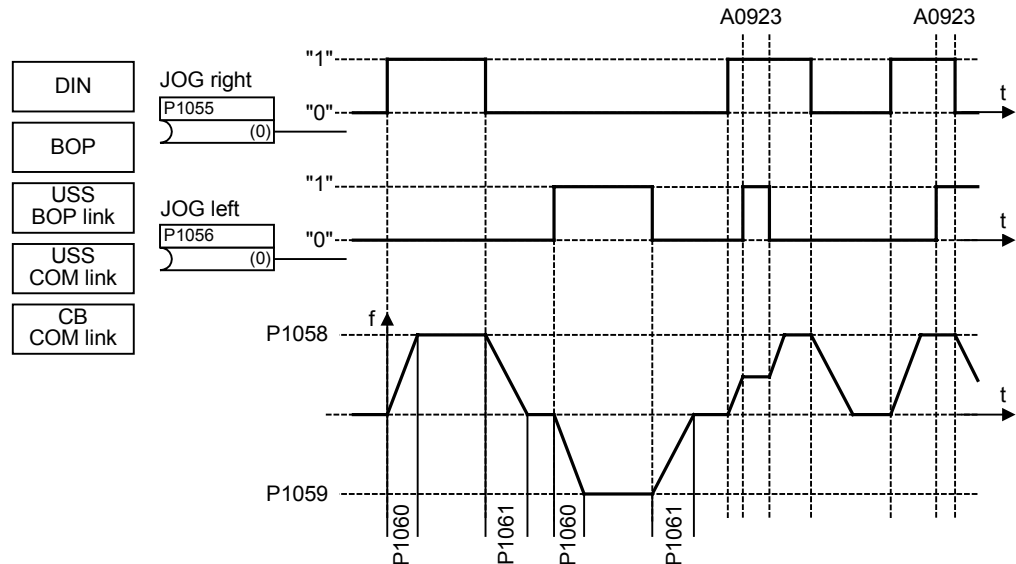
Index:

P1056[0] : 1st. Command data set (CDS)
 P1056[1] : 2nd. Command data set (CDS)
 P1056[2] : 3rd. Command data set (CDS)

P1058[3]	JOG frequency right	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz
	P-Group: SETPOINT	Active: Immediately	QuickComm. No Def: 5.00
		Max: 650.00	2

Jogging increases the motor speed by small amounts. The JOG buttons uses a non-latching switch on one of the digital inputs to control the motor speed.

While JOG right is selected, this parameter determines the frequency at which the inverter will run.



Index:

- P1058[0] : 1st. Drive data set (DDS)
- P1058[1] : 2nd. Drive data set (DDS)
- P1058[2] : 3rd. Drive data set (DDS)

Dependency:

P1060 and P1061 set up and down ramp times respectively for jogging.

P1059[3]	JOG frequency left	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz
	P-Group: SETPOINT	Active: Immediately	QuickComm. No Def: 5.00
		Max: 650.00	2

While JOG left is selected, this parameter determines the frequency at which the inverter will run.

Index:

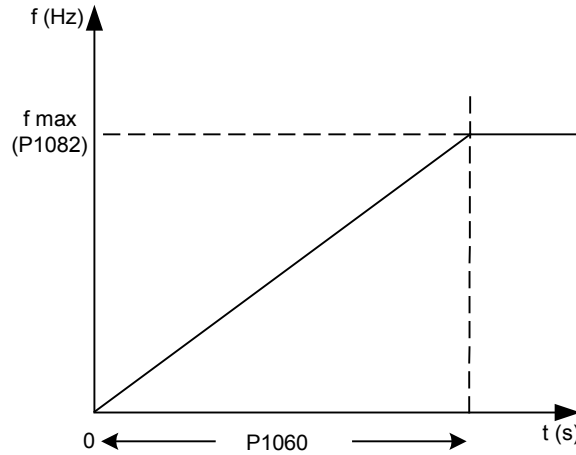
- P1059[0] : 1st. Drive data set (DDS)
- P1059[1] : 2nd. Drive data set (DDS)
- P1059[2] : 3rd. Drive data set (DDS)

Dependency:

P1060 and P1061 set up and down ramp times respectively for jogging.

P1060[3]	JOG ramp-up time			Min: 0.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: s	Def: 10.00	
	P-Group: SETPOINT	Active: first confirm	QuickComm. No	Max: 650.00	

Sets jog ramp-up time. This is the time used while jogging is active.



Index:

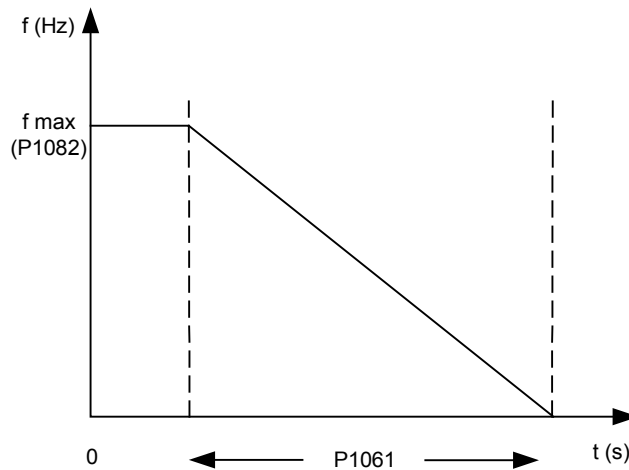
- P1060[0] : 1st. Drive data set (DDS)
- P1060[1] : 2nd. Drive data set (DDS)
- P1060[2] : 3rd. Drive data set (DDS)

Notice:

- Ramp times will be used as follows:
- P1060 / P1061 : JOG mode is active
- P1120 / P1121 : Normal mode (ON/OFF) is active
- P1060 / P1061 : Normal mode (ON/OFF) and P1124 is active

P1061[3]	JOG ramp-down time			Min: 0.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: s	Def: 10.00	
	P-Group: SETPOINT	Active: first confirm	QuickComm. No	Max: 650.00	

Sets ramp-down time. This is the time used while jogging is active.



Index:

- P1061[0] : 1st. Drive data set (DDS)
- P1061[1] : 2nd. Drive data set (DDS)
- P1061[2] : 3rd. Drive data set (DDS)

Notice:

- Ramp times will be used as follows:
- P1060 / P1061 : JOG mode is active
- P1120 / P1121 : Normal mode (ON/OFF) is active
- P1060 / P1061 : Normal mode (ON/OFF) and P1124 is active

P1070[3]	CI: Main setpoint	Min: 0.00	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 755:0		
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 4000:0		

Defines source of main setpoint.

Settings:

755 = Analog input 1 setpoint
1024 = Fixed frequency setpoint
1050 = Motor potentiometer (MOP) setpoint

Index:

P1070[0] : 1st. Command data set (CDS)
P1070[1] : 2nd. Command data set (CDS)
P1070[2] : 3rd. Command data set (CDS)

P1071[3]	CI: Main setpoint scaling	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 1:0		
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 4000:0		

Defines source of the main setpoint scaling.

Settings:

755 = Analog input 1 setpoint
1024 = Fixed frequency setpoint
1050 = Motor potentiometer (MOP) setpoint

Index:

P1071[0] : 1st. Command data set (CDS)
P1071[1] : 2nd. Command data set (CDS)
P1071[2] : 3rd. Command data set (CDS)

P1074[3]	BI: Disable additional setpoint	Min: 0:0	Level: 3
	CStat: CUT Datatype: U32 Unit: - Def: 0:0		
	P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		

Disables additional setpoint

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Index:

P1074[0] : 1st. Command data set (CDS)
P1074[1] : 2nd. Command data set (CDS)
P1074[2] : 3rd. Command data set (CDS)

P1075[3]	CI: Additional setpoint	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 0:0		
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 4000:0		

Defines source of the additional setpoint (to be added to main setpoint).

Settings:

755 = Analog input 1 setpoint
1024 = Fixed frequency setpoint
1050 = Motor potentiometer (MOP) setpoint

Index:

P1075[0] : 1st. Command data set (CDS)
P1075[1] : 2nd. Command data set (CDS)
P1075[2] : 3rd. Command data set (CDS)

P1076[3]	CI: Additional setpoint scaling	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 1:0		
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 4000:0		

Defines source of scaling for additional setpoint (to be added to main setpoint).

Settings:

1 = Scaling of 1.0 (100%)
755 = Analog input 1 Setpoint
1024 = Fixed Frequency Setpoint
1050 = MOP Setpoint

Index:

P1076[0] : 1st. Command data set (CDS)
P1076[1] : 2nd. Command data set (CDS)
P1076[2] : 3rd. Command data set (CDS)

r1078	CO: Total frequency setpoint	Min: -	Level: 3
	Datatype: Float Unit: Hz Def: - Max: -		
	P-Group: SETPOINT		

Displays sum of main and additional setpoints in [Hz].

r1079	CO: Selected frequency setpoint	Min: -	Level: 3
	Datatype: Float Unit: Hz Def: - Max: -		
	P-Group: SETPOINT		

Displays selected frequency setpoint.

Following frequency setpoints are displayed:

- r1078 Total frequency setpoint
- P1058 JOG frequency right
- P1059 JOG frequency left

Dependency:

P1055 (BI: Enable JOG right) or P1056 (BI: Enable JOG left) define command source of JOG right or JOG left respectively.

Note:

P1055 = 0 and P1056 = 0 ==> Total frequency setpoint is selected.

P1080[3]	Min. frequency	Min: 0.00	Level: 1
	CStat: CUT Datatype: Float Unit: Hz Def: 0.00		
	P-Group: SETPOINT Active: Immediately QuickComm. Yes Max: 650.00		

Sets minimum motor frequency [Hz] at which motor will run irrespective of frequency setpoint.

Index:

- P1080[0] : 1st. Drive data set (DDS)
- P1080[1] : 2nd. Drive data set (DDS)
- P1080[2] : 3rd. Drive data set (DDS)

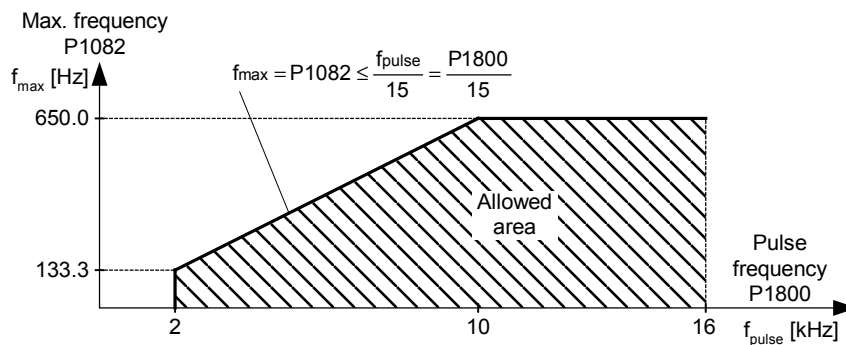
Note:

Value set here is valid both for clockwise and for anticlockwise rotation.

Under certain conditions (e.g. ramping, current limiting), motor can run below minimum frequency.

P1082[3]	Max. frequency	Min: 0.00	Level: 1
	CStat: CT Datatype: Float Unit: Hz Def: 50.00		
	P-Group: SETPOINT Active: first confirm QuickComm. Yes Max: 650.00		

Sets maximum motor frequency [Hz] at which motor will run irrespective of the frequency setpoint.



Index:

- P1082[0] : 1st. Drive data set (DDS)
- P1082[1] : 2nd. Drive data set (DDS)
- P1082[2] : 3rd. Drive data set (DDS)

Dependency:

Limited internally to 200 Hz or 5 * rated motor frequency (P0310) when P1300 >= 20 (control mode = vector control). When P1300 < 20 (control mode = VF or FCC modes) then max output frequency is limited to smallest of 650Hz or (Maximum Pulse Frequency / 15) The value is displayed in r0209 (maximum frequency).

Note:

The value set here is valid for both clockwise and anticlockwise rotation.

The maximum output frequency of inverter can be exceeded if one of the following is active:

- Slip compensation = $f_{max} + f_{slipcomp max}$
- or
- Flying restart = $f_{max} + f_{slipnom}$

Notice:

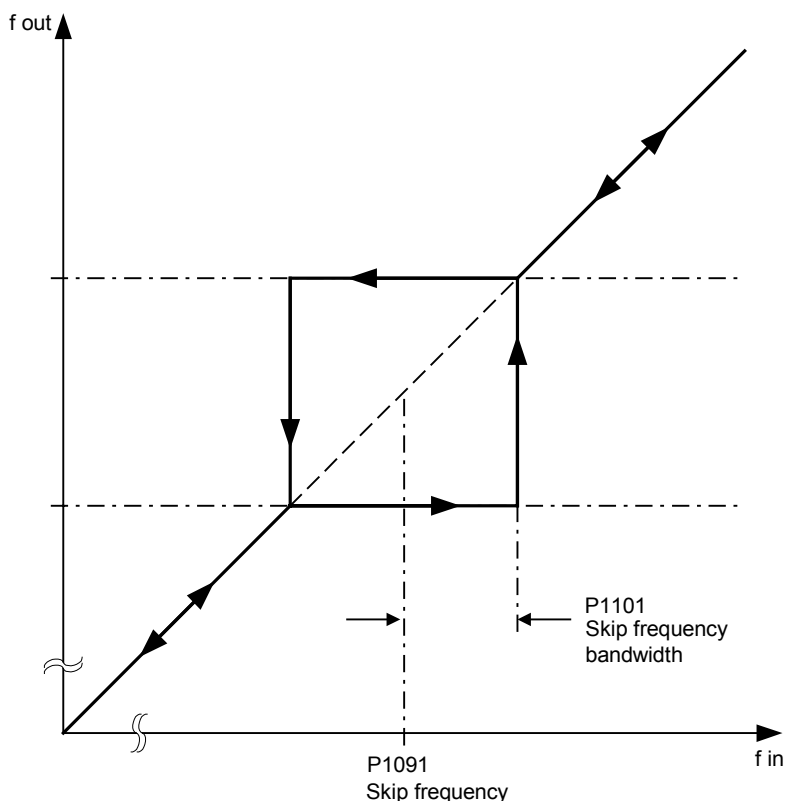
Maximum motor speed is subject to mechanical limitations.

r1084	Max. frequency setpoint	Datatype: Float	Unit: Hz	Min: -	Level: 3
	P-Group: CONTROL			Def: - Max: -	

Displays maximum frequency. The maximum frequency for vector control is the minimum of 200.00Hz and 5 * P0310 (rated motor frequency).

P1091[3]	Skip frequency 1	Datatype: Float	Unit: Hz	Min: 0.00	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 0.00 Max: 650.00	

Defines skip frequency 1 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).



Index:

- P1091[0] : 1st. Drive data set (DDS)
- P1091[1] : 2nd. Drive data set (DDS)
- P1091[2] : 3rd. Drive data set (DDS)

Notice:

Stationary operation is not possible within the suppressed frequency range; the range is merely passed through (on the ramp).

For example, if P1091 = 10 Hz and P1101 = 2 Hz, it is not possible to operate continuously between 10 Hz +/- 2 Hz (i.e. between 8 and 12 Hz).

P1092[3]	Skip frequency 2	Datatype: Float	Unit: Hz	Min: 0.00	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 0.00 Max: 650.00	

Defines skip frequency 2 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).

Index:

- P1092[0] : 1st. Drive data set (DDS)
- P1092[1] : 2nd. Drive data set (DDS)
- P1092[2] : 3rd. Drive data set (DDS)

Details:

See P1091 (skip frequency 1).

P1093[3]	Skip frequency 3	Min: 0.00	Level:
	CStat: CUT Datatype: Float Unit: Hz Def: 0.00 P-Group: SETPOINT Active: Immediately QuickComm. No Max: 650.00		3
	Defines skip frequency 3 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).		
Index:	P1093[0] : 1st. Drive data set (DDS) P1093[1] : 2nd. Drive data set (DDS) P1093[2] : 3rd. Drive data set (DDS)		
Details:	See P1091 (skip frequency 1).		
P1094[3]	Skip frequency 4	Min: 0.00	Level:
	CStat: CUT Datatype: Float Unit: Hz Def: 0.00 P-Group: SETPOINT Active: Immediately QuickComm. No Max: 650.00		3
	Defines skip frequency 4 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).		
Index:	P1094[0] : 1st. Drive data set (DDS) P1094[1] : 2nd. Drive data set (DDS) P1094[2] : 3rd. Drive data set (DDS)		
Details:	See P1091 (skip frequency 1).		
P1101[3]	Skip frequency bandwidth	Min: 0.00	Level:
	CStat: CUT Datatype: Float Unit: Hz Def: 2.00 P-Group: SETPOINT Active: Immediately QuickComm. No Max: 10.00		3
	Delivers frequency bandwidth to be applied to skip frequencies (in [Hz]).		
Index:	P1101[0] : 1st. Drive data set (DDS) P1101[1] : 2nd. Drive data set (DDS) P1101[2] : 3rd. Drive data set (DDS)		
Details:	See P1091 (skip frequency 1).		
P1110[3]	BI: Inhibit neg. freq. setpoint	Min: 0:0	Level:
	CStat: CT Datatype: U32 Unit: - Def: 0:0 P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		3
	Inhibits direction reversal, thus preventing a negative setpoint from causing motor from running in reverse. Instead, it will run at minimum frequency (P1080) in the normal direction.		
Settings:	0 = Disabled 1 = Enabled		
Index:	P1110[0] : 1st. Command data set (CDS) P1110[1] : 2nd. Command data set (CDS) P1110[2] : 3rd. Command data set (CDS)		
Note:	It is possible to disable all reverse commands (i.e. the command is ignored). To do this, set P0719 = 0 (remote selection of command/setpoint source) and define the command sources (P1113) individually.		
Notice:	This function does not disable the "reverse" command function; rather, a reverse command causes motor to run in the normal direction as described above.		
P1113[3]	BI: Reverse	Min: 0:0	Level:
	CStat: CT Datatype: U32 Unit: - Def: 722:1 P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		3
	Defines source of reverse command used when P0719 = 0 (remote selection of command/setpoint source).		
Settings:	722.0 = Digital input 1 (requires P0701 to be set to 99, BICO) 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO) 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO) 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO) 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO) 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)		
Index:	19.B = Reverse via BOP P1113[0] : 1st. Command data set (CDS) P1113[1] : 2nd. Command data set (CDS) P1113[2] : 3rd. Command data set (CDS)		

r1114	CO: Freq. setp. after dir. ctrl.	Datatype: Float	Unit: Hz	Min: -	Level: 3
	P-Group: SETPOINT			Def: - Max: -	

Displays setpoint frequency after change of direction.

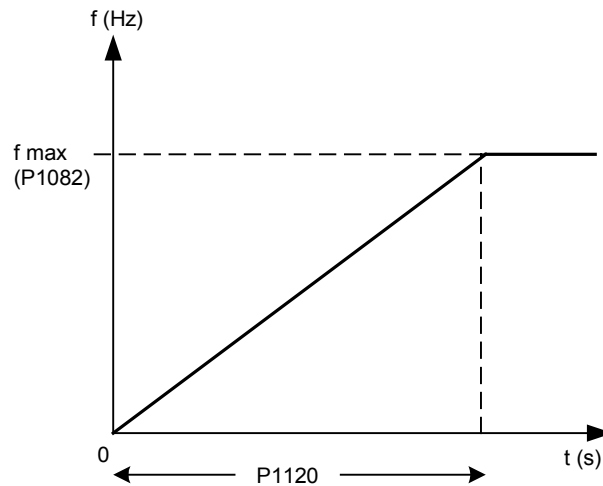
r1119	CO: Freq. setpoint before RFG	Datatype: Float	Unit: Hz	Min: -	Level: 3
	P-Group: SETPOINT			Def: - Max: -	

Displays output frequency after modification by other functions, e.g.:

- BI: Inhibit neg. freq. setpoint (P1110)
- skip frequencies
- f_min
- f_max
- limitations, etc.

P1120[3]	Ramp-up time			Min: 0.00	Level: 1
	CStat: CUT	Datatype: Float	Unit: s	Def: 10.00	
	P-Group: SETPOINT	Active: first confirm	QuickComm. Yes	Max: 650.00	

Time taken for motor to accelerate from standstill up to maximum motor frequency (P1082) when no rounding is used.



Setting the ramp-up time too short can cause the inverter to trip (overcurrent).

Index:

- P1120[0] : 1st. Drive data set (DDS)
- P1120[1] : 2nd. Drive data set (DDS)
- P1120[2] : 3rd. Drive data set (DDS)

Note:

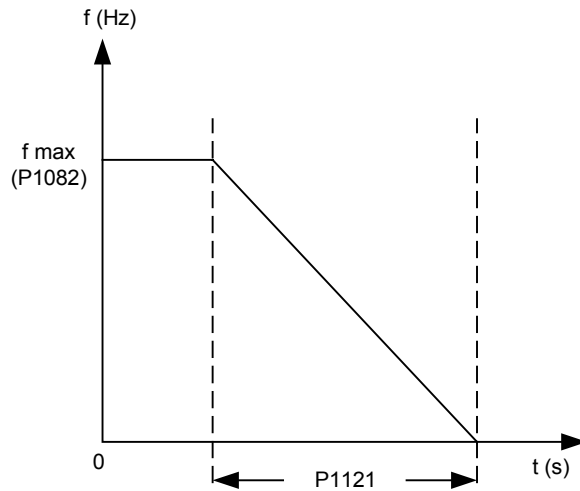
If an external frequency setpoint with set ramp rates is used (e.g. from a PLC). The best way to achieve optimum drive performance is to set ramp times in P1120 and P1121 slightly shorter than those of the PLC.

Notice:

- Ramp times will be used as follows:
- P1060 / P1061 : JOG mode is active
- P1120 / P1121 : Normal mode (ON/OFF) is active
- P1060 / P1061 : Normal mode (ON/OFF) and P1124 is active

P1121[3]	Ramp-down time	Datatype: Float	Unit: s	Min: 0.00	Level: 1
	CStat: CUT	Active: first confirm	QuickComm. Yes	Def: 10.00	
	P-Group: SETPOINT			Max: 650.00	

Time taken for motor to decelerate from maximum motor frequency (P1082) down to standstill when no rounding is used.



Index:

- P1121[0] : 1st. Drive data set (DDS)
- P1121[1] : 2nd. Drive data set (DDS)
- P1121[2] : 3rd. Drive data set (DDS)

Notice:

Setting the ramp-down time too short can cause the inverter to trip (overcurrent (F0001) / overvoltage (F0002)).

Ramp times will be used as follows:

- P1060 / P1061 : JOG mode is active
- P1120 / P1121 : Normal mode (ON/OFF) is active
- P1060 / P1061 : Normal mode (ON/OFF) and P1124 is active

P1124[3]	BI: Enable JOG ramp times	Datatype: U32	Unit: -	Min: 0:0	Level: 3
	CStat: CT	Active: first confirm	QuickComm. No	Def: 0:0	
	P-Group: COMMANDS			Max: 4000:0	

Defines source for switching between jog ramp times (P1060, P1061) and normal ramp times (P1120, P1121) as applied to the RFG. This parameter is valid for normal mode (ON/OFF) only.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

- P1124[0] : 1st. Command data set (CDS)
- P1124[1] : 2nd. Command data set (CDS)
- P1124[2] : 3rd. Command data set (CDS)

Notice:

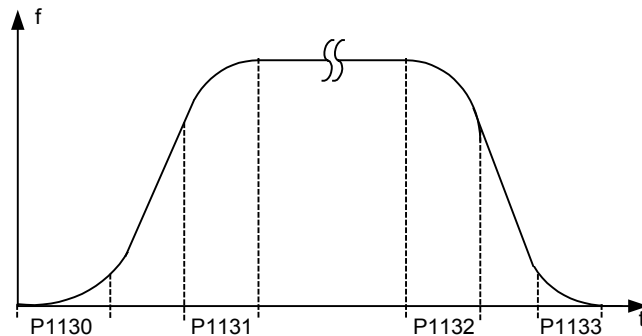
P1124 does not have any impact when JOG mode is selected. In this case, jog ramp times (P1060, P1061) will be used all the time.

Ramp times will be used as follows:

- P1060 / P1061 : JOG mode is active
- P1120 / P1121 : Normal mode (ON/OFF) is active
- P1060 / P1061 : Normal mode (ON/OFF) and P1124 is active

P1130[3]	Ramp-up initial rounding time				Min: 0.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: s	Def: 0.00		
	P-Group: SETPOINT	Active: first confirm	QuickComm. No	Max: 40.00		

Defines initial rounding time in seconds as shown on the diagram below.



where:

$$T_{\text{up total}} = \frac{1}{2}P1130 + X \cdot P1120 + \frac{1}{2}P1131$$

$$T_{\text{down total}} = \frac{1}{2}P1130 + X \cdot P1121 + \frac{1}{2}P1133$$

X is defined as: $X = \Delta f / f_{\text{max}}$

i.e. X is the ratio between the frequency step and f_{max}

Index:

P1130[0] : 1st. Drive data set (DDS)
P1130[1] : 2nd. Drive data set (DDS)
P1130[2] : 3rd. Drive data set (DDS)

Note:

Rounding times are recommended, since they prevent an abrupt response, thus avoiding detrimental effects on the mechanics.

Notice:

Rounding times are not recommended when analog inputs are used, since they would result in overshoot/undershoot in the inverter response.

P1131[3]	Ramp-up final rounding time				Min: 0.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: s	Def: 0.00		
	P-Group: SETPOINT	Active: first confirm	QuickComm. No	Max: 40.00		

Defines rounding time at end of ramp-up as shown in P1130 (ramp-up initial rounding time).

Index:

P1131[0] : 1st. Drive data set (DDS)
P1131[1] : 2nd. Drive data set (DDS)
P1131[2] : 3rd. Drive data set (DDS)

Note:

Rounding times are recommended, since they prevent an abrupt response, thus avoiding detrimental effects on the mechanics.

Notice:

Rounding times are not recommended when analog inputs are used, since they would result in overshoot/undershoot in the inverter response.

P1132[3]	Ramp-down initial rounding time				Min: 0.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: s	Def: 0.00		
	P-Group: SETPOINT	Active: first confirm	QuickComm. No	Max: 40.00		

Defines rounding time at start of ramp-down as shown in P1130 (ramp-up initial rounding time).

Index:

P1132[0] : 1st. Drive data set (DDS)
P1132[1] : 2nd. Drive data set (DDS)
P1132[2] : 3rd. Drive data set (DDS)

Note:

Rounding times are recommended, since they prevent an abrupt response, thus avoiding detrimental effects on the mechanics.

Notice:

Rounding times are not recommended when analog inputs are used, since they would result in overshoot/undershoot in the inverter response.

P1133[3]	Ramp-down final rounding time	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: s
	P-Group: SETPOINT	Active: first confirm		QuickComm. No

Defines rounding time at end of ramp-down as shown in P1130 (ramp-up initial rounding time).

Index:

- P1133[0] : 1st. Drive data set (DDS)
- P1133[1] : 2nd. Drive data set (DDS)
- P1133[2] : 3rd. Drive data set (DDS)

Note:

Rounding times are recommended, since they prevent an abrupt response, thus avoiding detrimental effects on the mechanics.

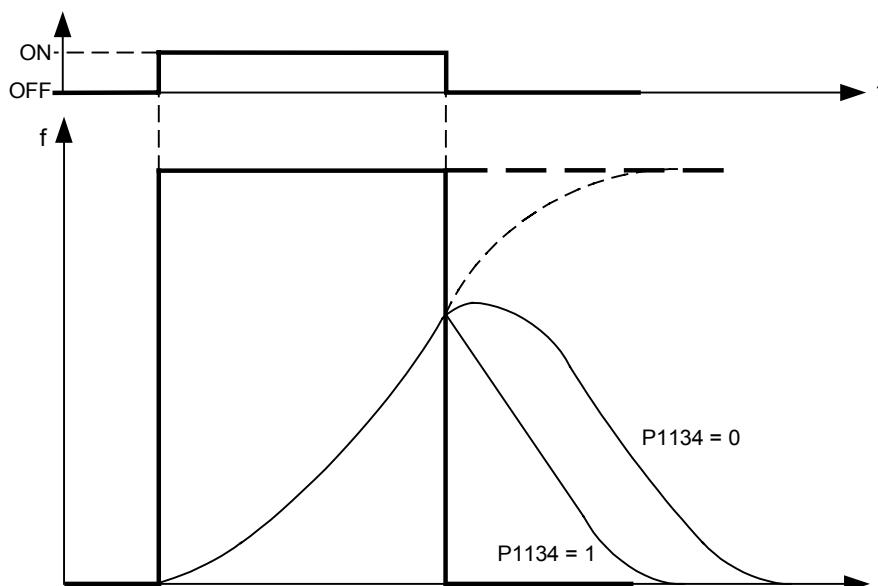
Notice:

Rounding times are not recommended when analog inputs are used, since they would result in overshoot/undershoot in the inverter response.

P1134[3]	Rounding type	Min: 0	Level: 2	
	CStat: CUT	Datatype: U16		Unit: -
	P-Group: SETPOINT	Active: Immediately		QuickComm. No

Defines smoothing response to OFF1 command or setpoint reduction.

If parameter P1134 = 0 it avoids sudden changes in setpoint frequency. Moreover, it gives smoother torque (no jerk).



Settings:

- 0 Continuous smoothing
- 1 Discontinuous smoothing

Index:

- P1134[0] : 1st. Drive data set (DDS)
- P1134[1] : 2nd. Drive data set (DDS)
- P1134[2] : 3rd. Drive data set (DDS)

Dependency:

No effect until total rounding time (P1130) > 0 s.

Notice:

P1134 = 0 Rounding acts at all times. At a sudden reduction of the input value, overshoot can occur.

P1134 = 1 Rounding does not act upon sudden reduction of input value during acceleration process.

Rounding times are not recommended when analog inputs are used. They would result in overshoot/undershoot in the inverter response.

P1135[3]	OFF3 ramp-down time	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: s
	P-Group: SETPOINT	Active: first confirm		QuickComm. Yes

Defines ramp-down time from maximum frequency to standstill for OFF3 command.

Index:

- P1135[0] : 1st. Drive data set (DDS)
- P1135[1] : 2nd. Drive data set (DDS)
- P1135[2] : 3rd. Drive data set (DDS)

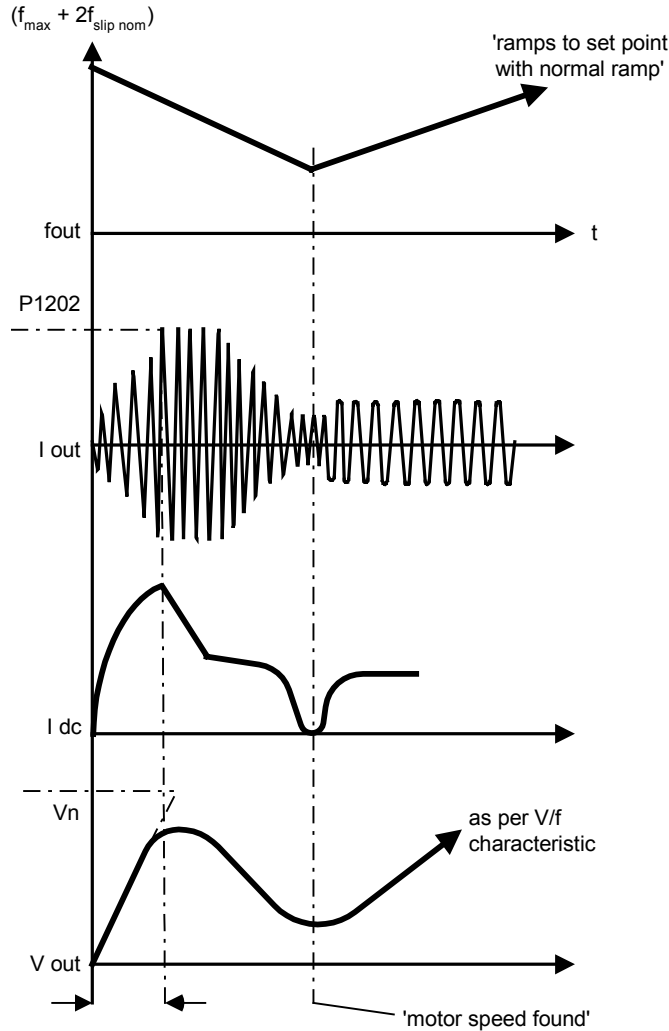
Note:

This time may be exceeded if the VDC_max. level is reached.

P1140[3]	BI: RFG enable	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 1:0 P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		
	Defines command source of RFG enable command (RFG: ramp function generator). If binary input is equal to zero than the RFG output will be set immediately to 0.		
Index:	P1140[0] : 1st. Command data set (CDS) P1140[1] : 2nd. Command data set (CDS) P1140[2] : 3rd. Command data set (CDS)		
P1141[3]	BI: RFG start	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 1:0 P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		
	Defines command source of RFG start command (RFG: ramp function generator). If binary input is equal to zero than the RFG output is held at it present value.		
Index:	P1141[0] : 1st. Command data set (CDS) P1141[1] : 2nd. Command data set (CDS) P1141[2] : 3rd. Command data set (CDS)		
P1142[3]	BI: RFG enable setpoint	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: - Def: 1:0 P-Group: COMMANDS Active: first confirm QuickComm. No Max: 4000:0		
	Defines command source of RFG enable setpoint command (RFG: ramp function generator). If binary input is equal to zero than the RFG input will be set to zero and the RFG output will be ramp-down to zero.		
Index:	P1142[0] : 1st. Command data set (CDS) P1142[1] : 2nd. Command data set (CDS) P1142[2] : 3rd. Command data set (CDS)		
r1170	CO: Frequency setpoint after RFG	Min: -	Level: 3
	P-Group: SETPOINT Datatype: Float Unit: Hz Def: - Max: -		
	Displays overall frequency setpoint after ramp generator.		

P1200	Flying start			Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: -	Def: 0	
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 6	

Starts inverter onto a spinning motor by rapidly changing the output frequency of the inverter until the actual motor speed has been found. Then, the motor runs up to setpoint using the normal ramp time.



Settings:

- 0 Flying start disabled
- 1 Flying start is always active, start in direction of setpoint
- 2 Flying start is active if power on, fault, OFF2, start in direction of setpoint
- 3 Flying start is active if fault, OFF2, start in direction of setpoint
- 4 Flying start is always active, only in direction of setpoint
- 5 Flying start is active if power on, fault, OFF2, only in direction of setpoint
- 6 Flying start is active if fault, OFF2, only in direction of setpoint

Note:

Useful for motors with high inertia loads.

Settings 1 to 3 search in both directions.

Settings 4 to 6 search only in direction of setpoint.

Notice:

Flying start must be used in cases where the motor may still be turning (e.g. after a short mains break) or can be driven by the load. Otherwise, overcurrent trips will occur.

P1202[3]	Motor-current: Flying start	Min: 10	Level: 3	
	CStat: CUT	Datatype: U16		Unit: %
	P-Group: FUNC	Active: first confirm		QuickComm. No

Defines search current used for flying start.

Value is in [%] based on rated motor current (P0305).

Index:

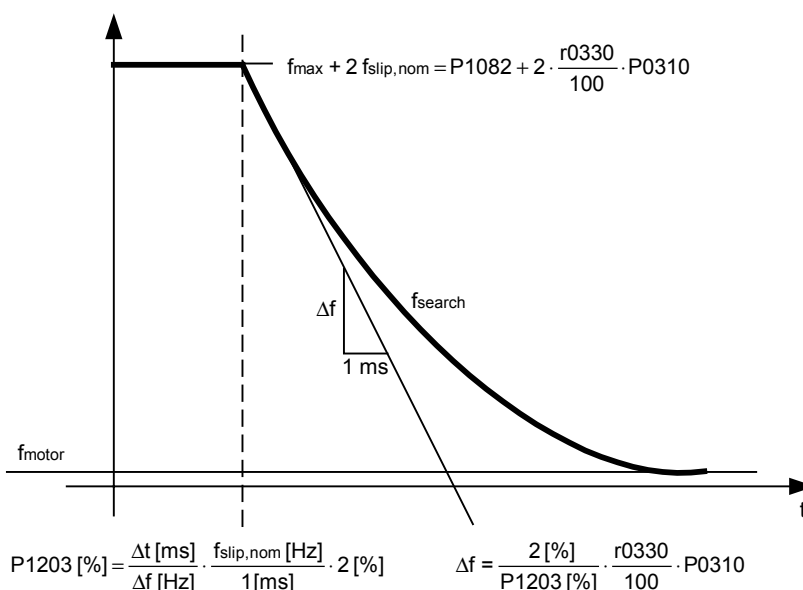
- P1202[0] : 1st. Drive data set (DDS)
- P1202[1] : 2nd. Drive data set (DDS)
- P1202[2] : 3rd. Drive data set (DDS)

Note:

Reducing the search current may improve performance for flying start if the inertia of the system is not very high.

P1203[3]	Search rate: Flying start	Min: 10	Level: 3	
	CStat: CUT	Datatype: U16		Unit: %
	P-Group: FUNC	Active: first confirm		QuickComm. No

Sets factor by which the output frequency changes during flying start to synchronize with turning motor. This value is entered in [%] relative to the default time factor defines the reciprocal initial gradient in the curve below (and thus influences the time taken to search for the motor frequency):



The search time is the time taken to search through all frequencies between $f_{\max} + 2 \times f_{\text{slip}}$ to 0 Hz.

P1203 = 100 % is defined as giving a rate of 2 % of $f_{\text{slip,nom}} / [\text{ms}]$.

P1203 = 200 % would result in a rate of frequency change of 1 % of $f_{\text{slip,nom}} / [\text{ms}]$.

Example:

For a motor with 50 Hz, 1350 rpm, 100 % would produce a maximum search time of 600 ms. If the motor is turning, the motor frequency is found in a shorter time.

Index:

- P1203[0] : 1st. Drive data set (DDS)
- P1203[1] : 2nd. Drive data set (DDS)
- P1203[2] : 3rd. Drive data set (DDS)

Note:

A higher value produces a flatter gradient and thus a longer search time.
A lower value has the opposite effect.

r1204	Status word: Flying start V/f	Min: -	Level: 4
	Datatype: U16 Unit: -	Def: -	
	P-Group: FUNC	Max: -	

Bit parameter for checking and monitoring states during search, if V/f control mode is selected (see P1300).

Bitfields:

Bit00	Current applied	0	NO
		1	YES
Bit01	Current could not be applied	0	NO
		1	YES
Bit02	Voltage reduced	0	NO
		1	YES
Bit03	Slope-filter started	0	NO
		1	YES
Bit04	Current less threshold	0	NO
		1	YES
Bit05	Current-minimum	0	NO
		1	YES
Bit07	Speed could not be found	0	NO
		1	YES

r1205	Status word: Flying start SLVC	Min: -	Level: 3
	Datatype: U16 Unit: -	Def: -	
	P-Group: FUNC	Max: -	

Bit parameter for checking status of flying start performed with n-adaption of observer. Parameter is only valid, if sensorless vector control (SLVC) is selected (see P1300).

Bitfields:

Bit00	Transformation active	0	NO
		1	YES
Bit01	Initialize n-adaption	0	NO
		1	YES
Bit02	Current applying	0	NO
		1	YES
Bit03	N-controller closed	0	NO
		1	YES
Bit04	Isd-controller open	0	NO
		1	YES
Bit05	RFG hold	0	NO
		1	YES
Bit06	N-adaption set to zero	0	NO
		1	YES
Bit07	Reserved	0	NO
		1	YES
Bit08	Reserved	0	NO
		1	YES
Bit09	Reserved	0	NO
		1	YES
Bit10	Direction Positive	0	NO
		1	YES
Bit11	Search is started	0	NO
		1	YES
Bit12	Current is applied	0	NO
		1	YES
Bit13	Search is aborted	0	NO
		1	YES
Bit14	Deviation is zero	0	NO
		1	YES
Bit15	N-controller is active	0	NO
		1	YES

P1210	Automatic restart			Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: -	Def: 1	
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 6	

Configures automatic restart function

Settings:

- 0 Disabled
- 1 Trip reset after power on, P1211 disabled
- 2 Restart after mains blackout, P1211 disabled
- 3 Restart after mains brownout or fault, P1211 enabled
- 4 Restart after mains brownout, P1211 enabled
- 5 Restart after mains blackout and fault, P1211 disabled
- 6 Restart after mains brown- /blackout or fault, P1211 disabled

Dependency:

Automatic restart requires constant ON command via a digital input wire link.

Caution1:

P1210 > 2 can cause the motor to restart automatically without toggling the ON command !

Notice:

A "mains brownout" is where the power is interrupted and re-applied before the display on the BOP (if one is fitted to the inverter) has gone dark (a very short mains break where the DC link has not fully collapsed).

A "mains blackout" is where the display has gone dark (a long mains break where the DC link has fully collapsed) before the power is re-applied.

P1210 = 0:
Automatic restart is disabled.

P1210 = 1:
The inverter will acknowledge (reset) faults i.e. it will reset a fault when the is re-applied. This means the inverter must be fully powered down, a brownout is not sufficed. The inverter will not run until the ON command has been toggled.

P1210 = 2:
The inverter will acknowledge the fault F0003 at power on after blackout and restarts the drive. It is necessary that the ON command is wired via digital input (DIN).

P1210 = 3:
For these settings it is fundamental that the drive only restarts if it has been in a RUN state at the time of the faults (F0003, etc.). The inverter will acknowledge the fault and restarts the drive after a blackout or brownout. It is necessary that the ON command is wired via digital input (DIN).

P1210 = 4:
For these settings it is fundamental that the drive only restarts if it has been in a RUN state at the time of the fault (F0003). The inverter will acknowledge the fault and restarts the drive after a blackout or brownout. It is necessary that the ON command is wired via digital input (DIN).

P1210 = 5:
The inverter will acknowledge the faults F0003 etc. at power on after blackout and restarts the drive. It is necessary that the ON command is wired via digital input (DIN).

P1210 = 6:
The inverter will acknowledge the faults (F0003 etc.) at power on after blackout or brownout and restarts the drive. It is necessary that the ON command is wired via digital input (DIN). Setting 6 causes the motor to restart immediately.

Following table presents an overview of parameter P1210 and its functionality.

P1210	Blackout F0003	Brownout F0003	All other faults	ON command enabled during Power OFF
0	–	–	–	–
1	Fault acknowledge	–	–	Fault acknowledge
2	Fault acknowledge + restart	–	–	Fault acknowledge + restart
3	Fault acknowledge + restart	Fault acknowledge + restart	Fault acknowledge + restart	–
4	Fault acknowledge + restart	Fault acknowledge + restart	–	–
5	Fault acknowledge + restart	–	Fault acknowledge + restart	Fault acknowledge + restart
6	Fault acknowledge + restart	Fault acknowledge + restart	Fault acknowledge + restart	Fault acknowledge + restart

Flying start must be used in cases where the motor may still be turning (e.g. after a short mains break) or can be driven by the load (P1200).

P1211	Number of restart attempts				Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 3		
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 10		

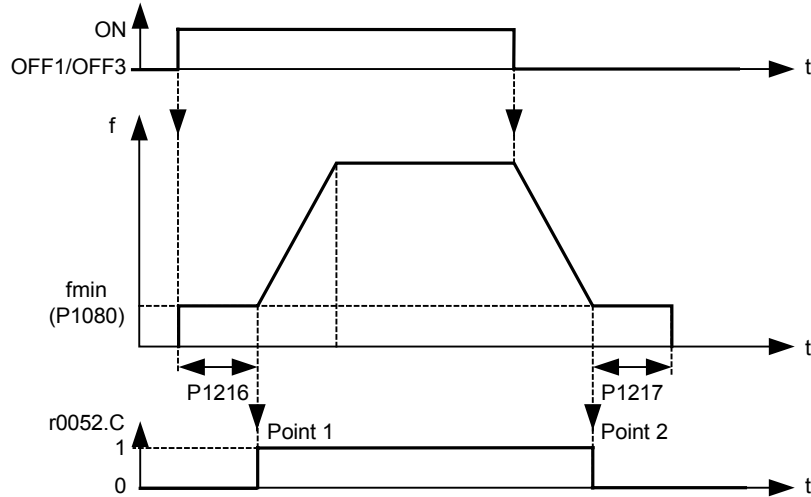
Specifies number of times inverter will attempt to restart if P1210 (Automatic restart) is activated.

P1215	Holding brake enable	Datatype: U16	Unit: -	Min: 0	Level: 2
	CStat: T	Active: first confirm	QuickComm. No	Def: 0	
	P-Group: FUNC			Max: 1	

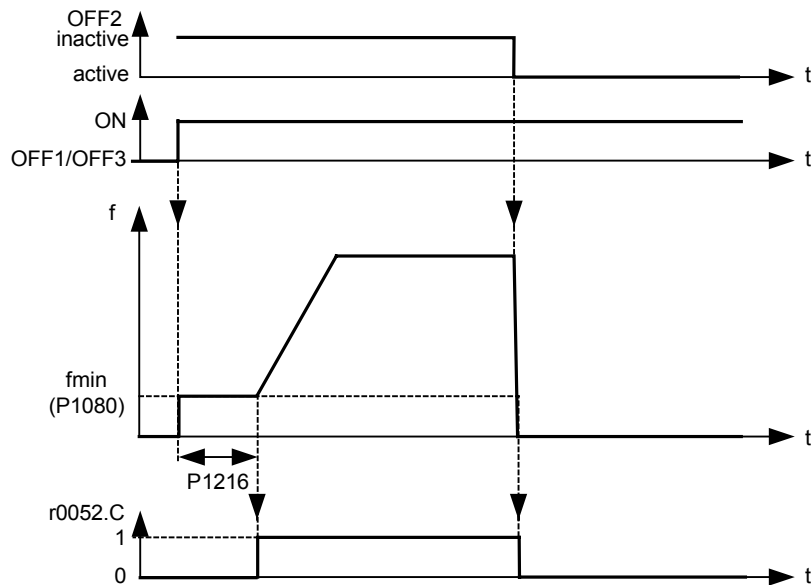
Enables/disables holding brake function. This function applies the following profile to the inverter:

Relay switching is also possible at point 1 and point 2 (if programmed in P0731 = 52.C) to control a brake.

ON / OFF1/OFF3:



ON / OFF2:



Settings:

- 0 Motor holding brake disabled
- 1 Motor holding brake enabled

Note:

The brake relay opens at point 1, if enabled using P0731 (function of digital output), and closes at point 2.

P1216	Holding brake release delay				Min: 0	Level: 2
	CStat: T	Datatype: Float	Unit: s	Def: 1.0		
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 20.0		

Defines period during which inverter runs at f_min before ramping up at point 1 (as shown in P1215 - holding brake enable). Inverter starts at f_min on this profile, i.e. it does not use a ramp.

Note:

A typical value of f_min for this type of application is the slip frequency of the motor.

You can calculate the rated slip frequency by using the following formula:

$$\frac{n_{syn} - n_n}{n_{syn}} \cdot f_n$$

Notice:

If used to hold the motor at a certain frequency against a mechanical brake (i.e. you are using a relay to control mechanical brake), it is important that f_min < 5 Hz; otherwise, the current drawn may be too high and the relay may not open.

P1217	Holding time after ramp down				Min: 0	Level: 2
	CStat: T	Datatype: Float	Unit: s	Def: 1.0		
	P-Group: FUNC	Active: first confirm	QuickComm. No	Max: 20.0		

Defines time for which inverter runs at minimum frequency (P1080) after ramping down at point 2.

Details:

See diagram P1215 (holding brake enable).

P1230[3]	BI: Enable DC braking				Min: 0:0	Level: 3
	CStat: CUT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Enables DC braking via a signal applied from an external source. Function remains active while external input signal is active.

DC braking causes the motor to stop rapidly by applying a DC braking current (current applied also holds shaft stationary).

When the DC braking signal is applied, the inverter output pulses are blocked and the DC current is not applied until the motor has been sufficiently demagnetized.

The level of DC braking is set in P1232 (DC braking current - relative to the rated motor current) which is set to 100 % by default.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Index:

- P1230[0] : 1st. Command data set (CDS)
- P1230[1] : 2nd. Command data set (CDS)
- P1230[2] : 3rd. Command data set (CDS)

Caution2:

Frequent use of long periods of DC braking can cause the motor to overheat.

Notice:

This delay time is set in P0347 (demagnetization time). If this delay is too short, overcurrent trips can occur.

DC braking is not possible when using a synchronous motor (i.e. P0300 = 2).

P1232[3]	DC braking current				Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: %	Def: 100		
	P-Group: FUNC	Active: Immediately	QuickComm. No	Max: 250		

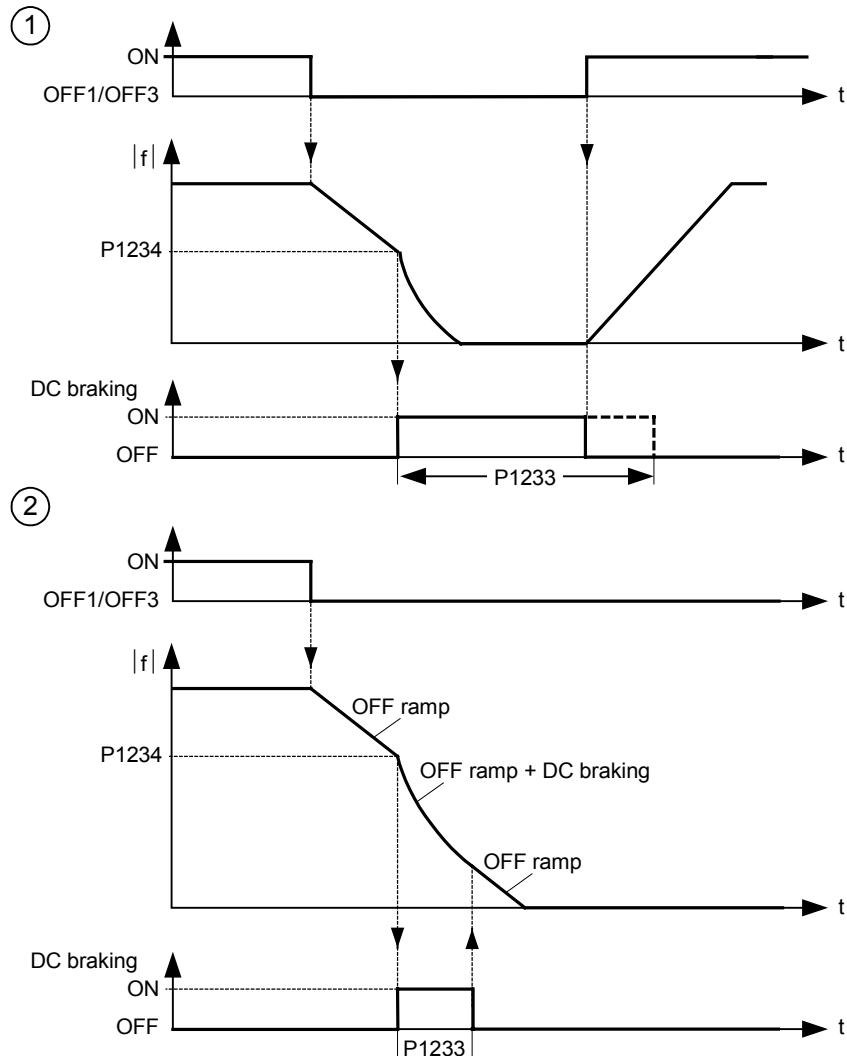
Defines level of DC current in [%] relative to rated motor current (P0305).

Index:

- P1232[0] : 1st. Drive data set (DDS)
- P1232[1] : 2nd. Drive data set (DDS)
- P1232[2] : 3rd. Drive data set (DDS)

P1233[3]	Duration of DC braking	Datatype: U16	Unit: s	Min: 0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 0	
	P-Group: FUNC			Max: 250	

Defines duration for which DC injection braking is to be active following an OFF1 or OFF3 command. When an OFF1 or OFF3 command is received by the drive, the output frequency starts to ramp to 0 Hz. When the output frequency reaches the value set in P1234, the drive injects a DC braking current P1232 for the time duration set in P1233.



Parameter P1232 still controls the level of DC injection.

Value:

P1233 = 0 :
Not active following OFF1 / OFF3.

P1233 = 1 - 250 :
Active for the specified duration.

Index:

P1233[0] : 1st. Drive data set (DDS)
P1233[1] : 2nd. Drive data set (DDS)
P1233[2] : 3rd. Drive data set (DDS)

Caution2:

Frequent use of long periods of DC braking can cause the motor to overheat.

Notice:

The DC braking function causes the motor to stop rapidly by applying a DC braking current (the current applied also holds the shaft stationary). When the DC braking signal is applied, the inverter output pulses are blocked and the DC current not applied until the motor has been sufficiently demagnetized (demagnetization time is calculated automatically from motor data).

The inverter will not restart if an ON-command is given during this period.

DC braking is not possible when using a synchronous motor (i.e. P0300 = 2).

P1234[3]	DC braking start frequency	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: FUNC	Active: Immediately		QuickComm. No
		Def: 650.00		
		Max: 650.00		

Sets start frequency for DC braking.

When an OFF1 or OFF3 command is received by the drive, the output frequency starts to ramp to 0 Hz. When the output frequency reaches the value set in start frequency of DC braking P1234, the drive injects a DC braking current P1232 for the time duration set in P1233.

Index:

P1234[0] : 1st. Drive data set (DDS)
P1234[1] : 2nd. Drive data set (DDS)
P1234[2] : 3rd. Drive data set (DDS)

Details:

See P1232 (DC braking current) and P1233 (duration of DC braking)

P1236[3]	Compound braking current	Min: 0	Level: 2	
	CStat: CUT	Datatype: U16		Unit: %
	P-Group: FUNC	Active: Immediately		QuickComm. No
		Def: 0		
		Max: 250		

Defines DC level superimposed on AC waveform after OFF1 / OFF3 command. The value is entered in [%] relative to rated motor current (P0305).

If P1254 = 0 :

$$\text{Compound braking switch-on level} = 1.13 \cdot \sqrt{2} \cdot V_{\text{mains}} = 1.13 \cdot \sqrt{2} \cdot P0210$$

otherwise :

$$\text{Compound braking switch-on level} = 0.98 \cdot r1242$$

Value:

P1236 = 0 :
Compound braking disabled.

P1236 = 1 - 250 :
Level of DC braking current defined as a [%] of rated motor current (P0305).

Index:

P1236[0] : 1st. Drive data set (DDS)
P1236[1] : 2nd. Drive data set (DDS)
P1236[2] : 3rd. Drive data set (DDS)

Dependency:

Compound braking depends on the DC link voltage only (see threshold above). This will happen on OFF1, OFF3 and any regenerative condition.

It is disabled, when:

- DC braking is active
- Flying start is active
- Vector mode (SLVC, VC) is selected

Notice:

Increasing the value will generally improve braking performance; however, if you set the value too high, an overcurrent trip may result. If used with dynamic brake enabled as well compound braking will take priority. Compound braking does not function when the drive is in vector control. If used with the Vdc max controller enabled the drive behaviour whilst braking may be worsened particularly with high values of compound braking.

P1237	Dynamic braking			Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: -	Def: 0	
	P-Group: FUNC	Active: Immediately	QuickComm. No	Max: 5	

Dynamic braking absorbs the braking energy. This parameter defines the rated duty cycle of the braking resistor (chopper resistor). Dynamic braking is active when the function is enabled and DC-link voltage exceeds the dynamic braking switch-on level, see below.

If P1254 = 0 :

$$\text{Dynamic braking switch-on level} = 1.13 \cdot \sqrt{2} \cdot V_{\text{mains}} = 1.13 \cdot \sqrt{2} \cdot P0210$$

otherwise :

$$\text{Dynamic braking switch-on level} = 0.98 \cdot r1242$$

Settings:

0	Disabled
1	5 % duty cycle
2	10 % duty cycle
3	20 % duty cycle
4	50 % duty cycle
5	100 % duty cycle

Dependency:

This function is not available for for MM440 PX (FSFX and FSGX).

If used with compound brake enabled as well compound braking will take priority.

Notice:

Initially the brake will operate at a high duty cycle dependant on the DC link level until the thermal limit is approached. The duty cycle specified by this parameter will then be imposed. The resistor should be able to operate at this level indefinitely without overheating.

The threshold for the warning A0535 is equivalent to 10 seconds running at 95 % duty cycle. The duty cycle will be limited when it was running 12 seconds at 95 % duty cycle.

P1240[3]	Configuration of Vdc controller			Min: 0	Level: 3
	CStat: CT	Datatype: U16	Unit: -	Def: 1	
	P-Group: FUNC	Active: Immediately	QuickComm. No	Max: 3	

Enables / disables Vdc controller.

The Vdc controller dynamically controls the DC link voltage to prevent overvoltage trips on high inertia systems.

Settings:

0	Vdc controller disabled
1	Vdc-max controller enabled
2	Kinetic buffering (Vdc-min controller) enabled
3	Vdc-max controller and kinetic buffering (KIB) enabled

Index:

P1240[0] : 1st. Drive data set (DDS)
P1240[1] : 2nd. Drive data set (DDS)
P1240[2] : 3rd. Drive data set (DDS)

Note:

Vdc max automatically increases ramp-down times to keep the DC-link voltage (r0026) within limits (P2172).

Vdc min is activated if DC-link voltage falls below the switch on level, P1245. The kinetic energy of the motor is then used to buffer the DC-link voltage, thus causing deceleration of the drive. If the drive trips F0003 immediately, try increasing the dynamic factor first, P1247. If still tripping F0003 try then increasing the switch on level, P1245.

Warning: If P1245 increased too much, it may interfere with the drive normal operation.

r1242	CO: Switch-on level of Vdc-max			Min: -	Level: 3
		Datatype: Float	Unit: V	Def: -	
	P-Group: FUNC			Max: -	

Displays switch-on level of Vdc max controller.

Following equation is only valid, if P1254 = 0 :

$$r1242 = 1.15 \cdot \sqrt{2} \cdot V_{\text{mains}} = 1.15 \cdot \sqrt{2} \cdot P0210$$

P1243[3]	Dynamic factor of Vdc-max	Min: 10	Level:
CStat: CUT	Datatype: U16	Def: 100	3
P-Group: FUNC	Active: Immediately	QuickComm. No Max: 200	
Defines dynamic factor for DC link controller in [%].			
Index:	P1243[0] : 1st. Drive data set (DDS) P1243[1] : 2nd. Drive data set (DDS) P1243[2] : 3rd. Drive data set (DDS)		
Dependency:	P1243 = 100 % means parameters P1250, P1251 and P1252 (gain, integration time and differential time) are used as set. Otherwise, these are multiplied by P1243 (dynamic factor of Vdc-max).		
Note:	Vdc controller adjustment is calculated automatically from motor and inverter data.		
P1245[3]	Switch on level kin. buffering	Min: 65	Level:
CStat: CUT	Datatype: U16	Def: 76	3
P-Group: FUNC	Active: Immediately	QuickComm. No Max: 115	
Enter switch-on level for kinetic buffering (KIB) in [%] relative to supply voltage (P0210). Changing P1254 doesn't affect the switch-on-level. Warning: increasing the value too much, may interfere with the drive normal operation.			
Index:	P1245 [V] = P1245 [%] · $\sqrt{2}$ · P0210 P1245[0] : 1st. Drive data set (DDS) P1245[1] : 2nd. Drive data set (DDS) P1245[2] : 3rd. Drive data set (DDS)		
r1246[3]	CO:Switch-on level kin buffering	Min: -	Level:
	Datatype: Float	Unit: V	3
P-Group: FUNC	Def: -	Max: -	
Displays switch-on level of kinetic buffering (KIB, Vdc min controller).			
P1247[3]	Dyn. factor of kinetic buffering	Min: 10	Level:
CStat: CUT	Datatype: U16	Def: 100	3
P-Group: FUNC	Active: Immediately	QuickComm. No Max: 200	
Enters dynamic factor for kinetic buffering (KIB, Vdc-min controller). P1247 = 100 % means parameters P1250, P1251 and P1252 (gain, integration time and differential time) are used as set. Otherwise, these are multiplied by P1247 (dynamic factor of Vdc-min).			
Index:	P1247[0] : 1st. Drive data set (DDS) P1247[1] : 2nd. Drive data set (DDS) P1247[2] : 3rd. Drive data set (DDS)		
Note:	Vdc controller adjustment is calculated automatically from motor and inverter data.		
P1250[3]	Gain of Vdc-controller	Min: 0.00	Level:
CStat: CUT	Datatype: Float	Unit: -	4
P-Group: FUNC	Active: Immediately	QuickComm. No Def: 1.00	
Max: 10.00			
Enters gain for Vdc controller.			
Index:	P1250[0] : 1st. Drive data set (DDS) P1250[1] : 2nd. Drive data set (DDS) P1250[2] : 3rd. Drive data set (DDS)		
P1251[3]	Integration time Vdc-controller	Min: 0.1	Level:
CStat: CUT	Datatype: Float	Unit: ms	4
P-Group: FUNC	Active: Immediately	QuickComm. No Def: 40.0	
Max: 1000.0			
Enters integral time constant for Vdc controller.			
Index:	P1251[0] : 1st. Drive data set (DDS) P1251[1] : 2nd. Drive data set (DDS) P1251[2] : 3rd. Drive data set (DDS)		
P1252[3]	Differential time Vdc-controller	Min: 0.0	Level:
CStat: CUT	Datatype: Float	Unit: ms	4
P-Group: FUNC	Active: Immediately	QuickComm. No Def: 1.0	
Max: 1000.0			
Enters differential time constant for Vdc controller.			
Index:	P1252[0] : 1st. Drive data set (DDS) P1252[1] : 2nd. Drive data set (DDS) P1252[2] : 3rd. Drive data set (DDS)		

P1253[3]	Vdc-controller output limitation	Min: 0	Level:
	CStat: CUT Datatype: Float Unit: Hz Def: 10		3
	P-Group: FUNC Active: Immediately QuickComm. No Max: 600		

Limits maximum effect of Vdc max controller.

Index:

P1253[0] : 1st. Drive data set (DDS)
P1253[1] : 2nd. Drive data set (DDS)
P1253[2] : 3rd. Drive data set (DDS)

P1254	Auto detect Vdc switch-on levels	Min: 0	Level:
	CStat: CT Datatype: U16 Unit: - Def: 1		3
	P-Group: FUNC Active: Immediately QuickComm. No Max: 1		

Enables/disables auto-detection of switch-on levels for Vdc max controller.

Settings:

0 Disabled
1 Enabled

P1256[3]	Reaction of kinetic buffering	Min: 0	Level:
	CStat: CT Datatype: U16 Unit: - Def: 0		3
	P-Group: FUNC Active: Immediately QuickComm. No Max: 2		

Enters reaction for kinetic buffering controller (Vdc-min controller).

Settings:

0 Maintain DC-link until trip
1 Maintain DC-link until trip/stop
2 Control stop

Index:

P1256[0] : 1st. Drive data set (DDS)
P1256[1] : 2nd. Drive data set (DDS)
P1256[2] : 3rd. Drive data set (DDS)

Note:

Reactions:
- Maintain dclink voltage until mains is returned or drive is tripped undervoltage.
- Maintain dclink voltage until mains is returned, drive tripped undervoltage or stopped.
- Ramp down drive to stationary even if mains return.

P1257[3]	Freq limit for kinetic buffering	Min: 0	Level:
	CStat: CUT Datatype: Float Unit: Hz Def: 2.5		3
	P-Group: SETPOINT Active: first confirm QuickComm. No Max: 600.00		

Frequency which kinetic buffering (KIB) either hold speed or disable pulses depending on P1256.

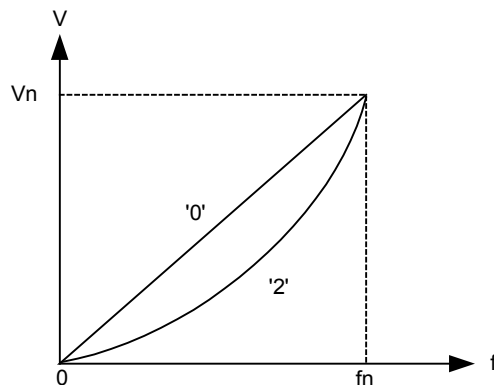
Index:

P1257[0] : 1st. Drive data set (DDS)
P1257[1] : 2nd. Drive data set (DDS)
P1257[2] : 3rd. Drive data set (DDS)

Note:

P1300[3]	Control mode	Min: 0	Level:
	CStat: CT Datatype: U16 Unit: - Def: 0		2
	P-Group: CONTROL Active: first confirm QuickComm. Yes Max: 23		

Controls relationship between speed of motor and voltage supplied by inverter as illustrated in the diagram below.



Settings:

- 0 V/f with linear charac.
- 1 V/f with FCC
- 2 V/f with parabolic charac.
- 3 V/f with programmable charac.
- 4 V/f with ECO mode
- 5 V/f for textile applications
- 6 V/f with FCC for textile applications
- 19 V/f control with independent voltage setpoint
- 20 Sensorless vector control
- 21 Vector control with sensor
- 22 Sensorless vector torque-control
- 23 Vector torque-control with sensor

Index:

- P1300[0] : 1st. Drive data set (DDS)
- P1300[1] : 2nd. Drive data set (DDS)
- P1300[2] : 3rd. Drive data set (DDS)

Dependency:

Limited internally to 200 Hz or 5 * rated motor frequency (P0305) when P1300 >= 20 (control mode = vector control). The value is displayed in r0209 (maximum frequency).

Note:

V/f mode:
 P1300 = 1 : V/f with FCC (flux current control)
 * Maintains motor flux current for improved efficiency.
 * If FCC is chosen, linear V/f is active at low frequencies.

P1300 = 2 : V/f with a quadratic curve
 * Suitable for centrifugal fans / pumps

Sensorless vector control (SLVC):
 SLVC can provide excellent performance for the following types of application:
 - Applications which require high torque performance
 - Applications which require fast respond to shock loading
 - Applications which require torque holding while passing through 0 Hz
 - Applications which require very accurate speed holding
 - Applications which require motor pull out protection

Restrictions:
 SLVC is dependent on the accuracy of the motor model being used and the measurements being performed by the inverter. There are therefore certain restrictions on the use of SLVC:
 - SLVC should not be used where the motor inverter rated current is less than 1 : 4.
 - a maximum frequency of 200 Hz.

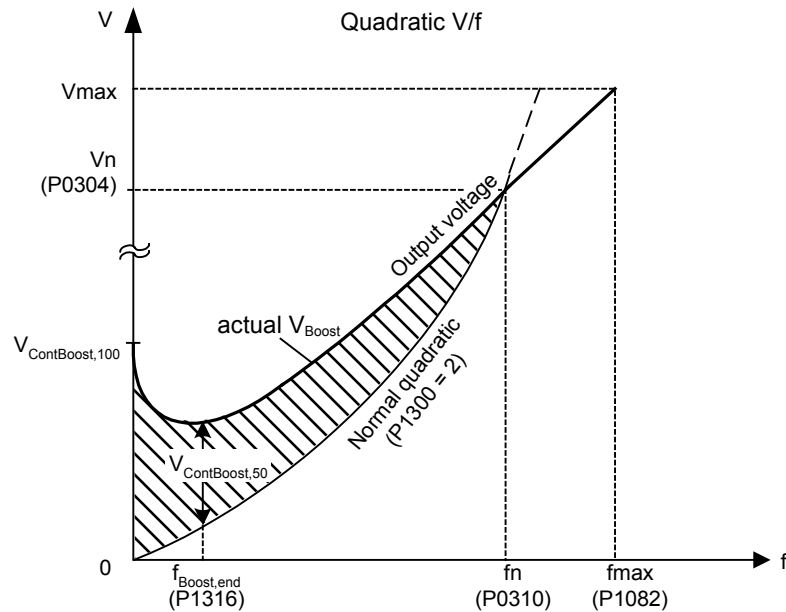
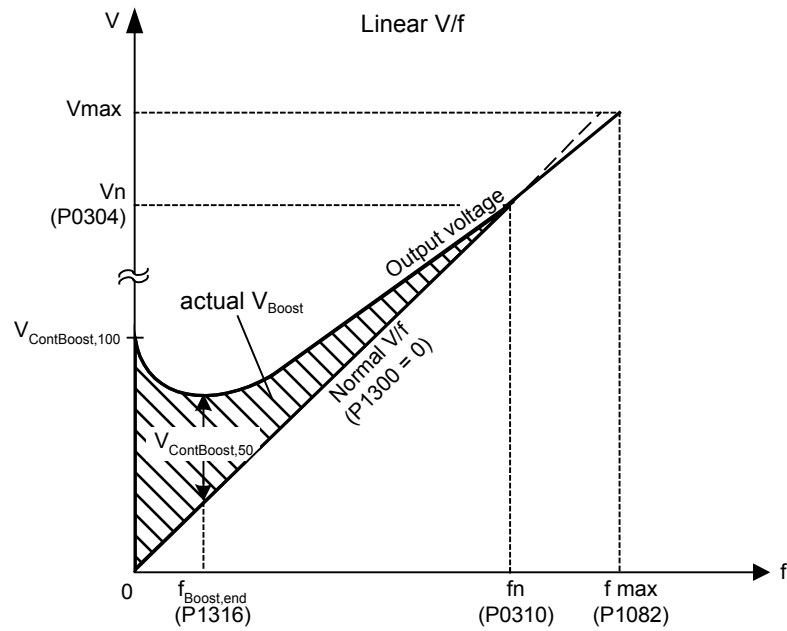
Recommended means of commissioning:
 For correct operation under SLVC control it is imperative that the name plate data of the motor (P0304 - P0310) is correctly entered and that the motor data identification (P1910) must be carried out on a cold motor. It is also necessary to ensure that the motor ambient temperature is correctly entered in P0625 if this is significantly different from the default value of 20°C. This must be done after the quick commissioning has been completed (P3900) but before the motor data identification measurements are carried out.

Optimisation:
 The following parameters can be adjusted by the user to improve performance.
 P0003 = 3
 P0342: Total / motor inertia ratio
 P1470: SLVC P gain
 P1472: SLVC I term
 P1610: SLVC continuous torque boost (open loop boost)
 P1750: Control word of motor model

P1310[3]	Continuous boost			Min: 0.0	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 50.0	
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 250.0	

At low output frequencies the output voltage is low to keep the flux level constant. However, the output voltage may be too low
 - for magnetisation the asynchronous motor
 - to hold the load
 - to overcome losses in the system. The output voltage can be increased using parameter P1310.

Defines boost level in [%] relative to P0305 (rated motor current) applicable to both linear and quadratic V/f curves according to the diagram below:



where voltage values are given

$$V_{\text{ContBoost},100} = \text{rated motor current (P0305)} * \text{Stator resistance (P0350)} * \text{Continuous boost (P1310)}$$

$$V_{\text{ContBoost},50} = V_{\text{ContBoost},100} / 2$$

Index:

- P1310[0] : 1st. Drive data set (DDS)
- P1310[1] : 2nd. Drive data set (DDS)
- P1310[2] : 3rd. Drive data set (DDS)

Dependency:

Setting in P0640 (motor overload factor [%]) limits the boost.

Continuous boost P1310 has no effect during vector operation because the inverter calculates continuously the optimum operating conditions.

Note:

The boost values are combined when continuous boost (P1310) used in conjunction with other boost parameters (acceleration boost P1311 and starting boost P1312).

However priorities are allocated to these parameters as follows:
P1310 > P1311 > P1312

Notice:

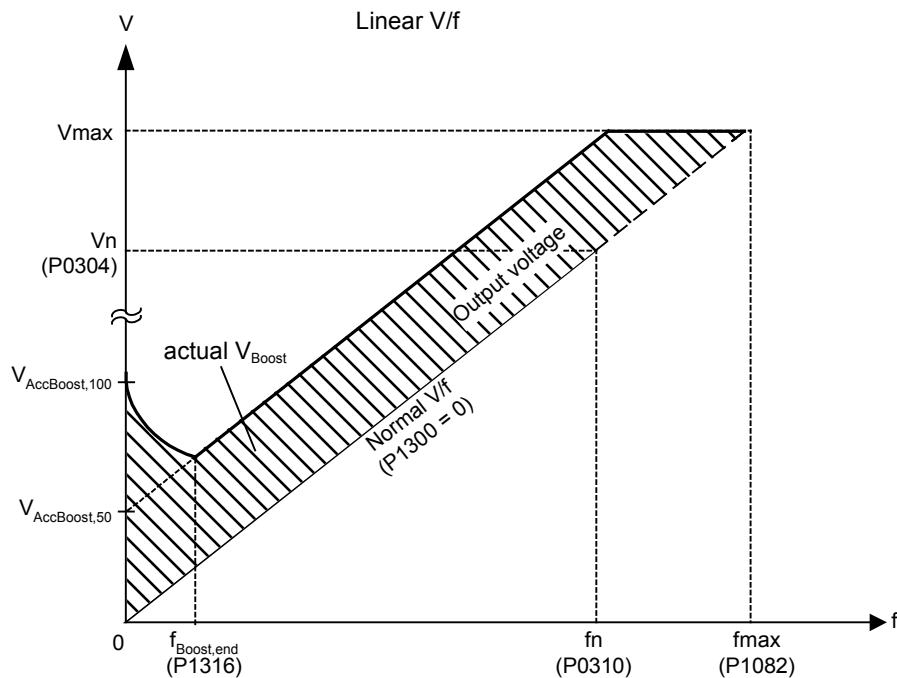
Increasing the boost levels increases motor heating (especially at standstill).

$$\text{Boosts} \leq 300 \cdot R_s \cdot I_{mot}$$

P1311[3]	Acceleration boost	Datatype: Float	Unit: %	Min: 0.0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 0.0	
	P-Group: CONTROL			Max: 250.0	

P1311 will only produce boost during ramping, and is therefore useful for additional torque during acceleration.

Applies boost in [%] relative to P0305 (rated motor current) following a positive setpoint change and drops back out once the setpoint is reached.



where voltage values are given

$$V_{_AccBoost,100} = \text{rated motor current (P0305)} \cdot \text{Stator resistance (P0350)} \cdot \text{Acceleration boost (P1311)}$$

$$V_{_AccBoost,50} = V_{_AccBoost,100} / 2$$

Index:

- P1311[0] : 1st. Drive data set (DDS)
- P1311[1] : 2nd. Drive data set (DDS)
- P1311[2] : 3rd. Drive data set (DDS)

Dependency:

Setting in P0640 (motor overload factor [%]) limits boost.

Acceleration boost P1311 has no effect during vector operation because the inverter calculates continuously the optimum operating conditions.

Note:

Acceleration boost can help to improve response to small positive setpoint changes.

$$\text{Boosts} \leq 300 \cdot R_s \cdot I_{mot}$$

Notice:

Increasing the boost level increases motor heating.

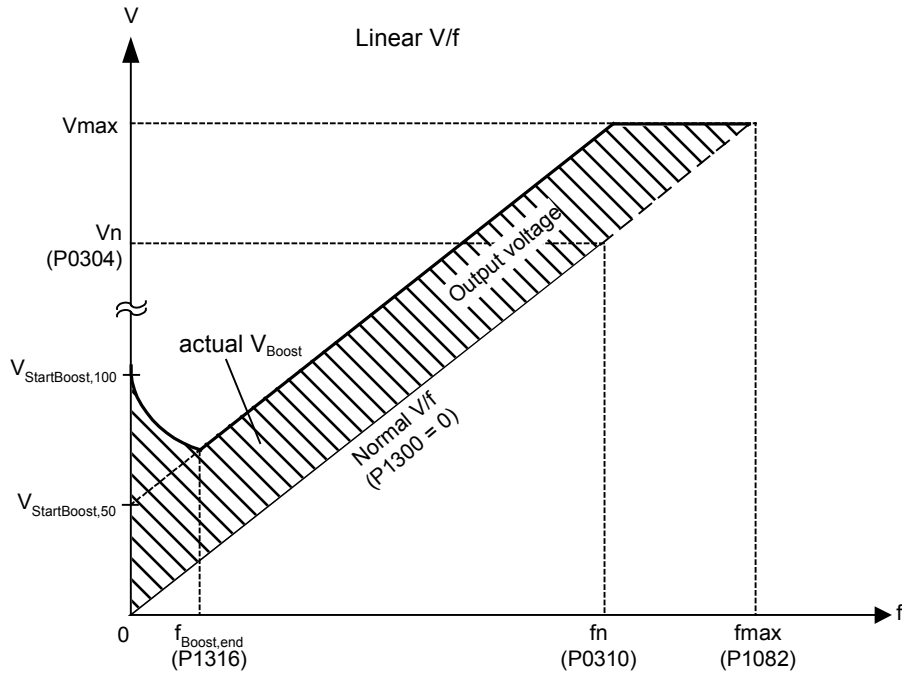
Details:

See note in P1310 for boost priorities.

P1312[3]	Starting boost	Datatype: Float	Unit: %	Min: 0.0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 0.0	
	P-Group: CONTROL			Max: 250.0	

Applies a constant linear offset (in [%] relative to P0305 (rated motor current)) to active V/f curve (either linear or quadratic) after an ON command and is active until setpoint is reached for the first time. This is useful for starting loads with high inertia.

Setting the starting boost (P1312) too high will cause the inverter to limit the current, which will in turn restrict the output frequency to below the setpoint frequency.



where voltage values are given

$$V_StartBoost,100 = \text{rated motor current (P0305)} \cdot \text{Stator resistance (P0350)} \cdot \text{Starting boost (P1312)}$$

$$V_StartBoost,50 = V_StartBoost,100 / 2$$

Index:

- P1312[0] : 1st. Drive data set (DDS)
- P1312[1] : 2nd. Drive data set (DDS)
- P1312[2] : 3rd. Drive data set (DDS)

Dependency:

Setting in P0640 (motor overload factor [%]) limits boost.

Starting boost P1312 has no effect during vector operation because the inverter calculates continuously the optimum operating conditions.

Notice:

Increasing the boost levels increases motor heating.

$$\text{Boosts} \leq 300 \cdot R_s \cdot I_{mot}$$

Details:

See note in P1310 for boost priorities.

r1315	CO: Total boost voltage	Datatype: Float	Unit: V	Min: -	Level: 4
	P-Group: CONTROL			Def: -	
				Max: -	

Displays total value of voltage boost (in volts).

P1316[3]	Boost end frequency	Min: 0.0	Level: 3	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: CONTROL	Active: Immediately		QuickComm. No

Defines point at which programmed boost reaches 50 % of its value.

This value is expressed in [%] relative to P0310 (rated motor frequency).

The default frequency is defined as follows:

$$f_{\text{Boost min}} = 2 \cdot \left(\frac{153}{\sqrt{P_{\text{motor}}}} + 3 \right)$$

Index:

- P1316[0] : 1st. Drive data set (DDS)
- P1316[1] : 2nd. Drive data set (DDS)
- P1316[2] : 3rd. Drive data set (DDS)

Note:

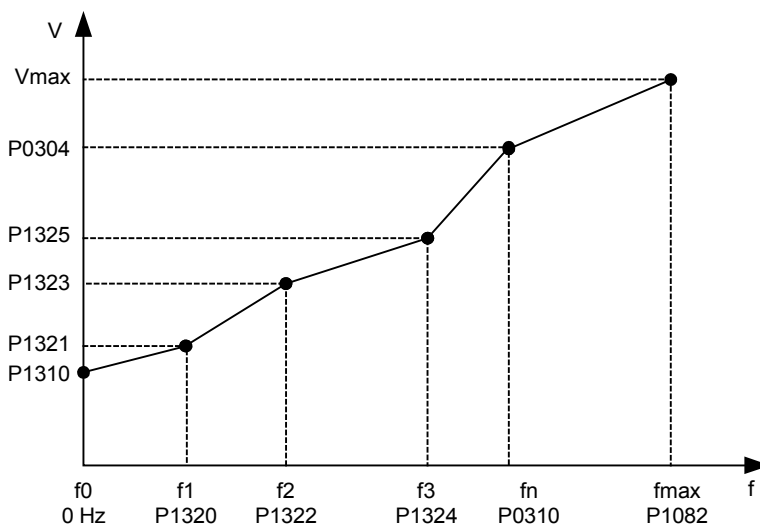
The expert user may change this value to alter the shape of the curve, e.g. to increase torque at a particular frequency.

Details:

See diagram in P1310 (continuous boost).

P1320[3]	Programmable V/f freq. coord. 1	Min: 0.00	Level: 3	
	CStat: CT	Datatype: Float		Unit: Hz
	P-Group: CONTROL	Active: Immediately		QuickComm. No

Sets V/f coordinates (P1320/1321 to P1324/1325) to define V/f characteristic.



$$P1310[V] = \frac{P1310[\%]}{100[\%]} \cdot \frac{r0395[\%]}{100[\%]} \cdot P0304[V]$$

Example:

This parameter can be used to provide correct torque at correct frequency and is useful when used with synchronous motors.

Index:

- P1320[0] : 1st. Drive data set (DDS)
- P1320[1] : 2nd. Drive data set (DDS)
- P1320[2] : 3rd. Drive data set (DDS)

Dependency:

To set parameter, select P1300 = 3 (V/f with programmable characteristic).

Note:

Linear interpolation will be applied between the individual data points.

V/f with programmable characteristic (P1300 = 3) has 3 programmable points. The two non-programmable points are:

- Continuous boost P1310 at zero 0 Hz
- Rated motor voltage P0304 at rated motor frequency P0310

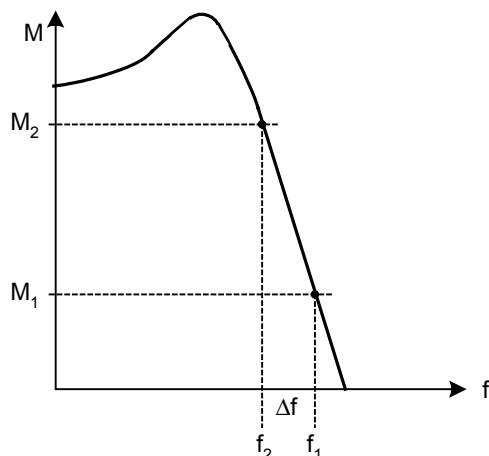
The acceleration boost and starting boost defined in P1311 and P1312 are applied to V/f with programmable characteristic.

P1321[3]	Programmable V/f volt. coord. 1	Min: 0.0	Level:
	CStat: CUT Datatype: Float Unit: V Def: 0.0 P-Group: CONTROL Active: Immediately QuickComm. No Max: 3000.0		3
	See P1320 (programmable V/f freq. coord. 1).		
Index:	P1321[0] : 1st. Drive data set (DDS) P1321[1] : 2nd. Drive data set (DDS) P1321[2] : 3rd. Drive data set (DDS)		
P1322[3]	Programmable V/f freq. coord. 2	Min: 0.00	Level:
	CStat: CT Datatype: Float Unit: Hz Def: 0.00 P-Group: CONTROL Active: Immediately QuickComm. No Max: 650.00		3
	See P1320 (programmable V/f freq. coord. 1).		
Index:	P1322[0] : 1st. Drive data set (DDS) P1322[1] : 2nd. Drive data set (DDS) P1322[2] : 3rd. Drive data set (DDS)		
P1323[3]	Programmable V/f volt. coord. 2	Min: 0.0	Level:
	CStat: CUT Datatype: Float Unit: V Def: 0.0 P-Group: CONTROL Active: Immediately QuickComm. No Max: 3000.0		3
	See P1320 (programmable V/f freq. coord. 1).		
Index:	P1323[0] : 1st. Drive data set (DDS) P1323[1] : 2nd. Drive data set (DDS) P1323[2] : 3rd. Drive data set (DDS)		
P1324[3]	Programmable V/f freq. coord. 3	Min: 0.00	Level:
	CStat: CT Datatype: Float Unit: Hz Def: 0.00 P-Group: CONTROL Active: Immediately QuickComm. No Max: 650.00		3
	See P1320 (programmable V/f freq. coord. 1).		
Index:	P1324[0] : 1st. Drive data set (DDS) P1324[1] : 2nd. Drive data set (DDS) P1324[2] : 3rd. Drive data set (DDS)		
P1325[3]	Programmable V/f volt. coord. 3	Min: 0.0	Level:
	CStat: CUT Datatype: Float Unit: V Def: 0.0 P-Group: CONTROL Active: Immediately QuickComm. No Max: 3000.0		3
	See P1320 (programmable V/f freq. coord. 1).		
Index:	P1325[0] : 1st. Drive data set (DDS) P1325[1] : 2nd. Drive data set (DDS) P1325[2] : 3rd. Drive data set (DDS)		
P1330[3]	CI: Voltage setpoint	Min: 0:0	Level:
	CStat: T Datatype: U32 Unit: - Def: 0:0 P-Group: CONTROL Active: first confirm QuickComm. No Max: 4000:0		3
	BICO parameter for selecting source of voltage setpoint for independent V/f control.		
Index:	P1330[0] : 1st. Command data set (CDS) P1330[1] : 2nd. Command data set (CDS) P1330[2] : 3rd. Command data set (CDS)		
P1333[3]	Start frequency for FCC	Min: 0.0	Level:
	CStat: CUT Datatype: Float Unit: % Def: 10.0 P-Group: CONTROL Active: Immediately QuickComm. No Max: 100.0		3
	Defines start frequency at which FCC (flux current control) is enabled as [%] of rated motor frequency (P0310).		
Index:	P1333[0] : 1st. Drive data set (DDS) P1333[1] : 2nd. Drive data set (DDS) P1333[2] : 3rd. Drive data set (DDS)		
Notice:	If this value is too low, the system may become unstable.		

P1335[3]	Slip compensation			Min: 0.0	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 0.0	
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 600.0	

Dynamically adjusts output frequency of inverter so that motor speed is kept constant independent of motor load.

Increasing the load from md1 to md2 (see diagram) will decrease the motor speed from f1 to f2, due to the slip. The inverter can compensate for this by increasing the output frequency slightly as the load increases. The inverter measures the current and increases the output frequency to compensate for the expected slip.



Value:

P1335 = 0 % :
Slip compensation disabled.

P1335 = 100 % :
This uses the motor data and motor model to add the rated slip frequency rated motor speed and rated motor current.

Index:

- P1335[0] : 1st. Drive data set (DDS)
- P1335[1] : 2nd. Drive data set (DDS)
- P1335[2] : 3rd. Drive data set (DDS)

Note:

Gain adjustment enables fine-tuning of the actual motor speed (see P1460 - gain speed control).

100% = standard setting for warm stator.

P1336[3]	Slip limit			Min: 0	Level: 2
	CStat: CUT	Datatype: U16	Unit: %	Def: 250	
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 600	

Compensation slip limit in [%] relative to r0330 (rated motor slip), which is added to frequency setpoint.

Index:

- P1336[0] : 1st. Drive data set (DDS)
- P1336[1] : 2nd. Drive data set (DDS)
- P1336[2] : 3rd. Drive data set (DDS)

Dependency:

Slip compensation (P1335) active.

r1337	CO: V/f slip frequency			Min: -	Level: 3
		Datatype: Float	Unit: %	Def: -	
	P-Group: CONTROL			Max: -	

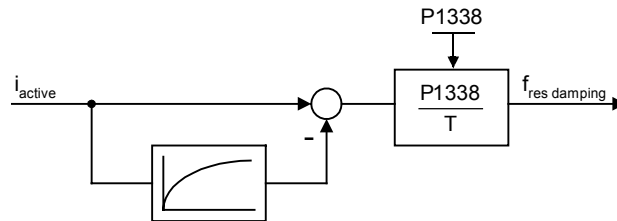
Displays actual compensated motor slip as [%]

Dependency:

Slip compensation (P1335) active.

P1338[3]	Resonance damping gain V/f				Min: 0.00	Level: 3
	CStat: CUT	Datatype: Float	Unit: -	Def: 0.00		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 10.00		

Defines resonance damping gain for V/f. Here, di/dt of the active current will be scaled by P1338 (see diagram below). If di/dt increases the resonance damping circuit decreases the inverter output frequency.

**Index:**

P1338[0] : 1st. Drive data set (DDS)
P1338[1] : 2nd. Drive data set (DDS)
P1338[2] : 3rd. Drive data set (DDS)

Note:

The resonance circuit damps oscillations of the active current which frequently occur during no-load operation.

In V/f modes (see P1300), the resonance damping circuit is active in a range from approx. 6 % to 80 % of rated motor frequency (P0310).

If the value of P1338 is too high, this will cause instability (forward control effect).

P1340[3]	I_{max} controller prop. gain				Min: 0.000	Level: 3
	CStat: CUT	Datatype: Float	Unit: -	Def: 0.000		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 0.499		

Proportional gain of the I_{max} frequency controller.

The I_{max} controller reduces inverter current if the output current exceeds the maximum motor current (r0067).

In linear V/f, parabolic V/f, FCC, and programmable V/f modes the I_{max} controller uses both a frequency controller (see parameters P1340 and P1341) and a voltage controller (see parameters P1344 and P1345). The frequency controller seeks to reduce current by limiting the inverter output frequency (to a minimum of the two times nominal slip frequency). If this action does not successfully remove the overcurrent condition, the inverter output voltage is reduced using the I_{max} voltage controller. When the overcurrent condition has been removed successfully, frequency limiting is removed using the ramp-up time set in P1120.

In linear V/f for textiles, FCC for textiles, or external V/f modes only the I_{max} voltage controller is used to reduce current (See parameters P1345 and P1346).

Index:

P1340[0] : 1st. Drive data set (DDS)
P1340[1] : 2nd. Drive data set (DDS)
P1340[2] : 3rd. Drive data set (DDS)

Note:

The I_{max} controller can be disabled by setting the frequency controller integral time P1341 to zero. This disables both the frequency and voltage controllers. Note that when disabled, the I_{max} controller will take no action to reduce current but overcurrent warnings will still be generated, and the Drive will trip in excessive overcurrent or overload conditions.

P1341[3]	I_{max} controller integral time				Min: 0.000	Level: 3
	CStat: CUT	Datatype: Float	Unit: s	Def: 0.300		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 50.000		

Integral time constant of the I_{max} frequency controller.

P1341 = 0 : I_{max} frequency and voltage controllers disabled
P1340 = 0 and P1341 > 0 : frequency controller enhanced integral
P1340 > 0 and P1341 > 0 : frequency controller normal PI control

See description in parameter P1340 for further information.

Index:

P1341[0] : 1st. Drive data set (DDS)
P1341[1] : 2nd. Drive data set (DDS)
P1341[2] : 3rd. Drive data set (DDS)

r1343	CO: I_{max} controller freq. output	Datatype: Float	Unit: Hz	Min: -	Def: -	Max: -	Level:
	P-Group: CONTROL						3
Displays effective frequency limitation.							
Dependency: If I _{max} controller not in operation, parameter normally shows f _{max} (P1082).							
r1344	CO: I_{max} controller volt. output	Datatype: Float	Unit: V	Min: -	Def: -	Max: -	Level:
	P-Group: CONTROL						3
Displays amount by which the I _{max} controller is reducing the inverter output voltage.							
P1345[3]	I_{max} controller prop. gain	Datatype: Float	Unit: -	Min: 0.000	Def: 0.250	Max: 5.499	Level:
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No				3
Proportional gain of the I _{max} voltage controller. See parameter P1340 for further information.							
Index: P1345[0] : 1st. Drive data set (DDS) P1345[1] : 2nd. Drive data set (DDS) P1345[2] : 3rd. Drive data set (DDS)							
P1346[3]	I_{max} controller integral time	Datatype: Float	Unit: s	Min: 0.000	Def: 0.300	Max: 50.000	Level:
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No				3
Integral time constant of the I _{max} voltage controller. P1341 = 0 : I _{max} frequency and voltage controllers disabled P1345 = 0 and P1346 > 0 : I _{max} voltage controller enhanced integral P1345 > 0 and P1346 > 0 : I _{max} voltage controller normal PI control							
See description in parameter P1340 for further information.							
Index: P1346[0] : 1st. Drive data set (DDS) P1346[1] : 2nd. Drive data set (DDS) P1346[2] : 3rd. Drive data set (DDS)							
P1350[3]	Voltage soft start	Datatype: U16	Unit: -	Min: 0	Def: 0	Max: 1	Level:
	CStat: CUT P-Group: CONTROL	Active: first confirm	QuickComm. No				3
Sets whether voltage is built up smoothly during magnetization time (ON) or whether it simply jumps to boost voltage (OFF)							
Settings: 0 OFF 1 ON							
Index: P1350[0] : 1st. Drive data set (DDS) P1350[1] : 2nd. Drive data set (DDS) P1350[2] : 3rd. Drive data set (DDS)							
Note: The settings for this parameter bring benefits and drawbacks: 0 = OFF (jump to boost voltage) Benefit: flux is built up quickly Drawback: motor may move 1 = ON (smooth voltage build-up) Benefit: motor less likely to move Drawback: flux build-up takes longer							
P1400[3]	Configuration of speed control	Datatype: U16	Unit: -	Min: 0	Def: 1	Max: 3	Level:
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No				3
Configuration for speed control.							
Bitfields:							
Bit00 Automatic Kp adaption		0	NO				
		1	YES				
Bit01 Integral freeze (SLVC)		0	NO				
		1	YES				
Index: P1400[0] : 1st. Drive data set (DDS) P1400[1] : 2nd. Drive data set (DDS) P1400[2] : 3rd. Drive data set (DDS)							

r1407	CO/BO: Status 2 of motor control	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
Displays status of motor control, which can be used to diagnose inverter status.					
Bitfields:					
	Bit00	V/f control enable	0	NO	
			1	YES	
	Bit01	SLVC enable	0	NO	
			1	YES	
	Bit02	Torque control enable	0	NO	
			1	YES	
	Bit05	Stop I-comp. speed control	0	NO	
			1	YES	
	Bit06	Set I-comp. speed controller	0	NO	
			1	YES	
	Bit08	Upper torque limit active	0	NO	
			1	YES	
	Bit09	Lower torque limit active	0	NO	
			1	YES	
	Bit10	Enable droop	0	NO	
			1	YES	
	Bit15	DDS change active	0	NO	
			1	YES	
Details:					
See P052 (CO/BO: Status word 1)					
r1438	CO: Freq. setpoint to controller	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
Displays setpoint of speed controller.					
P1442[3]	Filter time for act. speed	Datatype: U16	Unit: ms	Min: 0 Def: 4 Max: 32000	Level: 4
	CStat: CUT	Active: Immediately	QuickComm. No		
P-Group: CONTROL					
Sets time constant of PT1 filter to smooth actual speed of speed controller.					
Index:					
P1442[0] : 1st. Drive data set (DDS)					
P1442[1] : 2nd. Drive data set (DDS)					
P1442[2] : 3rd. Drive data set (DDS)					
r1445	CO: Act. filtered frequency	Datatype: Float	Unit: Hz	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
Displays filtered actual speed at speed controller input.					
P1452[3]	Filter time for act. speed (SLVC)	Datatype: U16	Unit: ms	Min: 0 Def: 4 Max: 32000	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No		
P-Group: CONTROL					
Sets time constant of PT1 filter to filter the speed deviation of speed controller in operation mode SLVC (sensorless vector control).					
Index:					
P1452[0] : 1st. Drive data set (DDS)					
P1452[1] : 2nd. Drive data set (DDS)					
P1452[2] : 3rd. Drive data set (DDS)					
P1460[3]	Gain speed controller	Datatype: Float	Unit: -	Min: 0.0 Def: 3.0 Max: 2000.0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No		
P-Group: CONTROL					
Enters gain of speed controller.					
Index:					
P1460[0] : 1st. Drive data set (DDS)					
P1460[1] : 2nd. Drive data set (DDS)					
P1460[2] : 3rd. Drive data set (DDS)					
P1462[3]	Integral time speed controller	Datatype: U16	Unit: ms	Min: 25 Def: 400 Max: 32001	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No		
P-Group: CONTROL					
Enters integral time of speed controller.					
Index:					
P1462[0] : 1st. Drive data set (DDS)					
P1462[1] : 2nd. Drive data set (DDS)					
P1462[2] : 3rd. Drive data set (DDS)					

P1470[3]	Gain speed controller (SLVC)	Min: 0.0	Level:
	CStat: CUT Datatype: Float Unit: - Def: 3.0 P-Group: CONTROL Active: Immediately QuickComm. No Max: 2000.0		2
Enters gain of speed controller for sensorless vector control (SLVC).			
Index: P1470[0] : 1st. Drive data set (DDS) P1470[1] : 2nd. Drive data set (DDS) P1470[2] : 3rd. Drive data set (DDS)			
P1472[3]	Integral time n-ctrl. (SLVC)	Min: 25	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 400 P-Group: CONTROL Active: Immediately QuickComm. No Max: 32001		2
Enters integral time of speed controller for sensorless vector control (SLVC).			
Index: P1472[0] : 1st. Drive data set (DDS) P1472[1] : 2nd. Drive data set (DDS) P1472[2] : 3rd. Drive data set (DDS)			
P1477[3]	BI: Set integrator of n-ctrl.	Min: 0:0	Level:
	CStat: CUT Datatype: U32 Unit: - Def: 0:0 P-Group: CONTROL Active: first confirm QuickComm. No Max: 4000:0		3
Selects source to read in command to enable speed controller.			
Index: P1477[0] : 1st. Command data set (CDS) P1477[1] : 2nd. Command data set (CDS) P1477[2] : 3rd. Command data set (CDS)			
P1478[3]	CI: Set integrator value n-ctrl.	Min: 0:0	Level:
	CStat: UT Datatype: U32 Unit: - Def: 0:0 P-Group: CONTROL Active: first confirm QuickComm. No Max: 4000:0		3
Selects source for integral part of speed controller.			
Index: P1478[0] : 1st. Command data set (CDS) P1478[1] : 2nd. Command data set (CDS) P1478[2] : 3rd. Command data set (CDS)			
Dependency: In case of sensorless vector control, integrator freezing must be selected (Bit 1 "Integral freeze (SLVC)" of P1400 has to be set) to save the integrator output.			
Note: If the setting command is not connected (P1477=0), a pending value is read in after pulse enable at the end of the excitation time (P0346) and the integral component of the speed controller is set once. If the P1482 (integral component of speed controller) is connected upon pulse enable, the integral component of the controller is set to the last value prior the pulse inhibit.			
Notice: Neither function works after flying start.			
r1482	CO: Integral output of n-ctrl.	Min: -	Level:
	Datatype: Float Unit: Nm Def: - P-Group: CONTROL Max: -		3
Displays integral part of speed controller output.			
P1488[3]	Droop input source	Min: 0	Level:
	CStat: CUT Datatype: U16 Unit: - Def: 0 P-Group: CONTROL Active: first confirm QuickComm. No Max: 3		3
Selects source of droop input signal.			
Settings: 0 Droop input disabled 1 Torque setpoint 2 Speed controller output 3 Speed controller integral output			
Index: P1488[0] : 1st. Drive data set (DDS) P1488[1] : 2nd. Drive data set (DDS) P1488[2] : 3rd. Drive data set (DDS)			
Dependency: Droop scaling (P1489) must be > 0 for droop to be effective.			

P1489[3]	Droop scaling			Min: 0.0	Level: 3
	CStat: CUT	Datatype: Float	Unit: -	Def: 0.05	
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 0.50	

Defines amount of droop in per unit at full load in [%].

Index:

P1489[0] : 1st. Drive data set (DDS)
P1489[1] : 2nd. Drive data set (DDS)
P1489[2] : 3rd. Drive data set (DDS)

Note:

If 0 is entered as value, no droop is applied.

r1490	CO: Droop frequency			Min: -	Level: 3
	CStat: CUT	Datatype: Float	Unit: Hz	Def: -	
	P-Group: CONTROL			Max: -	

Displays output signal of droop function.

This result of droop calculation is subtracted from the speed controller setpoint.

P1492[3]	Enable droop			Min: 0	Level: 3
	CStat: CUT	Datatype: U16	Unit: -	Def: 0	
	P-Group: CONTROL	Active: first confirm	QuickComm. No	Max: 1	

Enables droop.

Settings:

0 Disabled
1 Enabled

Index:

P1492[0] : 1st. Drive data set (DDS)
P1492[1] : 2nd. Drive data set (DDS)
P1492[2] : 3rd. Drive data set (DDS)

Dependency:

Effective only if droop scaling (P1489) > 0

P1496[3]	Scaling accel. precontrol			Min: 0.0	Level: 3
	CStat: CUT	Datatype: Float	Unit: %	Def: 0.0	
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 400.0	

Enters scaling of acceleration in [%].

Index:

P1496[0] : 1st. Drive data set (DDS)
P1496[1] : 2nd. Drive data set (DDS)
P1496[2] : 3rd. Drive data set (DDS)

Note:

P1496 = 100 % = standard setting

P1499[3]	Scaling accel. torque control			Min: 0.0	Level: 3
	CStat: CUT	Datatype: Float	Unit: %	Def: 100.0	
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 400.0	

Enters scaling of acceleration in [%] for sensorless torque control (SLVC) at low frequencies.

Index:

P1499[0] : 1st. Drive data set (DDS)
P1499[1] : 2nd. Drive data set (DDS)
P1499[2] : 3rd. Drive data set (DDS)

P1500[3]	Selection of torque setpoint				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: CONTROL	Active: first confirm	QuickComm. Yes	Max: 77		

Selects torque setpoint source. In the table of possible settings below, the main setpoint is selected from the least significant digit (i.e., 0 to 7) and any additional setpoint from the most significant digit (i.e., x0 through to x7).

Example:

Setting 24 selects the main setpoint (4) derived from the USS on BOP link with the additional setpoint (2) derived from the analog input. Single digits are main setpoints only with no additional setpoint.

Settings:

Use table below to select other settings, including an additional setpoint.

- 0 No main setpoint
- 2 Analog setpoint
- 4 USS on BOP link
- 5 USS on COM link
- 6 CB on COM link
- 7 Analog setpoint 2

Settings:

- 0 No main setpoint
- 2 Analog setpoint
- 4 USS on BOP link
- 5 USS on COM link
- 6 CB on COM link
- 7 Analog setpoint 2
- 20 No main setpoint + Analog setpoint
- 22 Analog setpoint + Analog setpoint
- 24 USS on BOP link + Analog setpoint
- 25 USS on COM link + Analog setpoint
- 26 CB on COM link + Analog setpoint
- 27 Analog setpoint 2 + Analog setpoint
- 40 No main setpoint + USS on BOP link
- 42 Analog setpoint + USS on BOP link
- 44 USS on BOP link + USS on BOP link
- 45 USS on COM link + USS on BOP link
- 46 CB on COM link + USS on BOP link
- 47 Analog setpoint 2 + USS on BOP link
- 50 No main setpoint + USS on COM link
- 52 Analog setpoint + USS on COM link
- 54 USS on BOP link + USS on COM link
- 55 USS on COM link + USS on COM link
- 57 Analog setpoint 2 + USS on COM link
- 60 No main setpoint + CB on COM link
- 62 Analog setpoint + CB on COM link
- 64 USS on BOP link + CB on COM link
- 66 CB on COM link + CB on COM link
- 67 Analog setpoint 2 + CB on COM link
- 70 No main setpoint + Analog setpoint 2
- 72 Analog setpoint + Analog setpoint 2
- 74 USS on BOP link + Analog setpoint 2
- 75 USS on COM link + Analog setpoint 2
- 76 CB on COM link + Analog setpoint 2
- 77 Analog setpoint 2 + Analog setpoint 2

Index:

- P1500[0] : 1st. Command data set (CDS)
- P1500[1] : 2nd. Command data set (CDS)
- P1500[2] : 3rd. Command data set (CDS)

P1501[3]	BI: Change to torque control				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: CONTROL	Active: first confirm	QuickComm. No	Max: 4000:0		

Selects command source from which it is possible to change between master (speed control) and slave (torque control).

Index:

- P1501[0] : 1st. Command data set (CDS)
- P1501[1] : 2nd. Command data set (CDS)
- P1501[2] : 3rd. Command data set (CDS)

P1503[3]	CI: Torque setpoint				Min: 0:0	Level: 3
	CStat: T	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: CONTROL	Active: first confirm	QuickComm. No	Max: 4000:0		

Selects source of torque setpoint for torque control.

Index:

- P1503[0] : 1st. Command data set (CDS)
- P1503[1] : 2nd. Command data set (CDS)
- P1503[2] : 3rd. Command data set (CDS)

r1508	CO: Torque setpoint	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays torque setpoint before limitation.				
P1511[3]	CI: Additional torque setpoint	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: T	Active: first confirm	QuickComm. No		
	P-Group: CONTROL				
	Selects source of additional torque setpoint for torque and speed control.				
Index:	P1511[0] : 1st. Command data set (CDS) P1511[1] : 2nd. Command data set (CDS) P1511[2] : 3rd. Command data set (CDS)				
r1515	CO: Additional torque setpoint	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
	Displays additional torque setpoint.				
r1518	CO: Acceleration torque	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
	Displays acceleration torque.				
P1520[3]	CO: Upper torque limit	Datatype: Float	Unit: Nm	Min: -99999.0 Def: 5.13 Max: 99999.0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No		
	P-Group: CONTROL				
	Specifies fixed value for upper torque limitation.				
Index:	P1520[0] : 1st. Drive data set (DDS) P1520[1] : 2nd. Drive data set (DDS) P1520[2] : 3rd. Drive data set (DDS)				
P1521[3]	CO: Lower torque limit	Datatype: Float	Unit: Nm	Min: -99999.0 Def: -5.13 Max: 99999.0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No		
	P-Group: CONTROL				
	Enters fixed value of lower torque limitation.				
Index:	P1521[0] : 1st. Drive data set (DDS) P1521[1] : 2nd. Drive data set (DDS) P1521[2] : 3rd. Drive data set (DDS)				
P1522[3]	CI: Upper torque limit	Datatype: U32	Unit: -	Min: 0:0 Def: 1520:0 Max: 4000:0	Level: 3
	CStat: T	Active: first confirm	QuickComm. No		
	P-Group: CONTROL				
	Selects source of upper torque limitation.				
Index:	P1522[0] : 1st. Command data set (CDS) P1522[1] : 2nd. Command data set (CDS) P1522[2] : 3rd. Command data set (CDS)				
P1523[3]	CI: Lower torque limit	Datatype: U32	Unit: -	Min: 0:0 Def: 1521:0 Max: 4000:0	Level: 3
	CStat: T	Active: first confirm	QuickComm. No		
	P-Group: CONTROL				
	Selects source of lower torque limitation.				
Index:	P1523[0] : 1st. Command data set (CDS) P1523[1] : 2nd. Command data set (CDS) P1523[2] : 3rd. Command data set (CDS)				
P1525[3]	Scaling lower torque limit	Datatype: Float	Unit: %	Min: -400.0 Def: 100.0 Max: 400.0	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No		
	P-Group: CONTROL				
	Enters scaling of lower torque limitation in [%].				
Index:	P1525[0] : 1st. Drive data set (DDS) P1525[1] : 2nd. Drive data set (DDS) P1525[2] : 3rd. Drive data set (DDS)				
Note:	P1525 = 100 % = standard setting				

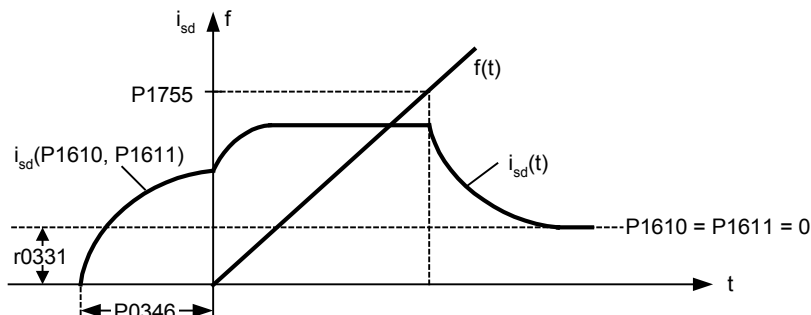
r1526	CO: Upper torque limitation	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
Displays actual upper torque limitation.					
r1527	CO: Lower torque limitation	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 3
	P-Group: CONTROL				
Displays actual lower torque limitation.					
P1530[3]	Motoring power limitation	Datatype: Float	Unit: -	Min: 0.0 Def: 0.75 Max: 8000.0	Level: 2
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No		
Defines fixed value of motoring power limitation.					
Index:					
P1530[0] : 1st. Drive data set (DDS)					
P1530[1] : 2nd. Drive data set (DDS)					
P1530[2] : 3rd. Drive data set (DDS)					
P1531[3]	Regenerative power limitation	Datatype: Float	Unit: -	Min: -8000.0 Def: -0.75 Max: 0.0	Level: 2
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No		
Enters fixed value of regenerative power limitation.					
Index:					
P1531[0] : 1st. Drive data set (DDS)					
P1531[1] : 2nd. Drive data set (DDS)					
P1531[2] : 3rd. Drive data set (DDS)					
r1536	CO: Max. trq. motoring current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
Displays maximum torque motoring current component.					
r1537	CO: Max trq regenerative current	Datatype: Float	Unit: A	Min: - Def: - Max: -	Level: 4
	P-Group: CONTROL				
Displays maximum torque of the regenerative current component.					
r1538	CO: Upper torque limit (total)	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
Displays total upper torque limitation.					
r1539	CO: Lower torque limit (total)	Datatype: Float	Unit: Nm	Min: - Def: - Max: -	Level: 2
	P-Group: CONTROL				
Displays total lower torque limitation.					
P1570[3]	CO: Fixed value flux setpoint	Datatype: Float	Unit: %	Min: 50.0 Def: 100.0 Max: 200.0	Level: 2
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No		
Defines fixed value of flux setpoint in [%] relative to rated motor flux.					
Index:					
P1570[0] : 1st. Drive data set (DDS)					
P1570[1] : 2nd. Drive data set (DDS)					
P1570[2] : 3rd. Drive data set (DDS)					
Note:					
If P1570 > 100%, the flux setpoint rises according to the load from 100 % to the value of P1570 between idling and nominal load.					
P1574[3]	Dynamic voltage headroom	Datatype: U16	Unit: V	Min: 0 Def: 10 Max: 150	Level: 3
	CStat: CUT P-Group: CONTROL	Active: Immediately	QuickComm. No		
Sets dynamic voltage headroom for vector control.					
Index:					
P1574[0] : 1st. Drive data set (DDS)					
P1574[1] : 2nd. Drive data set (DDS)					
P1574[2] : 3rd. Drive data set (DDS)					

P1580[3]	Efficiency optimization	Min: 0	Level:
	CStat: CUT Datatype: U16 Unit: % Def: 0		2
	P-Group: CONTROL Active: Immediately QuickComm. No Max: 100		
	Enters degree of efficiency optimization in [%].		
Index:	P1580[0] : 1st. Drive data set (DDS) P1580[1] : 2nd. Drive data set (DDS) P1580[2] : 3rd. Drive data set (DDS)		
Note:	If P1580 > 0, the dynamics for speed control (P1470, P1472) are restricted to prevent vibration. When no load is applied, a value of 100 % produces full flux reduction (i.e. to 50 % of rated motor flux). When using optimization, it is necessary to increase the smoothing time of the flux setpoint (P1582).		
P1582[3]	Smooth time for flux setpoint	Min: 4	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 15		3
	P-Group: CONTROL Active: Immediately QuickComm. No Max: 500		
	Sets time constant of PT1 filter to smooth flux setpoint.		
Index:	P1582[0] : 1st. Drive data set (DDS) P1582[1] : 2nd. Drive data set (DDS) P1582[2] : 3rd. Drive data set (DDS)		
r1583	CO: Flux setpoint (smoothed)	Min: -	Level:
	Datatype: Float Unit: % Def: -		4
	P-Group: CONTROL Max: -		
	Displays smoothed flux setpoint in [%] relative to rated motor flux.		
P1596[3]	Int. time field weak. controller	Min: 20	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 50		3
	P-Group: CONTROL Active: Immediately QuickComm. No Max: 32001		
	Sets integral time for field weakening controller.		
Index:	P1596[0] : 1st. Drive data set (DDS) P1596[1] : 2nd. Drive data set (DDS) P1596[2] : 3rd. Drive data set (DDS)		
r1597	CO: Outp. field weak. controller	Min: -	Level:
	Datatype: Float Unit: % Def: -		4
	P-Group: CONTROL Max: -		
	Displays output signal of field weakening controller in [%] relative to rated motor flux.		
r1598	CO: Flux setpoint (total)	Min: -	Level:
	Datatype: Float Unit: % Def: -		3
	P-Group: CONTROL Max: -		
	Displays total flux setpoint in [%] relative to the rated motor flux.		

P1610[3]	Continuous torque boost (SLVC)				Min: 0.0	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 50.0		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 200.0		

Sets continuous torque boost in lower speed range of SLVC (sensorless vector control).

Value is entered in [%] relative to rated motor torque r0333.



Index:

- P1610[0] : 1st. Drive data set (DDS)
- P1610[1] : 2nd. Drive data set (DDS)
- P1610[2] : 3rd. Drive data set (DDS)

Note:

P1610 = 100 % corresponds to rated motor torque.

P1611[3]	Acc. torque boost (SLVC)				Min: 0.0	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 0.0		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 200.0		

Sets acceleration torque boost in lower speed range of SLVC (sensorless vector control).

Value is entered in [%] relative to rated motor torque r0333.

Index:

- P1611[0] : 1st. Drive data set (DDS)
- P1611[1] : 2nd. Drive data set (DDS)
- P1611[2] : 3rd. Drive data set (DDS)

Note:

P1611 = 100 % corresponds to rated motor torque.

P1654[3]	Smooth time for Isq setpoint				Min: 2.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: ms	Def: 6.0		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 20.0		

Sets time constant of PT1 filter to filter setpoint of torque generating current component in field weakening range.

Index:

- P1654[0] : 1st. Drive data set (DDS)
- P1654[1] : 2nd. Drive data set (DDS)
- P1654[2] : 3rd. Drive data set (DDS)

P1715[3]	Gain current controller				Min: 0.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: -	Def: 0.25		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 5.0		

Enters gain of current controller.

Index:

- P1715[0] : 1st. Drive data set (DDS)
- P1715[1] : 2nd. Drive data set (DDS)
- P1715[2] : 3rd. Drive data set (DDS)

P1717[3]	Integral time current controller				Min: 1.0	Level: 4
	CStat: CUT	Datatype: Float	Unit: ms	Def: 4.1		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 50.0		

Enters integral time of current controller.

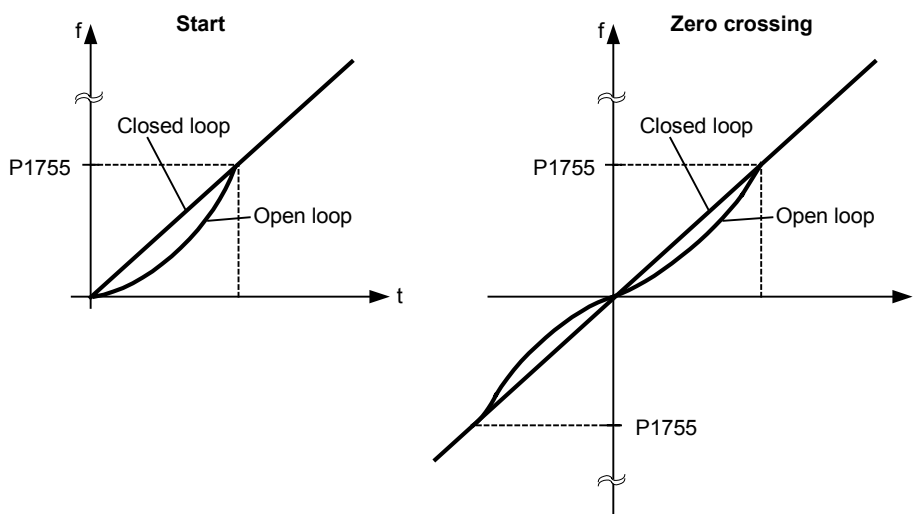
Index:

- P1717[0] : 1st. Drive data set (DDS)
- P1717[1] : 2nd. Drive data set (DDS)
- P1717[2] : 3rd. Drive data set (DDS)

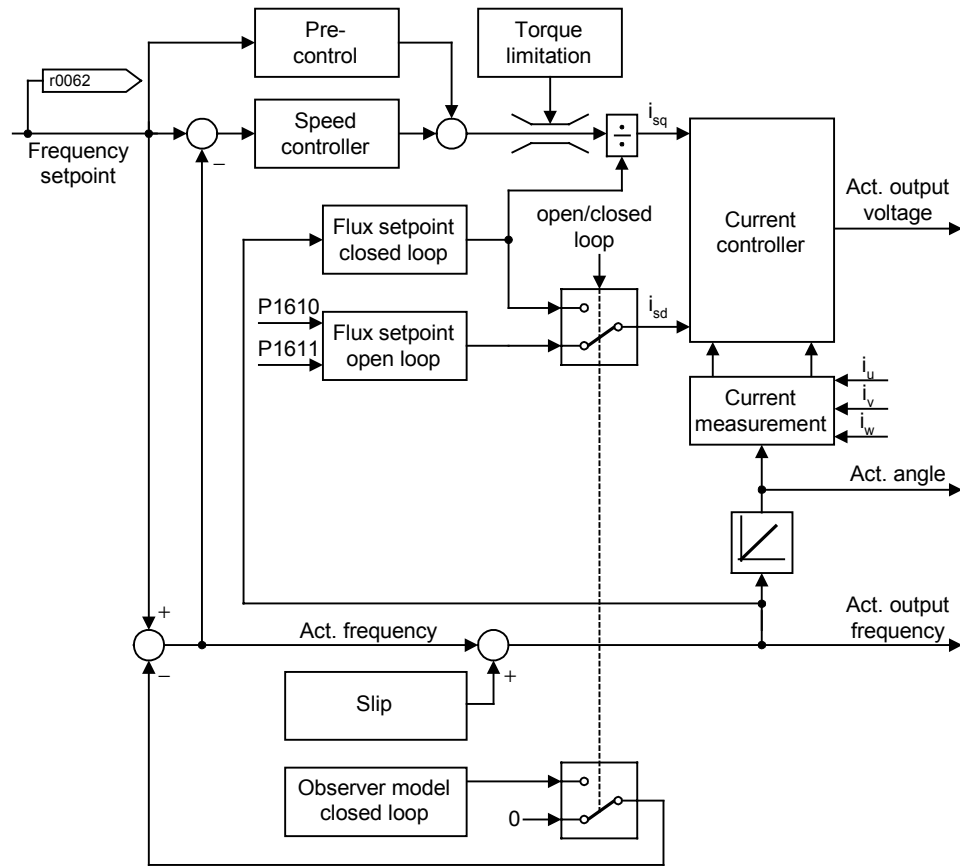
r1718	CO: Output of Isq controller Datatype: Float Unit: V P-Group: CONTROL	Min: - Def: - Max: -	Level: 4
Displays actual output of Isq current (torque current) controller (PI controller). It contains the proportional and integral part of the PI controller.			
r1719	CO: Integral output of Isq ctrl. Datatype: Float Unit: V P-Group: CONTROL	Min: - Def: - Max: -	Level: 4
Displays integral output of Isq current (torque current) controller (PI controller).			
r1723	CO: Output of Isd controller Datatype: Float Unit: V P-Group: CONTROL	Min: - Def: - Max: -	Level: 4
Displays actual output of Isd current (flux current) controller (PI controller). It contains the proportional and integral part of the PI controller.			
r1724	CO: Integral output of Isd ctrl. Datatype: Float Unit: V P-Group: CONTROL	Min: - Def: - Max: -	Level: 4
Displays integral output of Isd current (flux current) controller (PI controller).			
r1725	CO: Integral limit of Isd ctrl. Datatype: Float Unit: V P-Group: CONTROL	Min: - Def: - Max: -	Level: 4
Displays limit of integral output voltage setpoint of Isd current controller.			
r1728	CO: Decoupling voltage Datatype: Float Unit: V P-Group: CONTROL	Min: - Def: - Max: -	Level: 4
Displays actual output voltage setpoint of cross channel decoupling.			
P1740	Gain for oscillation damping CStat: CUT Datatype: Float Unit: - P-Group: CONTROL Active: Immediately QuickComm. No	Min: 0.000 Def: 0.000 Max: 10.000	Level: 3
Sets oscillation damping gain for sensorless vector control at low frequencies.			
P1750[3]	Control word of motor model CStat: CUT Datatype: U16 Unit: - P-Group: CONTROL Active: first confirm QuickComm. No	Min: 0 Def: 1 Max: 3	Level: 3

Control word of motor model. This parameter controls the operation of the sensorless vector control (SLVC) at very low frequencies. This therefore includes the following conditions:

- Operation directly after an ON command
- zero crossing.



SLVC open loop means that the speed controller does not get any speed feedback from the observer model.



Bitfields:

Bit00	Start SLVC open loop	0	NO
		1	YES
Bit01	Zero crossing SLVC open loop	0	NO
		1	YES

Index:

- P1750[0] : 1st. Drive data set (DDS)
- P1750[1] : 2nd. Drive data set (DDS)
- P1750[2] : 3rd. Drive data set (DDS)

r1751	Status word of motor model	Min: -	Level:
	Datatype: U16	Def: -	3
	P-Group: CONTROL	Max: -	

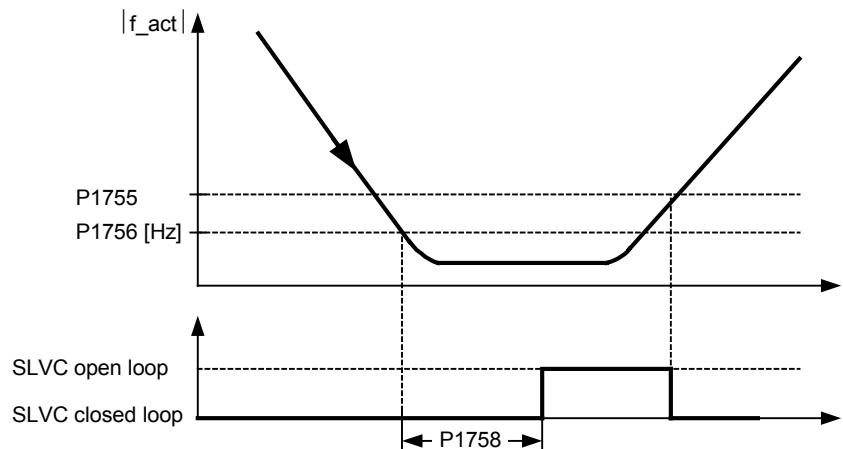
Displays status of transition from feed-forward to observer-control and vice versa.

Bitfields:

Bit00	Transit to open loop	0	NO
		1	YES
Bit01	N-adaption enabled	0	NO
		1	YES
Bit02	Switch freq. to observer	0	NO
		1	YES
Bit03	Speed controller enabled	0	NO
		1	YES
Bit04	Current injection	0	NO
		1	YES
Bit05	Start flux decrease	0	NO
		1	YES
Bit14	Rs adapted	0	NO
		1	YES
Bit15	Xh adapted	0	NO
		1	YES

P1755[3]	Start-freq. motor model (SLVC)				Min: 0.1	Level: 3
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 5.0		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 250.0		

Enters start frequency of sensorless vector control (SLVC).



$$P1756 \text{ [Hz]} = P1755 \text{ [Hz]} \cdot \frac{P1756 \text{ [\%]}}{100 \text{ [\%]}}$$

Index:

- P1755[0] : 1st. Drive data set (DDS)
- P1755[1] : 2nd. Drive data set (DDS)
- P1755[2] : 3rd. Drive data set (DDS)

P1756[3]	Hyst.-freq. motor model (SLVC)				Min: 10.0	Level: 3
	CStat: CUT	Datatype: Float	Unit: %	Def: 50.0		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 100.0		

Enters hysteresis frequency (in percent of start-frequency) to switch back from sensorless-vector-control (SLVC) to current model.

Value is entered in the range 0 % to 50 % relative to P1755 (SLVC stop frequency).

Index:

- P1756[0] : 1st. Drive data set (DDS)
- P1756[1] : 2nd. Drive data set (DDS)
- P1756[2] : 3rd. Drive data set (DDS)

P1758[3]	T(wait) transit to feed-fwd-mode				Min: 100	Level: 3
	CStat: CUT	Datatype: U16	Unit: ms	Def: 1500		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 2000		

Sets waiting time for change from observer-mode to feed-forward-mode

Index:

- P1758[0] : 1st. Drive data set (DDS)
- P1758[1] : 2nd. Drive data set (DDS)
- P1758[2] : 3rd. Drive data set (DDS)

P1759[3]	T(wait) for n-adaption to settle				Min: 50	Level: 3
	CStat: CUT	Datatype: U16	Unit: ms	Def: 100		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 2000		

Sets waiting time while transition is done from open-loop to close-loop operation

Index:

- P1759[0] : 1st. Drive data set (DDS)
- P1759[1] : 2nd. Drive data set (DDS)
- P1759[2] : 3rd. Drive data set (DDS)

P1764[3]	Kp of n-adaption (SLVC)				Min: 0.0	Level: 3
	CStat: CUT	Datatype: Float	Unit: -	Def: 0.2		
	P-Group: CONTROL	Active: Immediately	QuickComm. No	Max: 2.5		

Enters gain of speed adaptation controller for sensorless vector control.

Index:

- P1764[0] : 1st. Drive data set (DDS)
- P1764[1] : 2nd. Drive data set (DDS)
- P1764[2] : 3rd. Drive data set (DDS)

P1767[3]	Tn of n-adaption (SLVC)	Min: 1.0	Level:
	CStat: CUT Datatype: Float Unit: ms Def: 4.0		4
	P-Group: CONTROL Active: Immediately QuickComm. No Max: 200.0		

Enters speed adaptation controller integral time.

Index:

- P1767[0] : 1st. Drive data set (DDS)
- P1767[1] : 2nd. Drive data set (DDS)
- P1767[2] : 3rd. Drive data set (DDS)

r1770	CO: Prop. output of n-adaption	Min: -	Level:
	Datatype: Float Unit: Hz Def: -		3
	P-Group: CONTROL Max: -		

Displays integral part of speed adaptation controller.

r1771	CO: Int. output of n-adaption	Min: -	Level:
	Datatype: Float Unit: Hz Def: -		3
	P-Group: CONTROL Max: -		

Displays integral part of speed adaptation controller.

r1778	CO: Flux angle difference	Min: -	Level:
	Datatype: Float Unit: ° Def: -		4
	P-Group: CONTROL Max: -		

Displays flux angle difference between motor model and current transformation before motor model is active.

P1780[3]	Control word of Rs/Rr-adaption	Min: 0	Level:
	CStat: CUT Datatype: U16 Unit: - Def: 3		3
	P-Group: CONTROL Active: first confirm QuickComm. No Max: 3		

Enables thermal adaptation of stator and rotor resistance to reduce torque errors in speed/torque regulation with speed sensor, or speed errors in speed/torque regulation without speed sensor.

Bitfields:

- Bit00 Enable thermal Rs/Rr-adapt. 0 NO
1 YES
- Bit01 Enable observer Rs/Xm-adapt. 0 NO
1 YES

Index:

- P1780[0] : 1st. Drive data set (DDS)
- P1780[1] : 2nd. Drive data set (DDS)
- P1780[2] : 3rd. Drive data set (DDS)

Note:

Only stator resistance adaptation is carried out for synchronous motors.

P1781[3]	Tn of Rs-adaption	Min: 10	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 100		4
	P-Group: CONTROL Active: Immediately QuickComm. No Max: 2000		

Enters Rs-adaptation controller integral time.

Index:

- P1781[0] : 1st. Drive data set (DDS)
- P1781[1] : 2nd. Drive data set (DDS)
- P1781[2] : 3rd. Drive data set (DDS)

r1782	Output of Rs-adaption	Min: -	Level:
	Datatype: Float Unit: % Def: -		3
	P-Group: CONTROL Max: -		

Displays stator resistance adaptation from controller in [%] relative to rated motor resistance.

Note:

The rated motor resistance is given by the formula:

$$\text{Rated motor resistance} = P0304 \cdot \sqrt{3} \cdot P0305$$

P1786[3]	Tn of Xm-adaption	Min: 10	Level:
	CStat: CUT Datatype: U16 Unit: ms Def: 100		4
	P-Group: CONTROL Active: Immediately QuickComm. No Max: 2000		

Enters Xm-adaptation controller integral time.

Index:

- P1786[0] : 1st. Drive data set (DDS)
- P1786[1] : 2nd. Drive data set (DDS)
- P1786[2] : 3rd. Drive data set (DDS)

r1787	Output of Xm-adaption	Datatype: Float	Unit: %	Min: -	Def: -	Max: -	Level:
	P-Group: CONTROL						3
Displays main reactance adaptation from controller in [%] relative to rated impedance.							
Note:							
The rated motor resistance is given by the formula:							
Rated motor resistance = $P0304 \cdot \sqrt{3} \cdot P0305$							
P1800	Pulse frequency	Datatype: U16	Unit: kHz	Min: 2	Def: 4	Max: 16	Level:
	CStat: CUT	Active: Immediately	QuickComm. No				2
Sets pulse frequency of power switches in inverter. The frequency can be changed in steps of 2 kHz.							
Pulse frequencies > 4 kHz selected on 380-480 V units reduce the maximum continuous motor current.							
Dependency:							
Minimum pulse frequency depends on P1082 (maximum frequency) and P0310 (rated motor frequency).							
Note:							
At 4 kHz, full output current is obtained up to 50 degrees C (CT mode); over 50 degrees C, full output may be obtained at 8 kHz.							
If silent operation is not absolutely necessary, lower pulse frequencies may be selected to reduce inverter losses and radio-frequency emissions.							
Under certain circumstances, the inverter may reduce the switching frequency to provide protection against over-temperature (see P0290).							
r1801	CO: Act. pulse frequency	Datatype: U16	Unit: kHz	Min: -	Def: -	Max: -	Level:
	P-Group: INVERTER						3
Actual pulse frequency of power switches in inverter.							
Notice:							
Under certain conditions (inverter overtemperature, see P0290), this can differ from the values selected in P1800 (pulse frequency).							
P1802	Modulator mode	Datatype: U16	Unit: -	Min: 0	Def: 0	Max: 2	Level:
	CStat: CUT	Active: first confirm	QuickComm. No				3
Selects inverter modulator mode.							
Settings:							
0 SVM/ASVM automatic mode							
1 Asymmetric SVM							
2 Space vector modulation							
Notice:							
Asymmetric space vector modulation (ASVM) produces lower switching losses than space vector modulation (SVM), but may cause irregular rotation at very low speeds.							
Space vector modulation (SVM) with over-modulation may produce current waveform distortion at high output voltages.							
Space vector modulation (SVM) without over-modulation will reduce maximum output voltage available to motor.							
P1803[3]	Max. modulation	Datatype: Float	Unit: %	Min: 20.0	Def: 106.0	Max: 150.0	Level:
	CStat: CUT	Active: Immediately	QuickComm. No				4
Sets maximum modulation index.							
Index:							
P1803[0] : 1st. Drive data set (DDS)							
P1803[1] : 2nd. Drive data set (DDS)							
P1803[2] : 3rd. Drive data set (DDS)							
Note:							
P1803 = 100 % = limit for over-control (for ideal inverter without switching delay). For vector control the modulation limit will be reduced automatically with 4 %.							

P1820[3]	Reverse output phase sequence	Min: 0	Level: 2
	CStat: CT Datatype: U16 Unit: - Def: 0		
	P-Group: INVERTER Active: first confirm QuickComm. No Max: 1		

Changes direction of motor rotation without changing setpoint polarity.

Settings:

0 OFF
1 ON

Index:

P1820[0] : 1st. Drive data set (DDS)
P1820[1] : 2nd. Drive data set (DDS)
P1820[2] : 3rd. Drive data set (DDS)

Dependency:

If positive and negative revolution is enabled, frequency setpoint is directly used.
If both positive and negative revolution are disabled, reference value is set to zero.

Details:

See P1000 (select frequency setpoint)

P1825	On-state voltage of IGBT	Min: 0.0	Level: 4
	CStat: CUT Datatype: Float Unit: V Def: 1.4		
	P-Group: INVERTER Active: Immediately QuickComm. No Max: 20.0		

Corrects on-state voltage of the IGBTs.

P1828	Gating unit dead time	Min: 0.00	Level: 4
	CStat: CUT Datatype: Float Unit: us Def: 0.50		
	P-Group: INVERTER Active: first confirm QuickComm. No Max: 3.50		

Sets compensation time of gating unit interlock.

P1909[3]	Ctrl. word of motor data ident.	Min: 0	Level: 4
	CStat: CUT Datatype: U16 Unit: - Def: 1		
	P-Group: CONTROL Active: first confirm QuickComm. No Max: 1		

Control word of motor data identification.

Bitfields:

Bit00	Estimation of Xs	0	NO
		1	YES

Index:

P1909[0] : 1st. Drive data set (DDS)
P1909[1] : 2nd. Drive data set (DDS)
P1909[2] : 3rd. Drive data set (DDS)

P1910	Select motor data identification				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: MOTOR	Active: first confirm	QuickComm. Yes	Max: 20		

Performs a motor data identification.

Settings:

P1910 = 1: All motor data and inverter characteristic will be identified and parameter will be changed.

- * P0350 stator resistance,
- * P0354 rotor resistance,
- * P0356 stator leakage inductance,
- * P0358 rotor leakage inductance,
- * P0360 main inductance

- * P1825 on-state voltage of IGBTs
- * P1828 compensation time of gating unit interlock

P1910 = 3: Saturation curve will be identified and parameter will be changed.

- * P0362 ... P0365 magnetizing curve flux 1 .. 4
- * P0366 ... P0369 magnetizing curve imag 1 .. 4

Settings:

- | | |
|----|---|
| 0 | Disabled |
| 1 | Identification of all parameters with parameter change |
| 2 | Identification of all parameters without parameter change |
| 3 | Identification of saturation curve with parameter change |
| 4 | Identification of saturation curve without parameter change |
| 5 | Identification of XsigDyn (r1920) without parameter change |
| 6 | Identification of Tdead (r1926) without parameter change |
| 7 | Identification of Rs (r1912) without parameter change |
| 8 | Identification of Xs (r1915) without parameter change |
| 9 | Identification of Tr (r1913) without parameter change |
| 10 | Identification of Xsigma (r1914) without parameter change |
| 20 | Set voltage vector |

Note:

Before selecting motor data identification, "Quick commissioning" has to be performed in advance.

Once enabled (P1910 = 1), A0541 generates a warning that the next ON command will initiate measurement of motor parameters.

Notice:

When choosing the setting for measurement, observe the following:

1. "with parameter change"

means that the values are actually adopted as Pxxxx parameter settings (see common settings above) and applied to the controller as well as being shown in the read-only parameters below.

2. "without parameter change"

means that the values are only displayed, i.e. shown for checking purposes in the read-only parameters r1912 (identified stator resistance), r1913 (identified rotor time constant), r1914 (ident. total leakage reactance), r1915/r1916/r1917/r1918/r1919 (identified nominal stator reactance/identified stator reactance 1 to 4), r1925 (IGBT on-state voltage) and r1926 (identified gating unit dead time). The values are not applied to the controller.

P1911	No. of phase to be identified				Min: 1	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 3		
	P-Group: INVERTER	Active: Immediately	QuickComm. No	Max: 3		

Selects maximum number of motor phases to be identified.

r1912[3]	Identified stator resistance				Min: -	Level: 2
			Datatype: Float	Unit: Ohm	Def: -	
	P-Group: MOTOR				Max: -	

Displays measured stator resistance value (line-to-line) in [Ohms]

Index:

- r1912[0] : U_phase
- r1912[1] : V_phase
- r1912[2] : W_phase

Note:

This value is measured using P1910 = 1 or 2 , i.e., identification of all parameters with/without change.

r1913[3]	Identified rotor time constant				Min: -	Level: 2
			Datatype: Float	Unit: ms	Def: -	
	P-Group: MOTOR				Max: -	

Displays identified rotor time constant.

Index:

- r1913[0] : U_phase
- r1913[1] : V_phase
- r1913[2] : W_phase

r1914[3]	Ident. total leakage inductance	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified total leakage inductance.				
Index:	r1914[0] : U_phase r1914[1] : V_phase r1914[2] : W_phase				
r1915[3]	Ident. nom. stator inductance	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified stator inductance.				
Index:	r1915[0] : U_phase r1915[1] : V_phase r1915[2] : W_phase				
Notice:	If the value identified (Ls = stator inductance) does not lie within the range 50 % < Xs [p. u.] < 500 % fault message 41 (motor data identification failure) is issued.				
	P0949 provides further information (fault value = 4 in this case).				
r1916[3]	Identified stator inductance 1	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified stator inductance.				
Index:	r1916[0] : U_phase r1916[1] : V_phase r1916[2] : W_phase				
Details:	See P1915 (identified nominal stator inductance).				
r1917[3]	Identified stator inductance 2	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified stator inductance.				
Index:	r1917[0] : U_phase r1917[1] : V_phase r1917[2] : W_phase				
Details:	See P1915 (identified nominal stator inductance)				
r1918[3]	Identified stator inductance 3	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified stator inductance.				
Index:	r1918[0] : U_phase r1918[1] : V_phase r1918[2] : W_phase				
Details:	See P1915 (identified nominal stator reactance)				
r1919[3]	Identified stator inductance 4	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified stator inductance.				
Index:	r1919[0] : U_phase r1919[1] : V_phase r1919[2] : W_phase				
Details:	See P1915 (identified nominal stator inductance)				

r1920[3]	Identified dyn. leak. inductance	Datatype: Float	Unit: -	Min: - Def: - Max: -	Level: 2
	P-Group: MOTOR				
	Displays identified total dynamic leakage inductance.				
Index:	r1920[0] : U_phase r1920[1] : V_phase r1920[2] : W_phase				
r1925	Identified on-state voltage	Datatype: Float	Unit: V	Min: - Def: - Max: -	Level: 2
	P-Group: INVERTER				
	Displays identified on-state voltage of IGBT.				
r1926	Ident. gating unit dead time	Datatype: Float	Unit: us	Min: - Def: - Max: -	Level: 2
	P-Group: INVERTER				
	Displays identified dead time of gating unit interlock.				
P1930	Voltage setpoint for calibration	Datatype: Float	Unit: V	Min: 0 Def: 0 Max: 1000	Level: 4
	CStat: CUT				
	P-Group: INVERTER	Active: Immediately	QuickComm. No		
	Specifies reference voltage for generation of a test voltage vector (e.g. used for shunt calibration).				
P1931	Phase	Datatype: U16	Unit: -	Min: 1 Def: 1 Max: 6	Level: 4
	CStat: CUT				
	P-Group: INVERTER	Active: Immediately	QuickComm. No		
	Defines phase of voltage vector				
P1960	Speed control optimisation	Datatype: U16	Unit: -	Min: 0 Def: 0 Max: 1	Level: 3
	CStat: CT				
	P-Group: MOTOR	Active: first confirm	QuickComm. Yes		
	The drive should be set into a vector mode (P1300 = 20 or 21) to carry out speed controller optimisation. When speed controller optimisation is enabled (P1960 = 1) the warning A542 will become active.				
	When the drive is next started it will do the optimisation tests. The drive will accelerate the motor to 20 % of P0310 (rated motor frequency) using the ramp up time P1120 and then under torque control go to 50 % of P0310 (rated motor frequency). The drive will then ramp back down to 20 % using the ramp down time P1121. This procedure is repeated several times and then average time taken. From this an estimation of the inertia of the load on the motor can be derived. From this the inertia ratio parameter (P0342) and the Kp gains for VC (P1360) and SLVC (P1370) are modified to give a response suitable for the measured inertia.				
	Settings:				
	0	Disable			
	1	Enable			
	Note:	When the test is complete P1960 will be cleared to zero.			
	Notice:	If there is a problem due to instability the drive may drip with an F42 fault if a stable value has not been obtained on the ramp up within a reasonable time.			
	It should be noted that the Dc link controller should be enabled whilst doing the test as otherwise overvoltage trips maybe experienced. This will however depend on the ramp down time and the system inertia.				
	The speed loop optimisation may not be suitable for some applications due to the nature of the test i.e. accelerating under torque control from 20 % to 50 %.				
P2000[3]	Reference frequency	Datatype: Float	Unit: Hz	Min: 1.00 Def: 50.00 Max: 650.00	Level: 2
	CStat: CT				
	P-Group: COMM	Active: first confirm	QuickComm. No		
	Full-scale frequency setting used by serial link (corresponds to 4000H), analog I/O and P/D controller.				
Index:	P2000[0] : 1st. Drive data set (DDS) P2000[1] : 2nd. Drive data set (DDS) P2000[2] : 3rd. Drive data set (DDS)				

P2001[3]	Reference voltage	Min: 10	Level: 3	
	CStat: CT	Datatype: U16		Unit: V
	P-Group: COMM	Active: first confirm		QuickComm. No Def: 1000 Max: 2000

Full-scale output voltage (i.e. 100 %) used over serial link (corresponds to 4000H).

Example:

P2001 = 230 specifies that 4000H received via USS denotes 230 V.

Index:

- P2001[0] : 1st. Drive data set (DDS)
- P2001[1] : 2nd. Drive data set (DDS)
- P2001[2] : 3rd. Drive data set (DDS)

P2002[3]	Reference current	Min: 0.10	Level: 3	
	CStat: CT	Datatype: Float		Unit: A
	P-Group: COMM	Active: first confirm		QuickComm. No Def: 0.10 Max: 10000.00

Full-scale output current used over serial link (corresponds to 4000H).

Index:

- P2002[0] : 1st. Drive data set (DDS)
- P2002[1] : 2nd. Drive data set (DDS)
- P2002[2] : 3rd. Drive data set (DDS)

P2003[3]	Reference torque	Min: 0.10	Level: 3	
	CStat: CT	Datatype: Float		Unit: Nm
	P-Group: COMM	Active: first confirm		QuickComm. No Def: 0.75 Max: 99999.00

Full-scale reference torque used over the serial link (corresponds to 4000H).

Index:

- P2003[0] : 1st. Drive data set (DDS)
- P2003[1] : 2nd. Drive data set (DDS)
- P2003[2] : 3rd. Drive data set (DDS)

r2004[3]	Reference power	Min: -	Level: 3
	Datatype: Float	Unit: -	
	P-Group: COMM	Def: - Max: -	

Full-scale reference power used over the serial link (corresponds to 4000H).

Index:

- r2004[0] : 1st. Drive data set (DDS)
- r2004[1] : 2nd. Drive data set (DDS)
- r2004[2] : 3rd. Drive data set (DDS)

P2009[2]	USS normalization	Min: 0	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: COMM	Active: first confirm		QuickComm. No Def: 0 Max: 1

Enables special normalization for USS.

Settings:

- 0 Disabled
- 1 Enabled

Index:

- P2009[0] : Serial interface COM link
- P2009[1] : Serial interface BOP link

Note:

If enabled, the main setpoint (word 2 in PZD) is not interpreted as 100 % = 4000H, but as "absolute" instead (e.g. 4000H = 16384 means 163.84 Hz).

P2010[2]	USS baudrate	Min: 4	Level: 2	
	CStat: CUT	Datatype: U16		Unit: -
	P-Group: COMM	Active: first confirm		QuickComm. No Def: 6 Max: 12

Sets baud rate for USS communication.

Settings:

- 4 2400 baud
- 5 4800 baud
- 6 9600 baud
- 7 19200 baud
- 8 38400 baud
- 9 57600 baud
- 10 76800 baud
- 11 93750 baud
- 12 115200 baud

Index:

- P2010[0] : Serial interface COM link
- P2010[1] : Serial interface BOP link

P2011[2]	USS address	Min: 0	Level: 2	
	CStat: CUT	Datatype: U16		Def: 0
	P-Group: COMM	Active: first confirm		QuickComm. No Max: 31

Sets unique address for inverter.

Index:

P2011[0] : Serial interface COM link
P2011[1] : Serial interface BOP link

Note:

You can connect up to a further 30 inverters via the serial link (i.e. 31 inverters in total) and control them with the USS serial bus protocol.

P2012[2]	USS PZD length	Min: 0	Level: 3	
	CStat: CUT	Datatype: U16		Def: 2
	P-Group: COMM	Active: first confirm		QuickComm. No Max: 8

Defines the number of 16-bit words in PZD part of USS telegram. The PZD part of the USS telegram is used for the main setpoint, and to control the inverter.

Index:

P2012[0] : Serial interface COM link
P2012[1] : Serial interface BOP link

P2013[2]	USS PKW length	Min: 0	Level: 3	
	CStat: CUT	Datatype: U16		Def: 127
	P-Group: COMM	Active: first confirm		QuickComm. No Max: 127

Defines the number of 16-bit words in PKW part of USS telegram. The PKW part of the USS telegram is used to read and write individual parameter values.

Settings:

0 No words
3 3 words
4 4 words
27 Variable

Index:

P2013[0] : Serial interface COM link
P2013[1] : Serial interface BOP link

Notice:

Setting P2013 has implications for the PKW word order, please refer to the Reference Manual for details.

P2014[2]	USS telegram off time	Min: 0	Level: 3	
	CStat: CT	Datatype: U16		Def: 0
	P-Group: COMM	Active: Immediately		QuickComm. No Max: 65535

Defines a time T_off after which a fault will be generated (F0070) if no telegram is received via the USS channels.

Index:

P2014[0] : Serial interface COM link
P2014[1] : Serial interface BOP link

Notice:

By default (time set to 0), no fault is generated (i.e. watchdog disabled).

r2015[8]	CO: PZD from BOP link (USS)	Min: -	Level: 3	
		Datatype: U16		Def: -
	P-Group: COMM	Unit: -		Max: -

Displays process data received via USS on BOP link (RS232 USS).

Index:

r2015[0] : Received word 0
r2015[1] : Received word 1
r2015[2] : Received word 2
r2015[3] : Received word 3
r2015[4] : Received word 4
r2015[5] : Received word 5
r2015[6] : Received word 6
r2015[7] : Received word 7

Note:

The control words can be viewed as bit parameters r2032 and r2033.

P2016[8]	CI: PZD to BOP link (USS)				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 52:0		
	P-Group: COMM	Active: Immediately	QuickComm. No	Max: 4000:0		

Selects signals to be transmitted to serial interface via BOP link

Example:

P2016[0] = 52.0 (default). In this case, the value of r0052[0] (CO/BO: Status word) is transmitted as 1st PZD to the BOP link.

Index:

- P2016[0] : Transmitted word 0
- P2016[1] : Transmitted word 1
- P2016[2] : Transmitted word 2
- P2016[3] : Transmitted word 3
- P2016[4] : Transmitted word 4
- P2016[5] : Transmitted word 5
- P2016[6] : Transmitted word 6
- P2016[7] : Transmitted word 7

Note:

If r0052 not indexed, display does not show an index (".0").

r2018[8]	CO: PZD from COM link (USS)				Min: -	Level: 3
			Datatype: U16	Unit: -	Def: -	
	P-Group: COMM				Max: -	

Displays process data received via USS on COM link.

Index:

- r2018[0] : Received word 0
- r2018[1] : Received word 1
- r2018[2] : Received word 2
- r2018[3] : Received word 3
- r2018[4] : Received word 4
- r2018[5] : Received word 5
- r2018[6] : Received word 6
- r2018[7] : Received word 7

Note:

The control words can be viewed as bit parameters r2036 and r2037.

P2019[8]	CI: PZD to COM link (USS)				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 52:0		
	P-Group: COMM	Active: Immediately	QuickComm. No	Max: 4000:0		

Displays process data received via USS on COM link.

Index:

- P2019[0] : Transmitted word 0
- P2019[1] : Transmitted word 1
- P2019[2] : Transmitted word 2
- P2019[3] : Transmitted word 3
- P2019[4] : Transmitted word 4
- P2019[5] : Transmitted word 5
- P2019[6] : Transmitted word 6
- P2019[7] : Transmitted word 7

Details:

See r2016 (PZD to BOP link)

r2024[2]	USS error-free telegrams				Min: -	Level: 3
			Datatype: U16	Unit: -	Def: -	
	P-Group: COMM				Max: -	

Displays number of error-free USS telegrams received.

Index:

- r2024[0] : Serial interface COM link
- r2024[1] : Serial interface BOP link

r2025[2]	USS rejected telegrams				Min: -	Level: 3
			Datatype: U16	Unit: -	Def: -	
	P-Group: COMM				Max: -	

Displays number of USS telegrams rejected.

Index:

- r2025[0] : Serial interface COM link
- r2025[1] : Serial interface BOP link

r2026[2]	USS character frame error				Min: -	Level: 3
			Datatype: U16	Unit: -	Def: -	
	P-Group: COMM				Max: -	

Displays number of USS character frame errors.

Index:

- r2026[0] : Serial interface COM link
- r2026[1] : Serial interface BOP link

r2027[2]	USS overrun error	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				
	Displays number of USS telegrams with overrun error.				
Index:	r2027[0] : Serial interface COM link r2027[1] : Serial interface BOP link				
r2028[2]	USS parity error	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				
	Displays number of USS telegrams with parity error.				
Index:	r2028[0] : Serial interface COM link r2028[1] : Serial interface BOP link				
r2029[2]	USS start not identified	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				
	Displays number of USS telegrams with unidentified start.				
Index:	r2029[0] : Serial interface COM link r2029[1] : Serial interface BOP link				
r2030[2]	USS BCC error	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				
	Displays number of USS telegrams with BCC error.				
Index:	r2030[0] : Serial interface COM link r2030[1] : Serial interface BOP link				
r2031[2]	USS length error	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				
	Displays number of USS telegrams with incorrect length.				
Index:	r2031[0] : Serial interface COM link r2031[1] : Serial interface BOP link				
r2032	BO: CtrlWrd1 from BOP link (USS)	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: COMM				
	Displays control word 1 from BOP link (word 1 within USS).				
Bitfields:					
Bit00	ON/OFF1	0	NO		
		1	YES		
Bit01	OFF2: Electrical stop	0	YES		
		1	NO		
Bit02	OFF3: Fast stop	0	YES		
		1	NO		
Bit03	Pulse enable	0	NO		
		1	YES		
Bit04	RFG enable	0	NO		
		1	YES		
Bit05	RFG start	0	NO		
		1	YES		
Bit06	Setpoint enable	0	NO		
		1	YES		
Bit07	Fault acknowledge	0	NO		
		1	YES		
Bit08	JOG right	0	NO		
		1	YES		
Bit09	JOG left	0	NO		
		1	YES		
Bit10	Control from PLC	0	NO		
		1	YES		
Bit11	Reverse (setpoint inversion)	0	NO		
		1	YES		
Bit13	Motor potentiometer MOP up	0	NO		
		1	YES		
Bit14	Motor potentiometer MOP down	0	NO		
		1	YES		
Bit15	CDS Bit 0 (Local/Remote)	0	NO		
		1	YES		

r2033	BO: CtrlWrd2 from BOP link (USS)	Min: -	Level: 3
	Datatype: U16 Unit: -	Def: -	
	P-Group: COMM	Max: -	

Displays control word 2 from BOP link (i.e. word 4 within USS).

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit03	Fixed frequency Bit 3	0	NO
		1	YES
Bit04	Drive data set (DDS) Bit 0	0	NO
		1	YES
Bit05	Drive data set (DDS) Bit 1	0	NO
		1	YES
Bit08	PID enabled	0	NO
		1	YES
Bit09	DC brake enabled	0	NO
		1	YES
Bit11	Droop	0	NO
		1	YES
Bit12	Torque control	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO
Bit15	Command data set (CDS) Bit 1	0	NO
		1	YES

Dependency:

P0700 = 5 (USS on COM link) and P0719 = 0 (Cmd / Setpoint = BICO parameter).

r2036	BO: CtrlWrd1 from COM link (USS)	Min: -	Level: 3
	Datatype: U16 Unit: -	Def: -	
	P-Group: COMM	Max: -	

Displays control word 1 from COM link (i.e. word 1 within USS).

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motor potentiometer MOP up	0	NO
		1	YES
Bit14	Motor potentiometer MOP down	0	NO
		1	YES
Bit15	CDS Bit 0 (Local/Remote)	0	NO
		1	YES

Details:

See r2033 (control word 2 from BOP link).

r2037	BO: CtrlWrd2 from COM link (USS)	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: - Max: -	

Displays control word 2 from COM link (i.e. word 4 within USS).

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit03	Fixed frequency Bit 3	0	NO
		1	YES
Bit04	Drive data set (DDS) Bit 0	0	NO
		1	YES
Bit05	Drive data set (DDS) Bit 1	0	NO
		1	YES
Bit08	PID enabled	0	NO
		1	YES
Bit09	DC brake enabled	0	NO
		1	YES
Bit11	Droop	0	NO
		1	YES
Bit12	Torque control	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO
Bit15	Command data set (CDS) Bit 1	0	NO
		1	YES

Details:

See r2033 (control word 2 from BOP link).

P2040	CB telegram off time	Datatype: U16	Unit: ms	Min: 0	Level: 3
	CStat: CT	Active: Immediately	QuickComm. No	Def: 20 Max: 65535	

Defines time after which a fault will be generated (F0070) if no telegram is received via the link.

Dependency:

Setting 0 = watchdog disabled

P2041[5]	CB parameter	Datatype: U16	Unit: -	Min: 0	Level: 3
	CStat: CT	Active: first confirm	QuickComm. No	Def: 0 Max: 65535	

Configures a communication board (CB).

Index:

- P2041[0] : CB parameter 0
- P2041[1] : CB parameter 1
- P2041[2] : CB parameter 2
- P2041[3] : CB parameter 3
- P2041[4] : CB parameter 4

Details:

See relevant communication board manual for protocol definition and appropriate settings.

r2050[8]	CO: PZD from CB	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: - Max: -	

Displays PZD received from communication board (CB).

Index:

- r2050[0] : Received word 0
- r2050[1] : Received word 1
- r2050[2] : Received word 2
- r2050[3] : Received word 3
- r2050[4] : Received word 4
- r2050[5] : Received word 5
- r2050[6] : Received word 6
- r2050[7] : Received word 7

Note:

The control words can be viewed as bit parameters r2032 and r2033.

P2051[8]	CI: PZD to CB				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 52:0		
	P-Group: COMM	Active: Immediately	QuickComm. No	Max: 4000:0		

Connects PZD to CB.

This parameter allows the user to define the source of status words and actual values for the reply PZD.

Settings:

Status word 1 = 52
CO/BO: Act. status word 1 (see r0052)
Actual value 1 = 21 inverter output frequency (see r0021)

Other BICO settings are possible

Index:

P2051[0] : Transmitted word 0
P2051[1] : Transmitted word 1
P2051[2] : Transmitted word 2
P2051[3] : Transmitted word 3
P2051[4] : Transmitted word 4
P2051[5] : Transmitted word 5
P2051[6] : Transmitted word 6
P2051[7] : Transmitted word 7

r2053[5]	CB identification				Min: -	Level: 3
	Datatype: U16	Unit: -	Def: -	Max: -		
	P-Group: COMM					

Displays identification data of the communication board (CB). The different CB types (r2053[0]) are given in the Enum declaration.

Settings:

0 No CB option board
1 PROFIBUS DP
2 DeviceNet
256 not defined

Index:

r2053[0] : CB type (PROFIBUS = 1)
r2053[1] : Firmware version
r2053[2] : Firmware version detail
r2053[3] : Firmware date (year)
r2053[4] : Firmware date (day/month)

r2054[7]	CB diagnosis				Min: -	Level: 3
	Datatype: U16	Unit: -	Def: -	Max: -		
	P-Group: COMM					

Displays diagnostic information of communication board (CB).

Index:

r2054[0] : CB diagnosis 0
r2054[1] : CB diagnosis 1
r2054[2] : CB diagnosis 2
r2054[3] : CB diagnosis 3
r2054[4] : CB diagnosis 4
r2054[5] : CB diagnosis 5
r2054[6] : CB diagnosis 6

Details:

See relevant communications board manual.

r2090	BO: Control word 1 from CB	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: -	
				Max: -	

Displays control word 1 received from communication board (CB).

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motor potentiometer MOP up	0	NO
		1	YES
Bit14	Motor potentiometer MOP down	0	NO
		1	YES
Bit15	CDS Bit 0 (Local/Remote)	0	NO
		1	YES

Details:

See relevant communication board manual for protocol definition and appropriate settings.

r2091	BO: Control word 2 from CB	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: COMM			Def: -	
				Max: -	

Displays control word 2 received from communication board (CB).

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit03	Fixed frequency Bit 3	0	NO
		1	YES
Bit04	Drive data set (DDS) Bit 0	0	NO
		1	YES
Bit05	Drive data set (DDS) Bit 1	0	NO
		1	YES
Bit08	PID enabled	0	NO
		1	YES
Bit09	DC brake enabled	0	NO
		1	YES
Bit11	Droop	0	NO
		1	YES
Bit12	Torque control	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO
Bit15	Command data set (CDS) Bit 1	0	NO
		1	YES

Details:

See relevant communication board manual for protocol definition and appropriate settings.

P2100[3]	Alarm number selection	Min: 0	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: ALARMS	Active: first confirm		QuickComm. No

Selects up to 3 faults or warnings for non-default reactions.

Example:

If you want F0005 to perform an OFF3 instead of an OFF2, set P2100[0] = 5, then select the desired reaction in P2101[0] (in this case, set P2101[0] = 3).

Index:

- P2100[0] : Fault Number 1
- P2100[1] : Fault Number 2
- P2100[2] : Fault Number 3

Note:

All fault codes have a default reaction to OFF2. Some fault codes caused by hardware trips (e.g. overcurrent) cannot be changed from the default reactions.

P2101[3]	Stop reaction value	Min: 0	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: ALARMS	Active: first confirm		QuickComm. No

Sets drive stop reaction values for fault selected by P2100 (alarm number stop reaction).

This indexed parameter specifies the special reaction to the faults/warnings defined in P2100 indices 0 to 2.

Settings:

- 0 No reaction, no display
- 1 OFF1 stop reaction
- 2 OFF2 stop reaction
- 3 OFF3 stop reaction
- 4 No reaction warning only

Index:

- P2101[0] : Stop reaction value 1
- P2101[1] : Stop reaction value 2
- P2101[2] : Stop reaction value 3

Note:

Settings 0 - 3 only are available for fault codes.

Settings 0 and 4 only are available for warnings.

Index 0 (P2101) refers to fault/warning in index 0 (P2100).

P2103[3]	BI: 1. Faults acknowledgement	Min: 0:0	Level: 3	
	CStat: CT	Datatype: U32		Unit: -
	P-Group: COMMANDS	Active: first confirm		QuickComm. No

Defines source of fault acknowledgement, e.g. keypad/DIN, etc. (depending on setting).

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Index:

- P2103[0] : 1st. Command data set (CDS)
- P2103[1] : 2nd. Command data set (CDS)
- P2103[2] : 3rd. Command data set (CDS)

P2104[3]	BI: 2. Faults acknowledgement	Min: 0:0	Level: 3	
	CStat: CT	Datatype: U32		Unit: -
	P-Group: COMMANDS	Active: first confirm		QuickComm. No

Selects second source of fault acknowledgement.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Index:

- P2104[0] : 1st. Command data set (CDS)
- P2104[1] : 2nd. Command data set (CDS)
- P2104[2] : 3rd. Command data set (CDS)

P2106[3]	BI: External fault	Min: 0:0	Level: 3
	CStat: CT P-Group: COMMANDS	Datatype: U32 Unit: - Active: first confirm QuickComm. No	
Selects source of external faults.			
Settings:			
722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)			
722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)			
722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)			
722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)			
722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)			
722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)			
722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)			
722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)			
Index:			
P2106[0] : 1st. Command data set (CDS)			
P2106[1] : 2nd. Command data set (CDS)			
P2106[2] : 3rd. Command data set (CDS)			
r2110[4]	Warning number	Min: -	Level: 2
	P-Group: ALARMS	Datatype: U16 Unit: -	
Displays warning information.			
A maximum of 2 active warnings (indices 0 and 1) and 2 historical warnings (indices 2 and 3) may be viewed.			
Index:			
r2110[0] : Recent Warnings --, warning 1			
r2110[1] : Recent Warnings --, warning 2			
r2110[2] : Recent Warnings -1, warning 3			
r2110[3] : Recent Warnings -1, warning 4			
Note:			
The keypad will flash while a warning is active. The LEDs indicate the warning status in this case.			
If an AOP is in use, the display will show number and text of the active warning.			
Notice:			
Indices 0 and 1 are not stored.			
P2111	Total number of warnings	Min: 0	Level: 3
	CStat: CT P-Group: ALARMS	Datatype: U16 Unit: - Active: first confirm QuickComm. No	
Displays number of warning (up to 4) since last reset. Set to 0 to reset the warning history.			
r2114[2]	Run time counter	Min: -	Level: 3
	P-Group: ALARMS	Datatype: U16 Unit: -	
Displays run time counter. It is the total time the drive has been powered up. When power goes value is saved, then restored on powerup.			
The run time counter r2114 will be calculate as followed: Multiply the value in r2114[0], by 65536 and then add it to the value in r2114[1]. The resultant answer will be in seconds. This means that r2114[0] is not days.			
When AOP is not connected, the time in this parameter is used by r0948 to indicate when a fault has occurred.			
Example:			
If r2114[0] = 1 & r2114[1] = 20864			
We get 1 * 65536 + 20864 = 86400 seconds which equals 1 day.			
Index:			
r2114[0] : System Time, Seconds, Upper Word			
r2114[1] : System Time, Seconds, Lower Word			
Details:			
See r0948 (fault time)			
P2115[3]	AOP real time clock	Min: 0	Level: 3
	CStat: CT P-Group: ALARMS	Datatype: U16 Unit: - Active: Immediately QuickComm. No	
Displays AOP real time.			
Index:			
P2115[0] : Real Time, Seconds+Minutes			
P2115[1] : Real Time, Hours+Days			
P2115[2] : Real Time, Month+Year			
Details:			
See r0948 (fault time).			

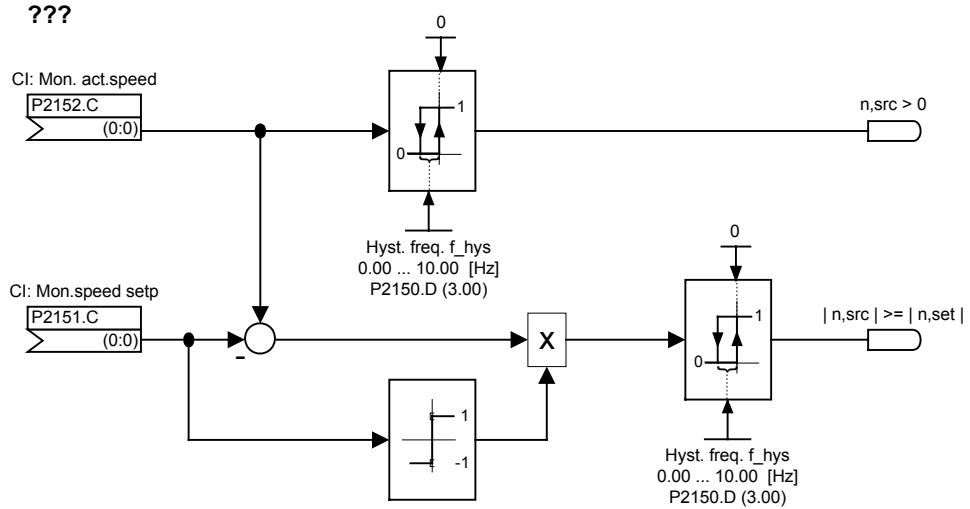
P2120	Indication counter			Min: 0	Level: 4
	CStat: CUT	Datatype: U16	Unit: -	Def: 0	
	P-Group: ALARMS	Active: Immediately	QuickComm. No	Max: 65535	

Indicates total number of alarm events. This parameter is incremented whenever an alarm event occurs. It also gets incremented when a warning is cleared or faults are cleared.

This parameter is used by the PC tools.

P2150[3]	Hysteresis frequency f_hys			Min: 0.00	Level: 3
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 3.00	
	P-Group: ALARMS	Active: Immediately	QuickComm. No	Max: 10.00	

Defines hysteresis level applied for comparing frequency and speed to threshold as illustrated in the diagram below.



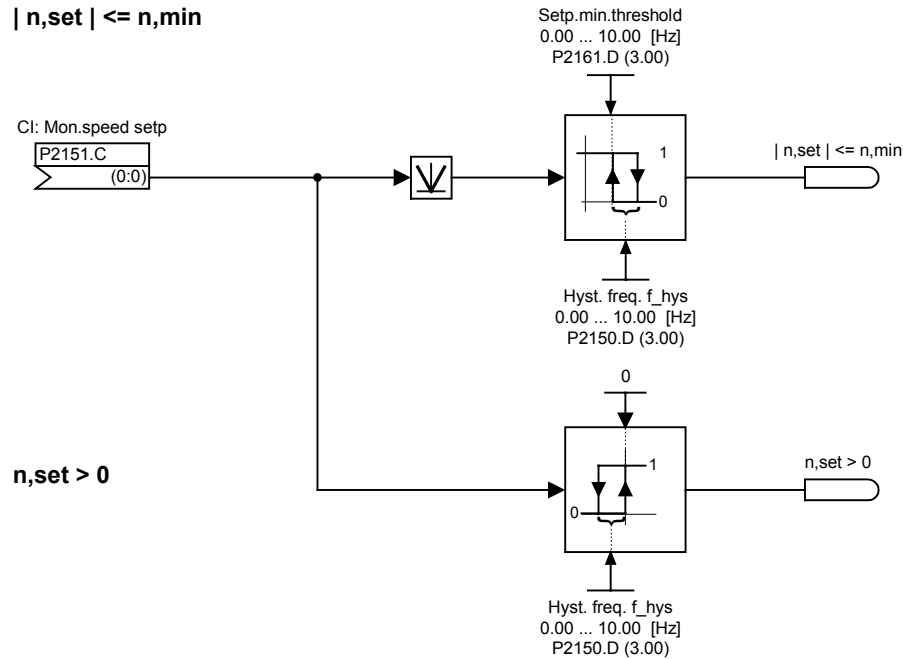
Index:

- P2150[0] : 1st. Drive data set (DDS)
- P2150[1] : 2nd. Drive data set (DDS)
- P2150[2] : 3rd. Drive data set (DDS)

P2151[3]	CI: Monitoring speed setpoint	Min: 0:0	Level:
	CStat: CUT	Datatype: U32	Def: 0:0
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 4000:0
3			

Selects (speed) setpoint signal to be compared to threshold as illustrated in the diagram below.

$|n, set| \leq n, min$



Index:

- P2151[0] : 1st. Command data set (CDS)
- P2151[1] : 2nd. Command data set (CDS)
- P2151[2] : 3rd. Command data set (CDS)

Details:

See also diagram in P2150 (hysteresis frequency f_hys)

P2152[3]	CI: Act. monitoring speed	Min: 0:0	Level:
	CStat: CUT	Datatype: U32	Def: 0:0
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 4000:0
3			

Selects (speed) signal to be compared to threshold.

Index:

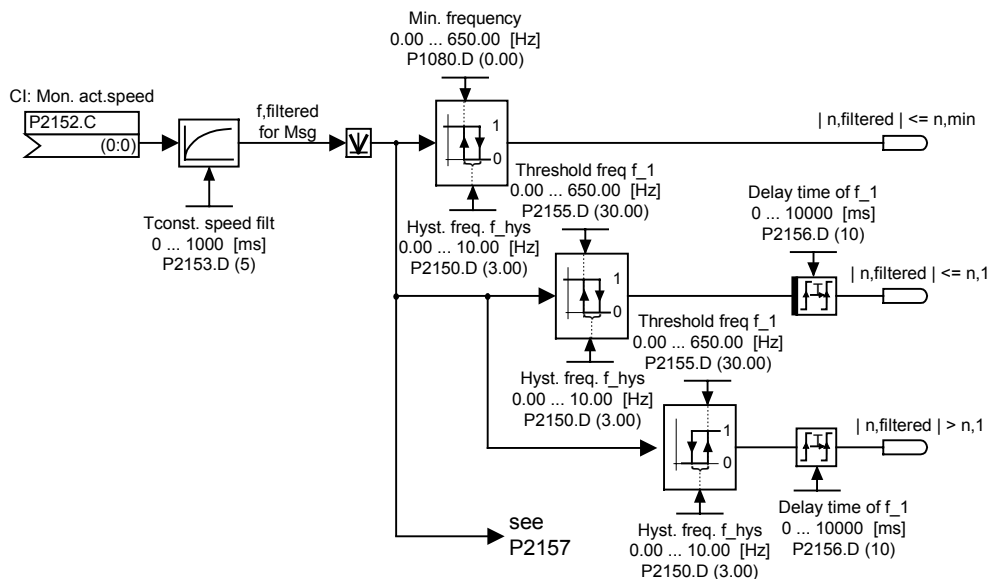
- P2152[0] : 1st. Command data set (CDS)
- P2152[1] : 2nd. Command data set (CDS)
- P2152[2] : 3rd. Command data set (CDS)

Details:

See diagrams in P2150 (hysteresis frequency f_hys) and P2151 (speed setpoint for monitoring).

P2153[3]	Time-constant speed filter	Min: 0	Level:
	CStat: CUT	Datatype: U16	Unit: ms
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 5	2
		Max: 1000	

Specifies time constant of first-order speed filter. The filtered speed is then compared to the thresholds as illustrated in the diagram below.



Index:

- P2153[0] : 1st. Drive data set (DDS)
- P2153[1] : 2nd. Drive data set (DDS)
- P2153[2] : 3rd. Drive data set (DDS)

Details:

See also diagram in P2157 (threshold frequency f₂)

P2155[3]	Threshold frequency f₁	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 30.00	3
		Max: 650.00	

Sets a threshold for comparing actual speed or frequency to threshold values f₁. This threshold controls status bits 4 and 5 in status word 2 (r0053).

Index:

- P2155[0] : 1st. Drive data set (DDS)
- P2155[1] : 2nd. Drive data set (DDS)
- P2155[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2153 (time-constant speed filter)

P2156[3]	Delay time of threshold freq f₁	Min: 0	Level:
	CStat: CUT	Datatype: U16	Unit: ms
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 10	3
		Max: 10000	

Sets delay time prior to threshold frequency f₁ comparison (P2155).

Index:

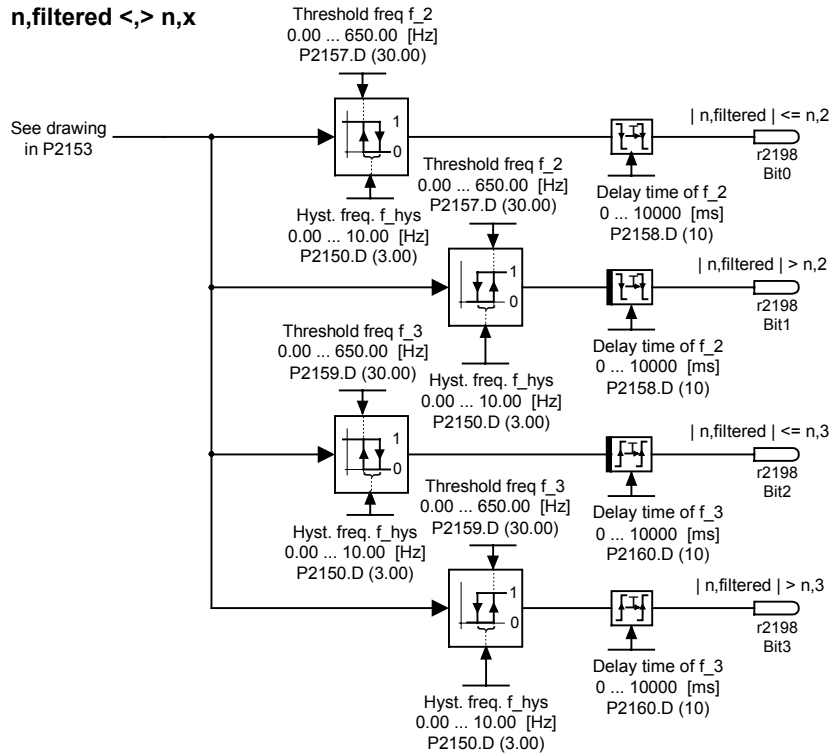
- P2156[0] : 1st. Drive data set (DDS)
- P2156[1] : 2nd. Drive data set (DDS)
- P2156[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2153 (time-constant speed filter)

P2157[3]	Threshold frequency f₂	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 30.00	2
		Max: 650.00	

Threshold_2 for comparing speed or frequency to thresholds as illustrated in the diagram below.



Index:

- P2157[0] : 1st. Drive data set (DDS)
- P2157[1] : 2nd. Drive data set (DDS)
- P2157[2] : 3rd. Drive data set (DDS)

Details:

See also diagram in P2153 (time-constant speed filter)

P2158[3]	Delay time of threshold freq f₂	Min: 0	Level:
	CStat: CUT	Datatype: U16	Unit: ms
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 10	2
		Max: 10000	

Delay time for comparing speed or frequency to threshold f₂ (P2157).

Index:

- P2158[0] : 1st. Drive data set (DDS)
- P2158[1] : 2nd. Drive data set (DDS)
- P2158[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2157 (threshold frequency f₂)

P2159[3]	Threshold frequency f₃	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 30.00	2
		Max: 650.00	

Threshold_3 for comparing speed or frequency to thresholds.

Index:

- P2159[0] : 1st. Drive data set (DDS)
- P2159[1] : 2nd. Drive data set (DDS)
- P2159[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2157 (threshold frequency f₂)

P2160[3]	Delay time of threshold freq f₃	Min: 0	Level:
	CStat: CUT	Datatype: U16	Unit: ms
	P-Group: ALARMS	Active: Immediately	QuickComm. No
		Def: 10	2
		Max: 10000	

Delay time for comparing speed or frequency to threshold f₃ (P2159).

Index:

- P2160[0] : 1st. Drive data set (DDS)
- P2160[1] : 2nd. Drive data set (DDS)
- P2160[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2157 (threshold frequency f₂)

P2161[3]	Min. threshold for freq. setp.	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: ALARMS	Active: Immediately		QuickComm. No
		Def: 3.00		
		Max: 10.00		

Minimum threshold value for comparing speed or frequency setpoint.

Index:

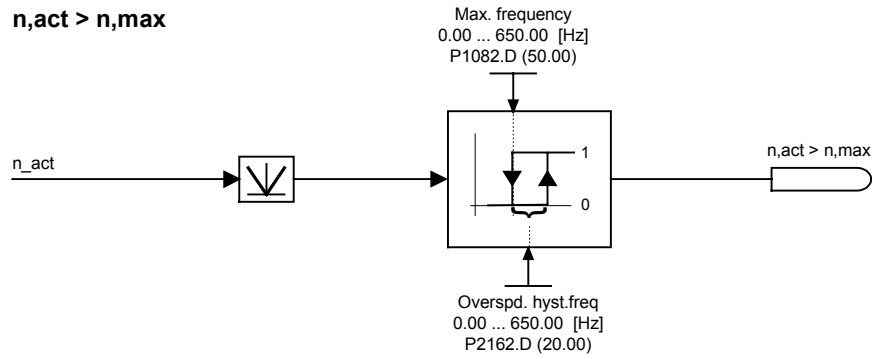
- P2161[0] : 1st. Drive data set (DDS)
- P2161[1] : 2nd. Drive data set (DDS)
- P2161[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2151 (speed setpoint for monitoring)

P2162[3]	Hysteresis freq. for overspeed	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: ALARMS	Active: Immediately		QuickComm. No
		Def: 20.00		
		Max: 650.00		

Hysteresis speed (or frequency) for overspeed-detection as illustrated in the diagram below.

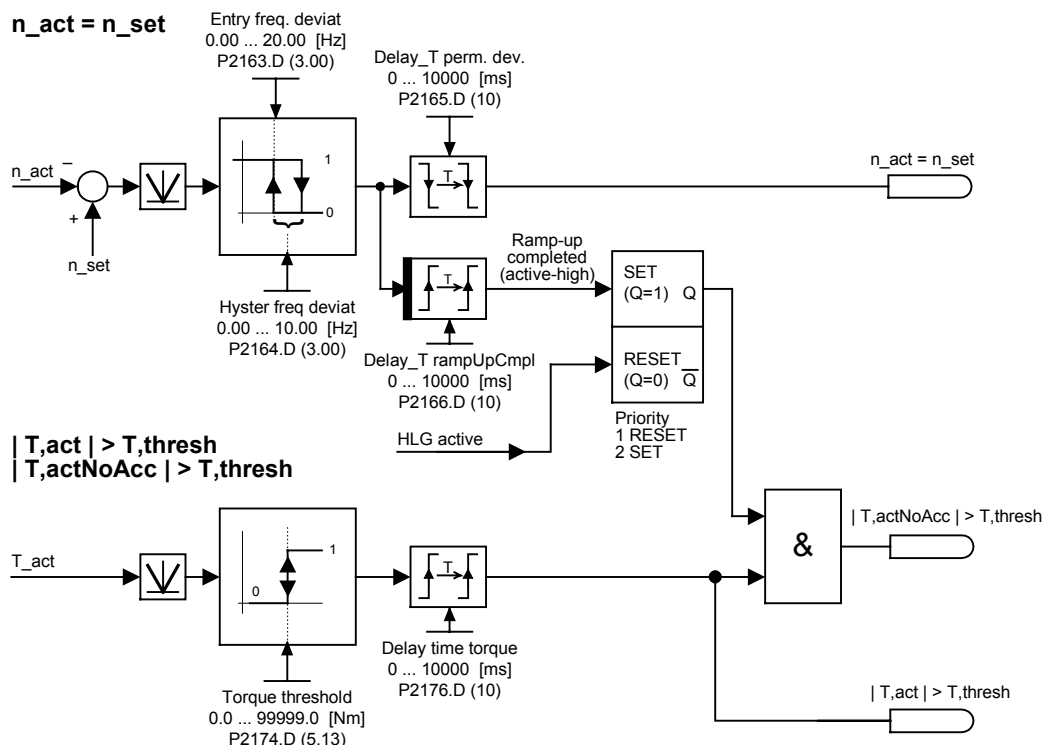


Index:

- P2162[0] : 1st. Drive data set (DDS)
- P2162[1] : 2nd. Drive data set (DDS)
- P2162[2] : 3rd. Drive data set (DDS)

P2163[3]	Entry freq. for perm. deviation	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Def: 3.00
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 20.00

Threshold for detecting speed deviation from setpoint as illustrated in the diagram below.



Index:

- P2163[0] : 1st. Drive data set (DDS)
- P2163[1] : 2nd. Drive data set (DDS)
- P2163[2] : 3rd. Drive data set (DDS)

P2164[3]	Hysteresis frequency deviation	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Def: 3.00
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10.00

Hysteresis frequency for detecting permitted deviation (from setpoint) or frequency or speed. This frequency controls bit 8 in status word 1 (P0052) and bit 6 in status word 2 (P0053).

Index:

- P2164[0] : 1st. Drive data set (DDS)
- P2164[1] : 2nd. Drive data set (DDS)
- P2164[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2163 (entry frequency for permissible deviation).

P2165[3]	Delay time permitted deviation	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Delay time for detecting permitted deviation of speed or frequency from setpoint.

Index:

- P2165[0] : 1st. Drive data set (DDS)
- P2165[1] : 2nd. Drive data set (DDS)
- P2165[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2163 (entry frequency for permissible deviation).

P2166[3]	Delay time ramp up completed	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Delay time for signal that indicates completion of ramp-up.

Index:

- P2166[0] : 1st. Drive data set (DDS)
- P2166[1] : 2nd. Drive data set (DDS)
- P2166[2] : 3rd. Drive data set (DDS)

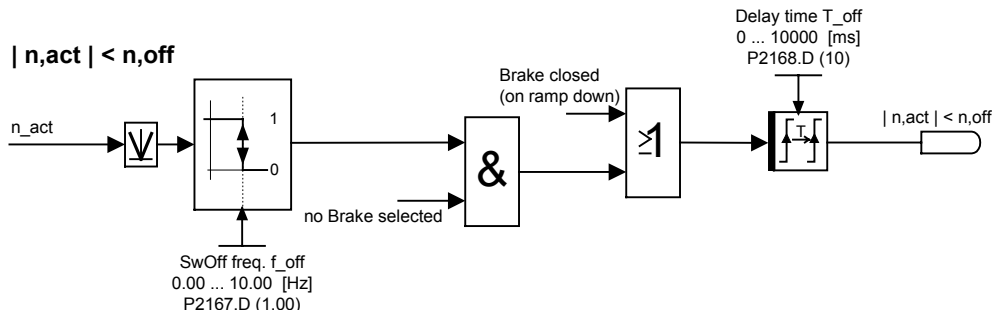
Details:

See diagram in P2163 (entry frequency for permissible deviation).

P2167[3]	Switch-off frequency f_{off}	Min: 0.00	Level: 3	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: ALARMS	Active: Immediately		QuickComm. No
		Def: 1.00		
		Max: 10.00		

Sets frequency threshold below which inverter switches off.

If the frequency falls below this threshold, bit 1 in status word 2 (r0053) is set.



Index:

- P2167[0] : 1st. Drive data set (DDS)
- P2167[1] : 2nd. Drive data set (DDS)
- P2167[2] : 3rd. Drive data set (DDS)

Dependency:

Switched off only if OFF1 or OFF3 active.

P2168[3]	Delay time T_{off}	Min: 0	Level: 3	
	CStat: CUT	Datatype: U16		Unit: ms
	P-Group: ALARMS	Active: Immediately		QuickComm. No
		Def: 10		
		Max: 10000		

Defines time for which the inverter may operate below switch-off frequency (P2167) before switch off occurs.

Index:

- P2168[0] : 1st. Drive data set (DDS)
- P2168[1] : 2nd. Drive data set (DDS)
- P2168[2] : 3rd. Drive data set (DDS)

Dependency:

Active if holding brake (P1215) not parameterized.

Details:

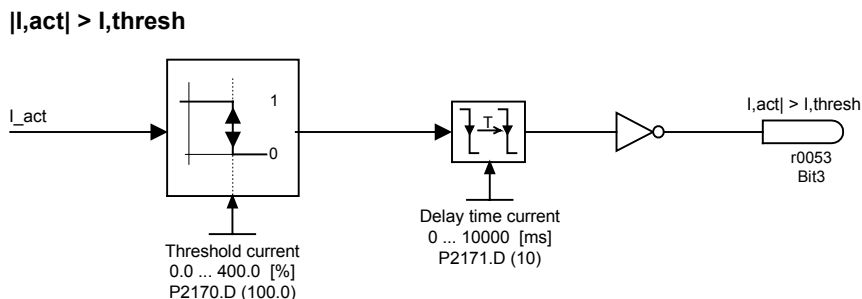
See diagram in P2167 (switch-off frequency)

r2169	CO: Act. filtered frequency	Min: -	Level: 2	
		Datatype: Float		Unit: Hz
	P-Group: ALARMS	Active: Immediately		QuickComm. No
		Def: -		
		Max: -		

Filtered speed (or frequency) for monitoring behind first-order lowpass filter.

P2170[3]	Threshold current I_{thresh}	Min: 0.0	Level: 3	
	CStat: CUT	Datatype: Float		Unit: %
	P-Group: ALARMS	Active: Immediately		QuickComm. No
		Def: 100.0		
		Max: 400.0		

Defines threshold current in [%] relative to P0305 (rated motor current) to be used in comparisons of I_{act} and I_{Thresh} as illustrated in the diagram below.



Index:

- P2170[0] : 1st. Drive data set (DDS)
- P2170[1] : 2nd. Drive data set (DDS)
- P2170[2] : 3rd. Drive data set (DDS)

Note:

This threshold controls bit 3 in status word 3 (P0053).

P2171[3]	Delay time current	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Defines delay time prior to activation of current comparison.

Index:

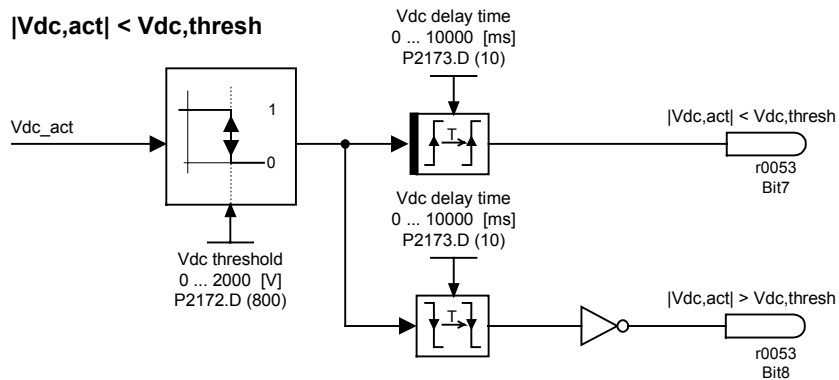
- P2171[0] : 1st. Drive data set (DDS)
- P2171[1] : 2nd. Drive data set (DDS)
- P2171[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2170 (threshold current I_{thresh})

P2172[3]	Threshold DC-link voltage	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 800
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 2000

Defines DC link voltage to be compared to actual voltage as illustrated in the diagram below.



Index:

- P2172[0] : 1st. Drive data set (DDS)
- P2172[1] : 2nd. Drive data set (DDS)
- P2172[2] : 3rd. Drive data set (DDS)

Note:

This voltage controls bits 7 and 8 in status word 3 (P0053).

P2173[3]	Delay time DC-link voltage	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Defines delay time prior to activation of threshold comparison.

Index:

- P2173[0] : 1st. Drive data set (DDS)
- P2173[1] : 2nd. Drive data set (DDS)
- P2173[2] : 3rd. Drive data set (DDS)

Details:

See diagram in P2172 (threshold DC-link voltage)

P2174[3]	Torque threshold T_{thresh}	Min: 0.0	Level:
	CStat: CUT	Datatype: Float	Def: 5.13
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 99999.0

Defines torque threshold for comparing actual torque.

Index:

- P2174[0] : 1st. Drive data set (DDS)
- P2174[1] : 2nd. Drive data set (DDS)
- P2174[2] : 3rd. Drive data set (DDS)

P2176[3]	Delay time for torque threshold	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Delay time for comparing actual torque to threshold.

Index:

- P2176[0] : 1st. Drive data set (DDS)
- P2176[1] : 2nd. Drive data set (DDS)
- P2176[2] : 3rd. Drive data set (DDS)

P2177[3]	Delay time for motor is blocked	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Delay time for identification that motor is blocked.

Index:

- P2177[0] : 1st. Drive data set (DDS)
- P2177[1] : 2nd. Drive data set (DDS)
- P2177[2] : 3rd. Drive data set (DDS)

P2178[3]	Delay time for motor pulled out	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 10
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Delay time for identification that motor is pulled out.

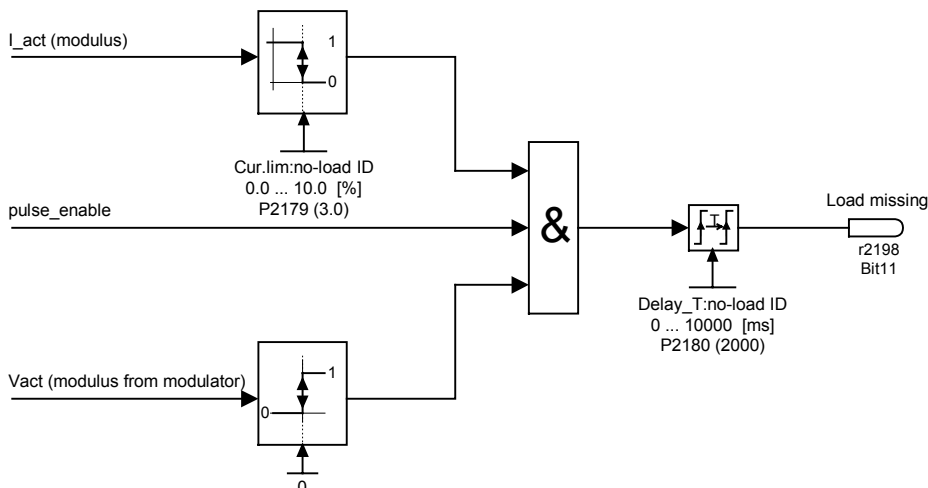
Index:

- P2178[0] : 1st. Drive data set (DDS)
- P2178[1] : 2nd. Drive data set (DDS)
- P2178[2] : 3rd. Drive data set (DDS)

P2179	Current limit for no load ident.	Min: 0.0	Level:
	CStat: CUT	Datatype: Float	Def: 3.0
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10.0

Threshold current for A0922 (load missing) in [%] relative to P0305 (rated motor current) as illustrated in the diagram below.

Load missing



Note:

It may be that the motor is not connected (load missing) or a phase could be missing.

Notice:

If a motor setpoint cannot be entered and the current limit (P2179) is not exceeded, Alarm A0922 (no load applied) is issued when delay time (P2180) expires.

P2180	Delay time for no load ident.	Min: 0	Level:
	CStat: CUT	Datatype: U16	Def: 2000
	P-Group: ALARMS	Active: Immediately	QuickComm. No Max: 10000

Delay time load missing

Note:

It may be that the motor is not connected (load missing) or a phase could be missing.

Notice:

If a motor setpoint cannot be entered and the current limit (P2179) is not exceeded, Alarm A0922 (no load applied) is issued when delay time (P2180) expires.

Details:

See diagram in P2179 (current limit for no load identification)

P2181[3]	Belt failure detection mode				Min: 0	Level: 2
	CStat: CT	Datatype: U16	Unit: -	Def: 0		
	P-Group: ALARMS	Active: first confirm	QuickComm. No	Max: 6		

Sets belt failure detection mode. This function allows detection of mechanical failure of the drive train, e.g. a broken drive belt. It can also detect conditions which cause an overload, such as a jam.

This is achieved by comparing the actual frequency/torque curve with a programmed envelope (see P2182 - P2190). If the curve falls outside the envelope, a warning or trip is generated.

Settings:

- 0 Belt failure detection disabled
- 1 Warn low torque/speed
- 2 Warn high torque/speed
- 3 Warn high/low torque/speed
- 4 Trip low torque/speed
- 5 Trip high torque/speed
- 6 Trip high/low torque/speed

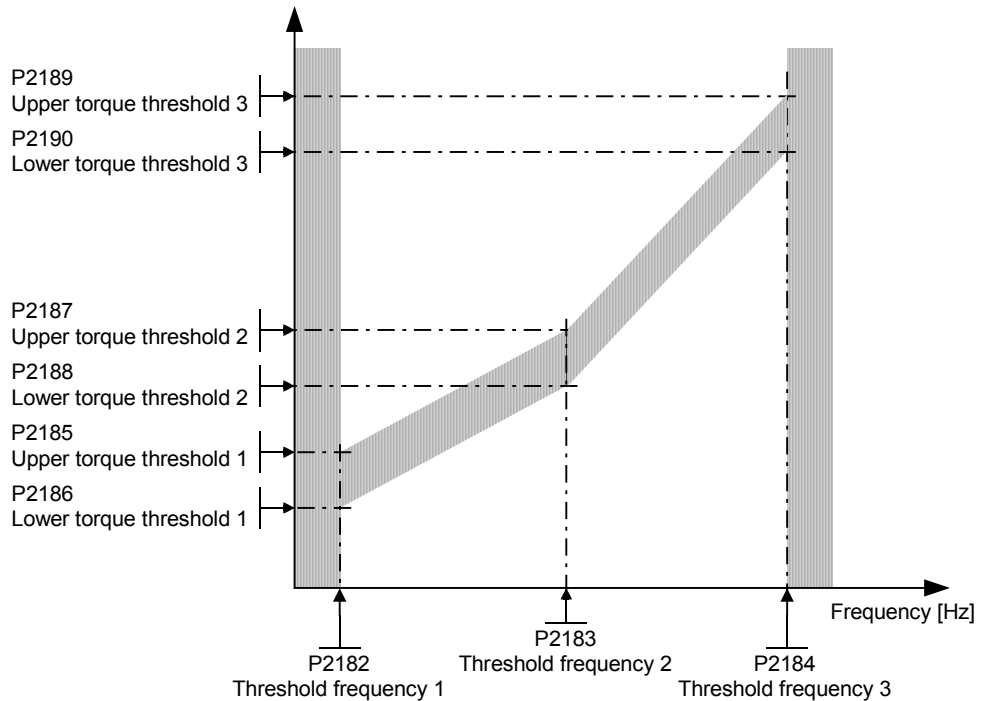
Index:

- P2181[0] : 1st. Command data set (CDS)
- P2181[1] : 2nd. Command data set (CDS)
- P2181[2] : 3rd. Command data set (CDS)

P2182[3]	Belt threshold frequency 1				Min: 0.00	Level: 3
	CStat: CUT	Datatype: Float	Unit: Hz	Def: 5.00		
	P-Group: ALARMS	Active: Immediately	QuickComm. No	Max: 650.00		

Sets a frequency threshold 1 for comparing actual torque to torque the envelope for belt failure detection.

The frequency torque envelope is defined by 9 parameters - 3 are frequency parameters (P2182 - P2184), and the other 6 define the low and high torque limits (P2185 - P2190) for each frequency (see diagram below).



The allowed frequency/torque region is defined by the shaded area. When the torque falls outside the area shown, a trip or warning occurs (see parameter P2181).

Index:

- P2182[0] : 1st. Drive data set (DDS)
- P2182[1] : 2nd. Drive data set (DDS)
- P2182[2] : 3rd. Drive data set (DDS)

Note:

The torque is unlimited below P2182, and above P2184. Normally P2182 <= lower torque limit (P1521), and P2184 > = upper torque limit (P1520).

P2183[3]	Belt threshold frequency 2	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Sets a threshold F2 for comparing actual torque to torque the envelope for belt failure detection.

Index:

P2183[0] : 1st. Drive data set (DDS)
 P2183[1] : 2nd. Drive data set (DDS)
 P2183[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2184[3]	Belt threshold frequency 3	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Hz
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Sets a threshold F3 for comparing actual torque to torque the envelope for belt failure detection.

Index:

P2184[0] : 1st. Drive data set (DDS)
 P2184[1] : 2nd. Drive data set (DDS)
 P2184[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2185[3]	Upper torque threshold 1	Min: 0.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Nm
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Upper limit threshold value 1 for comparing actual torque.

Index:

P2185[0] : 1st. Drive data set (DDS)
 P2185[1] : 2nd. Drive data set (DDS)
 P2185[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2186[3]	Lower torque threshold 1	Min: 0.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Nm
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Lower limit threshold value 1 for comparing actual torque.

Index:

P2186[0] : 1st. Drive data set (DDS)
 P2186[1] : 2nd. Drive data set (DDS)
 P2186[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2187[3]	Upper torque threshold 2	Min: 0.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Nm
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Upper limit threshold value 2 for comparing actual torque.

Index:

P2187[0] : 1st. Drive data set (DDS)
 P2187[1] : 2nd. Drive data set (DDS)
 P2187[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2188[3]	Lower torque threshold 2	Min: 0.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Nm
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Lower limit threshold value 2 for comparing actual torque.

Index:

P2188[0] : 1st. Drive data set (DDS)
 P2188[1] : 2nd. Drive data set (DDS)
 P2188[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2189[3]	Upper torque threshold 3	Min: 0.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Nm
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Upper limit threshold value 3 for comparing actual torque.

Index:

P2189[0] : 1st. Drive data set (DDS)
P2189[1] : 2nd. Drive data set (DDS)
P2189[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2190[3]	Lower torque threshold 3	Min: 0.0	Level: 2	
	CStat: CUT	Datatype: Float		Unit: Nm
	P-Group: ALARMS	Active: Immediately		QuickComm. No

Lower limit threshold value 3 for comparing actual torque.

Index:

P2190[0] : 1st. Drive data set (DDS)
P2190[1] : 2nd. Drive data set (DDS)
P2190[2] : 3rd. Drive data set (DDS)

Details:

See P2182 (belt threshold frequency 1).

P2192[3]	Time delay for belt failure	Min: 0	Level: 2	
	CStat: CUT	Datatype: U16		Unit: s
	P-Group: ALARMS	Active: Immediately		QuickComm. No

P2192 defines a delay before warning/trip becomes active. It is used to eliminate events caused by transient conditions. It is used for both methods of fault detection.

Index:

P2192[0] : 1st. Drive data set (DDS)
P2192[1] : 2nd. Drive data set (DDS)
P2192[2] : 3rd. Drive data set (DDS)

r2197	CO/BO: Monitoring word 1	Min: -	Level: 2	
		Datatype: U16		Unit: -
	P-Group: ALARMS			Max: -

Monitoring word 1 which indicates the state of monitor functions. Each bit represents one monitor function.

Bitfields:

Bit00	Act. freq. r0024 <= P1080 (f_min)	0	NO
		1	YES
Bit01	Act. freq. r0024 <= P2155 (f_1)	0	NO
		1	YES
Bit02	Act. freq. r0024 > P2155 (f_1)	0	NO
		1	YES
Bit03	Act. freq. r0024 > zero	0	NO
		1	YES
Bit04	Act. freq. r0024 >= setp.	0	NO
		1	YES
Bit05	Act. freq. r0024 <= P2167 (f_off)	0	NO
		1	YES
Bit06	Act. freq. r0024 >= P1082 (f_max)	0	NO
		1	YES
Bit07	Act. freq. r0024 == setp.	0	NO
		1	YES
Bit08	Act. current r0068 >= P2170	0	NO
		1	YES
Bit09	Act. unfilt. Vdc < P2172	0	NO
		1	YES
Bit10	Act. unfilt. Vdc > P2172	0	NO
		1	YES
Bit11	No load condition	0	NO
		1	YES

r2198	CO/BO: Monitoring word 2			Min: -	Level: 2
	P-Group: ALARMS	Datatype: U16	Unit: -	Def: - Max: -	

Monitoring word 2 which indicates the state of monitor functions. Each bit represents one monitor function.

Bitfields:

Bit00	n,filtered r2169 < P2157	0	NO
		1	YES
Bit01	n,filtered r2169 > P2157	0	NO
		1	YES
Bit02	n,filtered r2169 < P2159	0	NO
		1	YES
Bit03	n,filtered r2169 > P2159	0	NO
		1	YES
Bit04	n,set < P2161	0	NO
		1	YES
Bit05	n,set > 0	0	NO
		1	YES
Bit06	Motor blocked	0	NO
		1	YES
Bit07	Motor pulled out	0	NO
		1	YES
Bit08	I,act r0068 < P2170	0	NO
		1	YES
Bit09	T,act > P2174 & setpoint reached	0	NO
		1	YES
Bit10	T,act > P2174	0	NO
		1	YES
Bit11	Belt failure warning	0	NO
		1	YES
Bit12	Belt failure trip	0	NO
		1	YES

P2200[3]	BI: Enable PID controller			Min: 0:0	Level: 2
	CStat: CUT	Datatype: U32	Unit: -	Def: 0:0	
	P-Group: TECH	Active: first confirm	QuickComm. No	Max: 4000:0	

PID mode Allows user to enable/disable the PID controller. Setting to 1 enables the PID closed-loop controller.

Index:

- P2200[0] : 1st. Command data set (CDS)
- P2200[1] : 2nd. Command data set (CDS)
- P2200[2] : 3rd. Command data set (CDS)

Dependency:

Setting 1 automatically disables normal ramp times set in P1120 and P1121 and the normal frequency setpoints.

Following an OFF1 or OFF3 command, however, the inverter frequency will ramp down to zero using the ramp time set in P1121 (P1135 for OFF3).

Note:

The PID setpoint source is selected using P2253. The PID setpoint and the PID feedback signal are interpreted as [%] values (not [Hz]). The output of the PID controller is displayed as [%] and then normalized into [Hz] through P2000 (reference frequency) when PID is enabled.

In level 3, the PID controller source enable can also come from the digital inputs in settings 722.0 to 722.2 for DIN1 to DIN3 or from any other BiCo source.

Notice:

The minimum and maximum motor frequencies (P1080 and P1082) as well as the skip frequencies (P1091 to P1094) remain active on the inverter output. However, enabling skip frequencies with PID control can produce instabilities.

P2201[3]	Fixed PID setpoint 1			Min: -200.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 0.00	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00	

Defines Fixed PID Setpoint 1

In addition, you can set any of the digital input parameters to Fixed PID Setpoint via the digital inputs (P0701 - P0706).

There are three selection modes for the PID fixed setpoint:

1 Direct selection (P0701 = 15 or P0702 = 15, etc):

In this mode of operation, 1 digital input selects one PID fixed setpoint.

2 Direct selection with ON command (P0701 = 16 or P0702 = 16, etc.):

Description as for 1), except that this type of selection issues an ON command concurrent with any setpoint selection.

3 Binary Coded Decimal selection (P0701 - P0706 = 17)

Using this method to select the PID Fixed Setpoint allows you to choose up to 16 different PID setpoints.

The setpoints are selected according to the following table:

Example:

		DIN4	DIN3	DIN2	DIN1
	OFF	Inactive	Inactive	Inactive	Inactive
P2201	PID-FF1	Inactive	Inactive	Inactive	Active
P2202	PID-FF2	Inactive	Inactive	Active	Inactive
P2203	PID-FF3	Inactive	Inactive	Active	Active
P2204	PID-FF4	Inactive	Active	Inactive	Inactive
P2205	PID-FF5	Inactive	Active	Inactive	Active
P2206	PID-FF6	Inactive	Active	Active	Inactive
P2207	PID-FF7	Inactive	Active	Active	Active
P2208	PID-FF8	Active	Inactive	Inactive	Inactive
P2209	PID-FF9	Active	Inactive	Inactive	Active
P2210	PID-FF10	Active	Inactive	Active	Inactive
P2211	PID-FF11	Active	Inactive	Active	Active
P2212	PID-FF12	Active	Active	Inactive	Inactive
P2213	PID-FF13	Active	Active	Inactive	Active
P2214	PID-FF14	Active	Active	Active	Inactive
P2215	PID-FF15	Active	Active	Active	Active

Index:

P2201[0] : 1st. Drive data set (DDS)

P2201[1] : 2nd. Drive data set (DDS)

P2201[2] : 3rd. Drive data set (DDS)

Dependency:

P2000 = 1 required in user access level 2 to enable setpoint source.

In mode 1 (above):

ON command required to start motor (enable pulses).

In mode 2 (above):

If inputs programmed to PID fixed setpoint and selected together, the selected setpoints are summed.

Note:

You may mix different types of frequencies; however, remember that they will be summed if selected together.

P2201 = 100 % corresponds to 4000 hex

P2202[3]	Fixed PID setpoint 2			Min: -200.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 10.00	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00	

Defines Fixed PID Setpoint 2

Index:

P2202[0] : 1st. Drive data set (DDS)

P2202[1] : 2nd. Drive data set (DDS)

P2202[2] : 3rd. Drive data set (DDS)

Details:

See P2201 (Fixed PID Setpoint 1).

P2203[3]	Fixed PID setpoint 3	CStat: CUT P-Group: TECH	Datatype: Float Active: Immediately	Unit: % QuickComm. No	Min: -200.00 Def: 20.00 Max: 200.00	Level: 2
	Defines Fixed PID Setpoint 3					
Index:	P2203[0] : 1st. Drive data set (DDS) P2203[1] : 2nd. Drive data set (DDS) P2203[2] : 3rd. Drive data set (DDS)					
Details:	See P2201 (Fixed PID Setpoint 1).					
P2204[3]	Fixed PID setpoint 4	CStat: CUT P-Group: TECH	Datatype: Float Active: Immediately	Unit: % QuickComm. No	Min: -200.00 Def: 30.00 Max: 200.00	Level: 2
	Defines Fixed PID Setpoint 4					
Index:	P2204[0] : 1st. Drive data set (DDS) P2204[1] : 2nd. Drive data set (DDS) P2204[2] : 3rd. Drive data set (DDS)					
Details:	See P2201 (Fixed PID Setpoint 1).					
P2205[3]	Fixed PID setpoint 5	CStat: CUT P-Group: TECH	Datatype: Float Active: Immediately	Unit: % QuickComm. No	Min: -200.00 Def: 40.00 Max: 200.00	Level: 2
	Defines Fixed PID Setpoint 5					
Index:	P2205[0] : 1st. Drive data set (DDS) P2205[1] : 2nd. Drive data set (DDS) P2205[2] : 3rd. Drive data set (DDS)					
Details:	See P2201 (Fixed PID Setpoint 1).					
P2206[3]	Fixed PID setpoint 6	CStat: CUT P-Group: TECH	Datatype: Float Active: Immediately	Unit: % QuickComm. No	Min: -200.00 Def: 50.00 Max: 200.00	Level: 2
	Defines Fixed PID Setpoint 6					
Index:	P2206[0] : 1st. Drive data set (DDS) P2206[1] : 2nd. Drive data set (DDS) P2206[2] : 3rd. Drive data set (DDS)					
Details:	See P2201 (Fixed PID Setpoint 1).					
P2207[3]	Fixed PID setpoint 7	CStat: CUT P-Group: TECH	Datatype: Float Active: Immediately	Unit: % QuickComm. No	Min: -200.00 Def: 60.00 Max: 200.00	Level: 2
	Defines Fixed PID Setpoint 7					
Index:	P2207[0] : 1st. Drive data set (DDS) P2207[1] : 2nd. Drive data set (DDS) P2207[2] : 3rd. Drive data set (DDS)					
Details:	See P2201 (Fixed PID Setpoint 1).					
P2208[3]	Fixed PID setpoint 8	CStat: CUT P-Group: TECH	Datatype: Float Active: Immediately	Unit: % QuickComm. No	Min: -200.00 Def: 70.00 Max: 200.00	Level: 2
	Defines Fixed PID Setpoint 8					
Index:	P2208[0] : 1st. Drive data set (DDS) P2208[1] : 2nd. Drive data set (DDS) P2208[2] : 3rd. Drive data set (DDS)					
Details:	See P2201 (Fixed PID Setpoint 1).					

P2209[3]	Fixed PID setpoint 9	Min: -200.00	Level:
CStat: CUT	Datatype: Float	Unit: %	Def: 80.00
P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00
	Defines Fixed PID Setpoint 9		2
Index:	P2209[0] : 1st. Drive data set (DDS)		
	P2209[1] : 2nd. Drive data set (DDS)		
	P2209[2] : 3rd. Drive data set (DDS)		
Details:	See P2201 (Fixed PID Setpoint 1).		
P2210[3]	Fixed PID setpoint 10	Min: -200.00	Level:
CStat: CUT	Datatype: Float	Unit: %	Def: 90.00
P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00
	Defines Fixed PID Setpoint 10		2
Index:	P2210[0] : 1st. Drive data set (DDS)		
	P2210[1] : 2nd. Drive data set (DDS)		
	P2210[2] : 3rd. Drive data set (DDS)		
Details:	See P2201 (Fixed PID Setpoint 1).		
P2211[3]	Fixed PID setpoint 11	Min: -200.00	Level:
CStat: CUT	Datatype: Float	Unit: %	Def: 100.00
P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00
	Defines Fixed PID Setpoint 11		2
Index:	P2211[0] : 1st. Drive data set (DDS)		
	P2211[1] : 2nd. Drive data set (DDS)		
	P2211[2] : 3rd. Drive data set (DDS)		
Details:	See P2201 (Fixed PID Setpoint 1).		
P2212[3]	Fixed PID setpoint 12	Min: -200.00	Level:
CStat: CUT	Datatype: Float	Unit: %	Def: 110.00
P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00
	Defines Fixed PID Setpoint 12		2
Index:	P2212[0] : 1st. Drive data set (DDS)		
	P2212[1] : 2nd. Drive data set (DDS)		
	P2212[2] : 3rd. Drive data set (DDS)		
Details:	See P2201 (Fixed PID Setpoint 1).		
P2213[3]	Fixed PID setpoint 13	Min: -200.00	Level:
CStat: CUT	Datatype: Float	Unit: %	Def: 120.00
P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00
	Defines Fixed PID Setpoint 13		2
Index:	P2213[0] : 1st. Drive data set (DDS)		
	P2213[1] : 2nd. Drive data set (DDS)		
	P2213[2] : 3rd. Drive data set (DDS)		
Details:	See P2201 (Fixed PID Setpoint 1).		
P2214[3]	Fixed PID setpoint 14	Min: -200.00	Level:
CStat: CUT	Datatype: Float	Unit: %	Def: 130.00
P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00
	Defines Fixed PID Setpoint 14		2
Index:	P2214[0] : 1st. Drive data set (DDS)		
	P2214[1] : 2nd. Drive data set (DDS)		
	P2214[2] : 3rd. Drive data set (DDS)		
Details:	See P2201 (Fixed PID Setpoint 1).		

P2215[3]	Fixed PID setpoint 15	Min: -200.00	Level:
	CStat: CUT	Datatype: Float	Unit: %
	P-Group: TECH	Active: Immediately	QuickComm. No
		Def: 130.00	2
		Max: 200.00	

Defines Fixed PID Setpoint 15

Index:

- P2215[0] : 1st. Drive data set (DDS)
- P2215[1] : 2nd. Drive data set (DDS)
- P2215[2] : 3rd. Drive data set (DDS)

Details:

See P2201 (Fixed PID Setpoint 1).

P2216	Fixed PID setpoint mode - Bit 0	Min: 1	Level:
	CStat: CT	Datatype: U16	Unit: -
	P-Group: TECH	Active: first confirm	QuickComm. No
		Def: 1	3
		Max: 3	

Fixed frequencies for PID setpoint can be selected in three different modes. Parameter P1016 defines the mode of selection Bit 0.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

P2217	Fixed PID setpoint mode - Bit 1	Min: 1	Level:
	CStat: CT	Datatype: U16	Unit: -
	P-Group: TECH	Active: first confirm	QuickComm. No
		Def: 1	3
		Max: 3	

BCD or direct selection Bit 1 for PID setpoint.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

P2218	Fixed PID setpoint mode - Bit 2	Min: 1	Level:
	CStat: CT	Datatype: U16	Unit: -
	P-Group: TECH	Active: first confirm	QuickComm. No
		Def: 1	3
		Max: 3	

BCD or direct selection Bit 2 for PID setpoint.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

P2219	Fixed PID setpoint mode - Bit 3	Min: 1	Level:
	CStat: CT	Datatype: U16	Unit: -
	P-Group: TECH	Active: first confirm	QuickComm. No
		Def: 1	3
		Max: 3	

BCD or direct selection Bit 3 for PID setpoint.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command
- 3 Binary coded selection + ON command

P2220[3]	BI: Fixed PID setp. select Bit 0	Min: 0:0	Level:
	CStat: CT	Datatype: U32	Unit: -
	P-Group: COMMANDS	Active: first confirm	QuickComm. No
		Def: 0:0	3
		Max: 4000:0	

Defines command source of fixed PID setpoint selection Bit 0

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

Index:

- P2220[0] : 1st. Command data set (CDS)
- P2220[1] : 2nd. Command data set (CDS)
- P2220[2] : 3rd. Command data set (CDS)

P2221[3]	BI: Fixed PID setp. select Bit 1				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines command source of fixed PID setpoint selection Bit 1.

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

P2221[0] : 1st. Command data set (CDS)
 P2221[1] : 2nd. Command data set (CDS)
 P2221[2] : 3rd. Command data set (CDS)

P2222[3]	BI: Fixed PID setp. select Bit 2				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 0:0		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines command source of fixed PID setpoint selection Bit 2

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

P2222[0] : 1st. Command data set (CDS)
 P2222[1] : 2nd. Command data set (CDS)
 P2222[2] : 3rd. Command data set (CDS)

P2223[3]	BI: Fixed PID setp. select Bit 3				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 722:3		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines command source of fixed PID setpoint selection Bit 3

Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

P2223[0] : 1st. Command data set (CDS)
 P2223[1] : 2nd. Command data set (CDS)
 P2223[2] : 3rd. Command data set (CDS)

r2224	CO: Act. fixed PID setpoint			Min: -	Level: 2
		Datatype: Float	Unit: %	Def: -	
	P-Group: TECH			Max: -	

Displays total output of PID fixed setpoint selection.

Note:

r2224 = 100 % corresponds to 4000 hex

P2225	Fixed PID setpoint mode - Bit 4				Min: 1	Level: 3
	CStat: CT	Datatype: U16	Unit: -	Def: 1		
	P-Group: TECH	Active: first confirm	QuickComm. No	Max: 2		

Direct selection or direct selection + ON Bit 4 for PID setpoint.

Settings:

1 Direct selection
 2 Direct selection + ON command

P2226[3]	BI: Fixed PID setp. select Bit 4	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: -	Def: 722:4	
	P-Group: COMMANDS Active: first confirm QuickComm. No	Max: 4000:0	

Defines command source of fixed PID setpoint selection Bit 4

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

- P2226[0] : 1st. Command data set (CDS)
- P2226[1] : 2nd. Command data set (CDS)
- P2226[2] : 3rd. Command data set (CDS)

P2227	Fixed PID setpoint mode - Bit 5	Min: 1	Level: 3
	CStat: CT Datatype: U16 Unit: -	Def: 1	
	P-Group: TECH Active: first confirm QuickComm. No	Max: 2	

Direct selection / direct selection + ON Bit 5 for PID setpoint.

Settings:

- 1 Direct selection
- 2 Direct selection + ON command

P2228[3]	BI: Fixed PID setp. select Bit 5	Min: 0:0	Level: 3
	CStat: CT Datatype: U32 Unit: -	Def: 722:5	
	P-Group: COMMANDS Active: first confirm QuickComm. No	Max: 4000:0	

Defines command source of fixed PID setpoint selection Bit 5

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

Index:

- P2228[0] : 1st. Command data set (CDS)
- P2228[1] : 2nd. Command data set (CDS)
- P2228[2] : 3rd. Command data set (CDS)

P2231[3]	Setpoint memory of PID-MOP	Min: 0	Level: 2
	CStat: CUT Datatype: U16 Unit: -	Def: 0	
	P-Group: TECH Active: Immediately QuickComm. No	Max: 1	

Setpoint memory

Settings:

- 0 PID-MOP setpoint will not be stored
- 1 PID-MOP setpoint will be stored (P2240 is updated)

Index:

- P2231[0] : 1st. Drive data set (DDS)
- P2231[1] : 2nd. Drive data set (DDS)
- P2231[2] : 3rd. Drive data set (DDS)

Dependency:

If 0 selected, setpoint returns to value set in P2240 (setpoint of PID-MOP) after an OFF command.

If 1 is selected, active setpoint is 'remembered' and P2240 updated with current value.

Details:

See P2240 (setpoint of PID-MOP)

P2232	Inhibit rev. direct. of PID-MOP	Min: 0	Level: 2
	CStat: CT Datatype: U16 Unit: -	Def: 1	
	P-Group: TECH Active: first confirm QuickComm. No	Max: 1	

Inhibits reverse setpoint selection when PID motor potentiometer is chosen either as a main setpoint of additional setpoint (using P1000)

Settings:

- 0 Reverse direction is allowed
- 1 Reverse direction inhibited

Note:

Setting 0 enables a change of motor direction using the motor potentiometer setpoint (increase/decrease frequency either by using digital inputs or motor potentiometer up/down buttons).

P2235[3]	BI: Enable PID-MOP (UP-cmd)				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 19:13		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of UP command.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)

19.D = Keypad UP cursor

Index:

- P2235[0] : 1st. Command data set (CDS)
- P2235[1] : 2nd. Command data set (CDS)
- P2235[2] : 3rd. Command data set (CDS)

Dependency:

To change setpoint:

1. Use UP / DOWN key on BOP or
2. Set P0702/P0703 = 13/14 (function of digital inputs 2 and 3)

P2236[3]	BI: Enable PID-MOP (DOWN-cmd)				Min: 0:0	Level: 3
	CStat: CT	Datatype: U32	Unit: -	Def: 19:14		
	P-Group: COMMANDS	Active: first confirm	QuickComm. No	Max: 4000:0		

Defines source of DOWN command.

Settings:

- 722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
- 722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
- 722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)
- 722.3 = Digital input 4 (requires P0704 to be set to 99, BICO)
- 722.4 = Digital input 5 (requires P0705 to be set to 99, BICO)
- 722.5 = Digital input 6 (requires P0706 to be set to 99, BICO)
- 722.6 = Digital input 7 (via analog input 1, requires P0707 to be set to 99)
- 722.7 = Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.E = Keypad DOWN cursor

Index:

- P2236[0] : 1st. Command data set (CDS)
- P2236[1] : 2nd. Command data set (CDS)
- P2236[2] : 3rd. Command data set (CDS)

Dependency:

To change setpoint:

1. Use UP / DOWN key on BOP or
2. Set P0702/P0703 = 13/14 (function of digital inputs 2 and 3)

P2240[3]	Setpoint of PID-MOP				Min: -200.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 10.00		
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00		

Setpoint of the motor potentiometer.

Allows user to set a digital PID setpoint in [%].

Index:

- P2240[0] : 1st. Drive data set (DDS)
- P2240[1] : 2nd. Drive data set (DDS)
- P2240[2] : 3rd. Drive data set (DDS)

Note:

P2240 = 100 % corresponds to 4000 hex

r2250	CO: Output setpoint of PID-MOP				Min: -	Level: 2
		Datatype: Float	Unit: %	Def: -		
	P-Group: TECH			Max: -		

Displays output setpoint of motor potentiometer in [%].

Note:

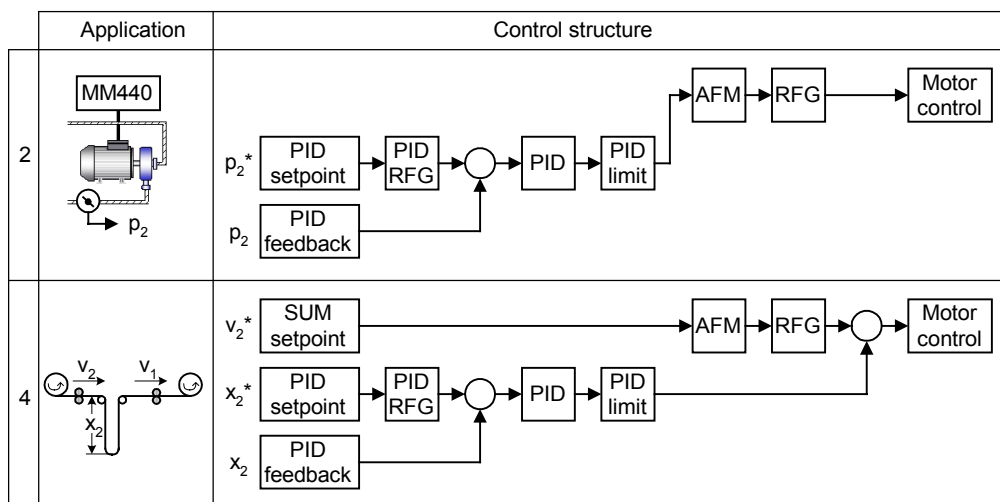
r2250 = 100 % corresponds to 4000 hex

P2251	PID mode	Min: 0	Level:
	CStat: CT	Datatype: U16	Def: 0
	P-Group: TECH	Active: Immediately	QuickComm. No Max: 1

Enables function of PID controller.

	SUM	PID controller	RFG	PID-RFG
1	P2200 = 0:0 ²⁾ P2251 = 0	Main setpoint	ON: active OFF1/3: active	ON: - OFF1/3: -
2	P2200 = 1:0 ²⁾ P2251 = 0	-	ON: - OFF1/3: active	ON: active OFF1/3: -
3	P2200 = 0:0 ¹⁾ P2251 = 1	Main setpoint	ON: active OFF1/3: active	ON: - OFF1/3: -
4	P2200 = 1:0 ¹⁾ P2251 = 1	Main setpoint	ON: active OFF1/3: active	ON: active OFF1/3: active

- 1) will take change with drive running
- 2) change only taken when drive stopped



- Settings:**
 0 PID as setpoint
 1 PID as trim

Dependency:
 Active when PID loop is enabled (see P2200).

P2253[3]	CI: PID setpoint	Min: 0:0	Level:
	CStat: CUT	Datatype: U32	Def: 0:0
	P-Group: TECH	Active: first confirm	QuickComm. No Max: 4000:0

Defines setpoint source for PID setpoint input.

This parameter allows the user to select the source of the PID setpoint. Normally, a digital setpoint is selected either using a fixed PID setpoint or an active setpoint.

- Settings:**
 755 = Analog input 1
 2224 = Fixed PI setpoint (see P2201 to P2207)
 2250 = Active PI setpoint (see P2240)

- Index:**
 P2253[0] : 1st. Command data set (CDS)
 P2253[1] : 2nd. Command data set (CDS)
 P2253[2] : 3rd. Command data set (CDS)

P2254[3]	CI: PID trim source	Min: 0:0	Level:
	CStat: CUT	Datatype: U32	Def: 0:0
	P-Group: TECH	Active: first confirm	QuickComm. No Max: 4000:0

Selects trim source for PID setpoint. This signal is multiplied by the trim gain and added to the PID setpoint.

Settings:

755 = Analog input 1
 2224 = Fixed PI setpoint (see P2201 to P2207)
 2250 = Active PI setpoint (see P2240)

Index:

P2254[0] : 1st. Command data set (CDS)
 P2254[1] : 2nd. Command data set (CDS)
 P2254[2] : 3rd. Command data set (CDS)

P2255	PID setpoint gain factor	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Def: 100.00
	P-Group: TECH	Active: Immediately	QuickComm. No Max: 100.00

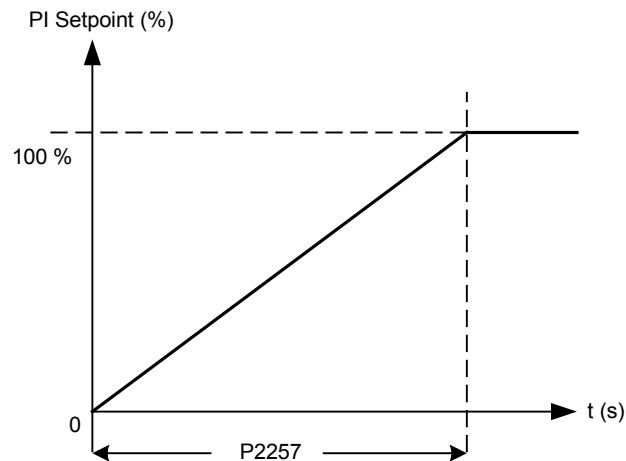
Gain factor for PID setpoint. The PID setpoint input is multiplied by this gain factor to produce a suitable ratio between setpoint and trim.

P2256	PID trim gain factor	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Def: 100.00
	P-Group: TECH	Active: Immediately	QuickComm. No Max: 100.00

Gain factor for PID trim. This gain factor scales the trim signal, which is added to the main PID setpoint.

P2257	Ramp-up time for PID setpoint	Min: 0.00	Level:
	CStat: CUT	Datatype: Float	Def: 1.00
	P-Group: TECH	Active: Immediately	QuickComm. No Max: 650.00

Sets the ramp-up time for the PID setpoint.

**Dependency:**

P2200 = 1 (PID control is enabled) disable normal ramp-up time (P1120).

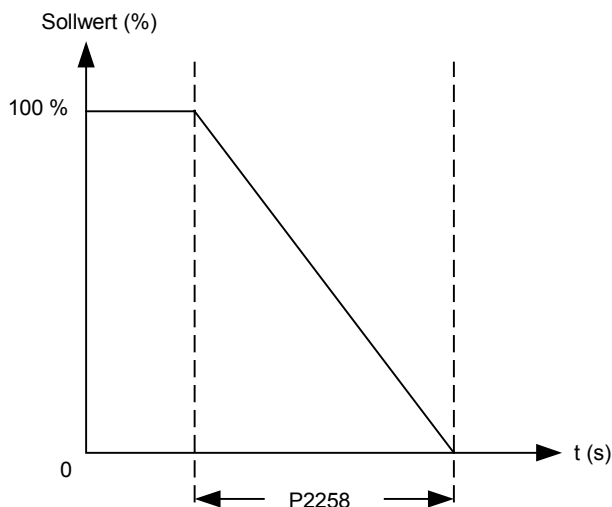
PID ramp time effective only on PID setpoint and only active when PID setpoint is changed or when RUN command is given (when PID uses this ramp to reach its value from 0 %).

Notice:

Setting the ramp-up time too short may cause the inverter to trip, on overcurrent for example.

P2258	Ramp-down time for PID setpoint	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Unit: s
	P-Group: TECH	Active: Immediately		QuickComm. No
		Def: 1.00		
		Max: 650.00		

Sets ramp-down time for PID setpoint.



Dependency:

P2200 = 1 (PID control is enabled) disables normal ramp-up time (P1120).

PID setpoint ramp effective only on PID setpoint changes.

P1121 (ramp-down time) and P1135 (OFF3 ramp-down time) define the ramp times used after OFF1 and OFF2 respectively.

Notice:

Setting the ramp-down time too short can cause the inverter to trip on overvoltage (F0002) / overcurrent (F0001).

r2260	CO: PID setpoint after PID-RFG	Min: -	Level: 2	
		Datatype: Float		Unit: %
	P-Group: TECH	Def: -		Max: -

Displays total active PID setpoint after PID-RFG in [%].

Note:

r2260 = 100 % corresponds to 4000 hex

P2261	PID setpoint filter timeconstant	Min: 0.00	Level: 3	
	CStat: CUT	Datatype: Float		Unit: s
	P-Group: TECH	Active: Immediately		QuickComm. No
		Def: 0.00		
		Max: 60.00		

Sets a time constant for smoothing the PID setpoint.

Note:

0 = no smoothing

r2262	CO: Filtered PID setp. after RFG	Min: -	Level: 3	
		Datatype: Float		Unit: %
	P-Group: TECH	Def: -		Max: -

Displays filtered PID setpoint after PID-RFG in [%].

Note:

r2262 = 100 % corresponds to 4000 hex

P2263	PID controller type	Min: 0	Level: 3	
	CStat: CT	Datatype: U16		Unit: -
	P-Group: TECH	Active: Immediately		QuickComm. No
		Def: 0		
		Max: 1		

Sets the PID controller type.

Settings:

- 0 D component on feedback signal
- 1 D component on error signal

P2264[3]	CI: PID feedback	Min: 0:0	Level: 2	
	CStat: CUT	Datatype: U32		Def: 755:0
	P-Group: TECH	Active: first confirm		QuickComm. No Max: 4000:0

Selects the source of the PID feedback signal.

Settings:

- 755 = Analog input 1 setpoint
- 2224 = Fixed PID setpoint
- 2250 = Output setpoint of PID-MOP

Index:

- P2264[0] : 1st. Command data set (CDS)
- P2264[1] : 2nd. Command data set (CDS)
- P2264[2] : 3rd. Command data set (CDS)

Note:

When analog input is selected, offset and gain can be implemented using parameters P0756 to P0760 (ADC scaling).

P2265	PID feedback filter timeconstant	Min: 0.00	Level: 2	
	CStat: CUT	Datatype: Float		Def: 0.00
	P-Group: TECH	Active: Immediately		QuickComm. No Max: 60.00

Defines time constant for PID feedback filter.

r2266	CO: PID filtered feedback	Min: -	Level: 2	
		Datatype: Float		Def: -
	P-Group: TECH	Unit: %		Max: -

Displays PID feedback signal in [%].

Note:

r2266 = 100 % corresponds to 4000 hex

P2267	Max. value for PID feedback	Min: -200.00	Level: 3	
	CStat: CUT	Datatype: Float		Def: 100.00
	P-Group: TECH	Active: Immediately		QuickComm. No Max: 200.00

Sets the upper limit for the value of the feedback signal in [%].

Note:

P2267 = 100 % corresponds to 4000 hex

Notice:

When PID is enabled (P2200 = 1) and the signal rises above this value, the inverter will trip with F0222.

P2268	Min. value for PID feedback	Min: -200.00	Level: 3	
	CStat: CUT	Datatype: Float		Def: 0.00
	P-Group: TECH	Active: Immediately		QuickComm. No Max: 200.00

Sets lower limit for value of feedback signal in [%].

Note:

P2268 = 100 % corresponds to 4000 hex

Notice:

When PID is enabled (P2200 = 1) and the signal rises below this value, the inverter will trip with F0221.

P2269	Gain applied to PID feedback	Min: 0.00	Level: 3	
	CStat: CUT	Datatype: Float		Def: 100.00
	P-Group: TECH	Active: Immediately		QuickComm. No Max: 500.00

Allows the user to scale the PID feedback as a percentage value [%].

A gain of 100.0 % means that feedback signal has not changed from its default value.

P2270	PID feedback function selector	Min: 0	Level: 3	
	CStat: CUT	Datatype: U16		Def: 0
	P-Group: TECH	Active: Immediately		QuickComm. No Max: 3

Applies mathematical functions to the PID feedback signal, allowing multiplication of the result by P2269 (gain applied to PID feedback).

Settings:

- 0 Disabled
- 1 Square root (root(x))
- 2 Square (x*x)
- 3 Cube (x*x*x)

P2271	PID transducer type	Min: 0	Level: 2	
	CStat: CUT	Datatype: U16		Unit: -
	P-Group: TECH	Active: Immediately		QuickComm. No
		Def: 0		
		Max: 1		

Allows the user to select the transducer type for the PID feedback signal.

Value:

0 : [default] If the feedback signal is less than the PID setpoint, the PID controller will increase motor speed to correct this.

1 : If the feedback signal is greater than the PID setpoint, the PID controller will reduce motor speed to correct this.

Settings:

- 0 Disabled
- 1 Inversion of PID feedback signal

Notice:

It is essential that you select the correct transducer type.

If you are unsure whether 0 or 1 is applicable, you can determine the correct type as follows:

- 1 Disable the PID function (P2200 = 0).
- 2 Increase the motor frequency while measuring the feedback signal.
- 3 If the feedback signal increases with an increase in motor frequency, the PID transducer type should be 0.
- 4 If the feedback signal decreases with an increase in motor frequency the PID transducer type should be set to 1.

r2272	CO: PID scaled feedback	Min: -	Level: 2	
		Datatype: Float		Unit: %
	P-Group: TECH			Def: -
		Max: -		

Displays PID scaled feedback signal in [%].

Note:

r2272 = 100 % corresponds to 4000 hex

r2273	CO: PID error	Min: -	Level: 2	
		Datatype: Float		Unit: %
	P-Group: TECH			Def: -
		Max: -		

Displays PID error (difference) signal between setpoint and feedback signals in [%].

Note:

r2273 = 100 % corresponds to 4000 hex

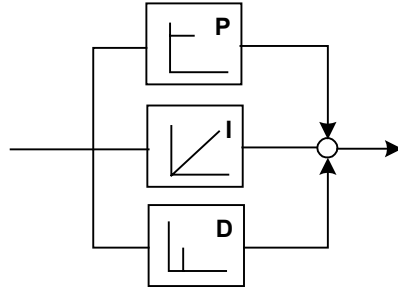
P2274	PID derivative time	Min: 0.000	Level: 2	
	CStat: CUT	Datatype: Float		Unit: s
	P-Group: TECH	Active: Immediately		QuickComm. No
		Def: 0.000		
		Max: 60.000		

Sets PID derivative time.

P2280	PID proportional gain			Min: 0.000	Level: 2
	CStat: CUT	Datatype: Float	Unit: -	Def: 3.000	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 65.000	

Allows user to set proportional gain for PID controller.

The PID controller is implemented using the standard model.



For best results, enable both P and I terms.

Dependency:

If P term = 0, I term acts on the square of the error signal. If I term = 0, PID controller acts as a P or PD controller respectively.

Note:

If the system is prone to sudden step changes in the feedback signal, P term should normally be set to a small value (0.5) with a faster I term for optimum performance.

The D term (P2274) multiplies the difference between the present and previous feedback signal thus accelerating the controller reaction to an error that appears suddenly.

Notice:

The D term should be used carefully, since it can cause the controller output to fluctuate as every change in the feedback signal is amplified by the controller derivative action.

P2285	PID integral time			Min: 0.000	Level: 2
	CStat: CUT	Datatype: Float	Unit: s	Def: 0.000	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 60.000	

Sets integral time constant for PID controller.

Details:

See P2280 (PID proportional gain).

P2291	PID output upper limit			Min: -200.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 100.00	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00	

Sets upper limit for PID controller output in [%].

Dependency:

If F max (P1082) is greater than P2000 (reference frequency), either P2000 or P2291 (PID output upper limit) must be changed to achieve F max.

Note:

P2291 = 100 % corresponds to 4000 hex (as defined by P2000 (reference frequency)).

P2292	PID output lower limit			Min: -200.00	Level: 2
	CStat: CUT	Datatype: Float	Unit: %	Def: 0.00	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 200.00	

Sets lower limit for the PID controller output in [%].

Dependency:

A negative value allows bipolar operation of PID controller.

Note:

P2292 = 100 % corresponds to 4000 hex

P2293	Ramp-up /-down time of PID limit			Min: 0.00	Level: 3
	CStat: CUT	Datatype: Float	Unit: s	Def: 1.00	
	P-Group: TECH	Active: Immediately	QuickComm. No	Max: 100.00	

Sets maximum ramp rate on output of PID.

When PI is enabled, the output limits are ramped up from 0 to the limits set in P2291 (PID output upper limit) and P2292 (PID output lower limit). Limits prevent large step changes appearing on the output of the PID when the inverter is started. Once the limits have been reached, the PID controller output is instantaneous.

These ramp times are used whenever a RUN command is issued.

Note:

If an OFF1 or OFF 3 are issued, the inverter output frequency ramps down as set in P1121 (ramp-down time) or P1135 (OFF3 ramp-down time).

r2294	CO: Act. PID output	Datatype: Float	Unit: %	Min: -	Level: 2
	P-Group: TECH			Def: - Max: -	

Displays PID output in [%]

Note:

r2294 = 100 % corresponds to 4000 hex

P2295	Gain applied to PID output	Datatype: Float	Unit: -	Min: -100.00	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 100.00 Max: 100.00	

Allows the user to scale the PID output as a percentage value [%].

A gain of 100.0 % means that output signal has not changed from its default value.

P2350	PID autotune enable	Datatype: U16	Unit: -	Min: 0	Level: 2
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 0 Max: 4	

Enables autotune function of PID controller.

Settings:

- 0 PID autotuning disabled
- 1 PID autotuning via Ziegler Nichols (ZN) standard
- 2 PID autotuning as 1 plus some overshoot (O/S)
- 3 PID autotuning as 2 little or no overshoot (O/S)
- 4 PID autotuning PI only, quarter damped response

Dependency:

Active when PID loop is enabled (see P2200).

Note:

P2350 = 1

This is the standard Ziegler Nichols (ZN) tuning which should be a quarter damped response to a step.

P2350 = 2

This tuning will give some overshoot (O/S) but should be faster than option 1

P2350 = 3

This tuning should give little or no overshoot but will not be as fast as option 2.

P2350 = 4

This tuning only changes values of P and I and should be a quarter damped response.

The option to be selected depends on the application but broadly speaking option 1 will give an all round good response, whereas if a faster response is desired option 2 should be selected. If no overshoot is desired then option 3 is the choice. For cases where no D term is wanted then option 4 can be selected. The tuning procedure is the same for all options. It is just the calculation of P,I and D values that is different.

After autotune this parameter is set to zero (autotune completed).

P2354	PID tuning timeout length	Datatype: U16	Unit: s	Min: 60	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 240 Max: 65000	

This parameter determines the time that the auto tuning code will wait before aborting a tuning run if no oscillation has been obtained.

P2355	PID tuning offset	Datatype: Float	Unit: %	Min: 0.00	Level: 3
	CStat: CUT	Active: Immediately	QuickComm. No	Def: 5.00 Max: 20.00	

Sets applied offset and deviation for PID autotuning.

Note:

This can be varied depending on plant conditions e.g. a very long system time constant might require a larger value.

P2480[3]	Position mode	Datatype: U16	Unit: -	Min: 1	Level: 3
	CStat: CT	Active: first confirm	QuickComm. No	Def: 1 Max: 1	

Sets the mode for positioning mode

Settings:

- 1 Open loop positioning

Index:

- P2480[0] : 1st. Drive data set (DDS)
- P2480[1] : 2nd. Drive data set (DDS)
- P2480[2] : 3rd. Drive data set (DDS)

P2481[3]	Gearbox ratio input	Min: 0.00	Level:
	CStat: CT Datatype: Float Unit: - Def: 1.00 P-Group: CONTROL Active: first confirm QuickComm. No Max: 9999.99		3
	Defines the ratio between number of motor shaft revolutions to equal one revolution of the gearbox output shaft.		
Index:	P2481[0] : 1st. Drive data set (DDS) P2481[1] : 2nd. Drive data set (DDS) P2481[2] : 3rd. Drive data set (DDS)		
P2482[3]	Gearbox ratio output	Min: 0.00	Level:
	CStat: CT Datatype: Float Unit: - Def: 1.00 P-Group: CONTROL Active: first confirm QuickComm. No Max: 9999.99		3
	Defines the ratio between number of motor shaft revolutions to equal one revolution of the gearbox output shaft.		
Index:	P2482[0] : 1st. Drive data set (DDS) P2482[1] : 2nd. Drive data set (DDS) P2482[2] : 3rd. Drive data set (DDS)		
P2484[3]	No. of shaft turns = 1 Unit	Min: 0.01	Level:
	CStat: CUT Datatype: Float Unit: - Def: 1.0 P-Group: CONTROL Active: first confirm QuickComm. No Max: 9999.99		3
	Sets the number of rotations of the motor shaft required to represent 1 Unit of user selected Units See P0530.		
Index:	P2484[0] : 1st. Drive data set (DDS) P2484[1] : 2nd. Drive data set (DDS) P2484[2] : 3rd. Drive data set (DDS)		
P2487[3]	Positional error trim value	Min: -200.00	Level:
	CStat: CUT Datatype: Float Unit: - Def: 0.00 P-Group: CONTROL Active: first confirm QuickComm. No Max: 200.00		3
	Offset error correction due to mechanical errors. Negative value entered when final position is before required end point. Positive value entered when final position is after the required end point.		
Index:	P2487[0] : 1st. Drive data set (DDS) P2487[1] : 2nd. Drive data set (DDS) P2487[2] : 3rd. Drive data set (DDS)		
P2488[3]	No. final shaft turns = 1 Unit	Min: 0.01	Level:
	CStat: CUT Datatype: Float Unit: - Def: 1.0 P-Group: CONTROL Active: first confirm QuickComm. No Max: 9999.99		3
	Sets the number of rotations of the motor shaft required to represent 1 Unit of user selected Units See P0530.		
Index:	P2488[0] : 1st. Drive data set (DDS) P2488[1] : 2nd. Drive data set (DDS) P2488[2] : 3rd. Drive data set (DDS)		
r2489	Act. number of shaft revolutions	Min: -	Level:
	Datatype: Float Unit: - Def: - P-Group: CONTROL Max: -		3
	Displays the actual number of shaft revolutions since trigger of positioning.		
P2800	Enable FFBs	Min: 0	Level:
	CStat: CUT Datatype: U16 Unit: - Def: 0 P-Group: TECH Active: first confirm QuickComm. No Max: 1		3
	Free function blocks (FFB) are enabled in two steps. 1. Parameter P2800 enables all free function blocks , normally (P2800 = 1). 2. Parameters P2801 and P2802 respectively, enable each free function block individually (P2801[x] > 0 bzw. P2802[x] > 0).		
Settings:	0 Disable 1 Enable		
Dependency:	All active function blocks will be calculated in every 132 ms.		

r2811	BO: AND 1	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of AND 1 element. Displays and logic of bits defined in P2810[0], P2810[1].

Dependency:
P2801[0] is active level for the AND element.

P2812[2]	BI: AND 2	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT P-Group: TECH	Active: first confirm	QuickComm. No		

P2812[0], 2812[1] define inputs of AND 2 element, output is P2813.

Index:
P2812[0] : Binector input 0 (BI 0)
P2812[1] : Binector input 1 (BI 1)

Dependency:
P2801[1] is active level for the AND element.

r2813	BO: AND 2	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of AND 2 element. Displays and logic of bits defined in P2812[0], P2812[1].

Dependency:
P2801[1] is active level for the AND element.

P2814[2]	BI: AND 3	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT P-Group: TECH	Active: first confirm	QuickComm. No		

P2814[0], P2814[1] define inputs of AND 3 element, output is P2815.

Index:
P2814[0] : Binector input 0 (BI 0)
P2814[1] : Binector input 1 (BI 1)

Dependency:
P2801[2] is active level for the AND element.

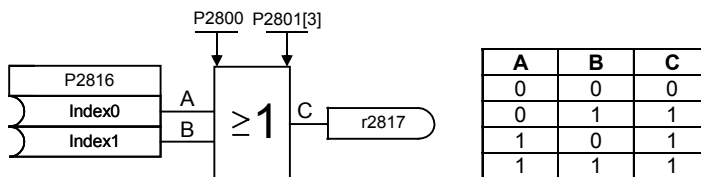
r2815	BO: AND 3	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of AND 3 element. Displays and logic of bits defined in P2814[0], P2814[1].

Dependency:
P2801[2] is active level for the AND element.

P2816[2]	BI: OR 1	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT P-Group: TECH	Active: first confirm	QuickComm. No		

P2816[0], P2816[1] define inputs of OR 1 element, output is P2817.



Index:
P2816[0] : Binector input 0 (BI 0)
P2816[1] : Binector input 1 (BI 1)

Dependency:
P2801[3] is active level for the OR element.

r2817	BO: OR 1	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of OR 1 element. Displays or logic of bits defined in P2816[0], P2816[1].

Dependency:
P2801[3] is active level for the OR element.

P2818[2]	BI: OR 2	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: U32		Def: 0:0
	P-Group: TECH	Active: first confirm		QuickComm. No

P2818[0], P2818[1] define inputs of OR 2 element, output is P2819.

Index:

P2818[0] : Binector input 0 (BI 0)
P2818[1] : Binector input 1 (BI 1)

Dependency:

P2801[4] is active level for the OR element.

r2819	BO: OR 2	Min: -	Level: 3	
	Datatype: U16	Unit: -		Def: -
	P-Group: TECH			Max: -

Output of OR 2 element. Displays or logic of bits defined in P2818[0], P2818[1].

Dependency:

P2801[4] is active level for the OR element.

P2820[2]	BI: OR 3	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: U32		Def: 0:0
	P-Group: TECH	Active: first confirm		QuickComm. No

P2820[0], P2820[1] define inputs of OR 3 element, output is P2821.

Index:

P2820[0] : Binector input 0 (BI 0)
P2820[1] : Binector input 1 (BI 1)

Dependency:

P2801[5] is active level for the OR element.

r2821	BO: OR 3	Min: -	Level: 3	
	Datatype: U16	Unit: -		Def: -
	P-Group: TECH			Max: -

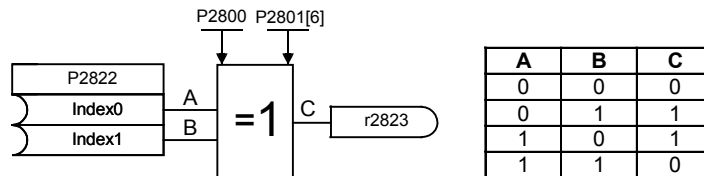
Output of OR 3 element. Displays or logic of bits defined in P2820[0], P2820[1].

Dependency:

P2801[5] is active level for the OR element.

P2822[2]	BI: XOR 1	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: U32		Def: 0:0
	P-Group: TECH	Active: first confirm		QuickComm. No

P2822[0], P2822[1] define inputs of XOR 1 element, output is P2823.



Index:

P2822[0] : Binector input 0 (BI 0)
P2822[1] : Binector input 1 (BI 1)

Dependency:

P2801[6] is active level for the XOR element.

r2823	BO: XOR 1	Min: -	Level: 3	
	Datatype: U16	Unit: -		Def: -
	P-Group: TECH			Max: -

Output of XOR 1 element. Displays exclusive-or logic of bits defined in P2822[0], P2822[1].

Dependency:

P2801[6] is active level for the XOR element.

P2824[2]	BI: XOR 2	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: U32		Def: 0:0
	P-Group: TECH	Active: first confirm		QuickComm. No

P2824[0], P2824[1] define inputs of XOR 2 element, output is P2825.

Index:

P2824[0] : Binector input 0 (BI 0)
P2824[1] : Binector input 1 (BI 1)

Dependency:

P2801[7] is active level for the XOR element.

r2825	BO: XOR 2	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of XOR 2 element. Displays exclusive-or logic of bits defined in P2824[0], P2824[1].

Dependency:
P2801[7] is active level for the XOR element.

P2826[2]	BI: XOR 3	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No		
	P-Group: TECH				

P2826[0], P2826[1] define inputs of XOR 3 element, output is P2827.

Index:
P2826[0] : Binector input 0 (BI 0)
P2826[1] : Binector input 1 (BI 1)

Dependency:
P2801[8] is active level for the XOR element.

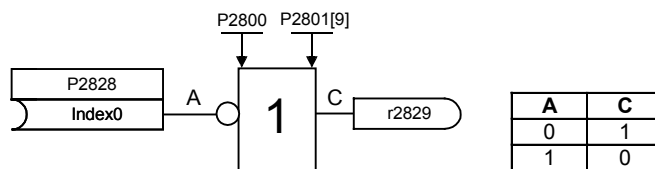
r2827	BO: XOR 3	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of XOR 3 element. Displays exclusive-or logic of bits defined in P2826[0], P2826[1].

Dependency:
P2801[8] is active level for the XOR element.

P2828	BI: NOT 1	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No		
	P-Group: TECH				

P2828 defines input of NOT 1 element, output is P2829.



Dependency:
P2801[9] is active level for the NOT element.

r2829	BO: NOT 1	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of NOT 1 element. Displays not logic of bit defined in P2828.

Dependency:
P2801[9] is active level for the NOT element.

P2830	BI: NOT 2	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No		
	P-Group: TECH				

P2830 defines input of NOT 2 element, output is P2831.

Dependency:
P2801[10] is active level for the NOT element.

r2831	BO: NOT 2	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of NOT 2 element. Displays not logic of bit defined in P2830.

Dependency:
P2801[10] is active level for the NOT element.

P2832	BI: NOT 3	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No		
	P-Group: TECH				

P2832 defines input of NOT 3 element, output is P2833.

Dependency:
P2801[11] is active level for the NOT element.

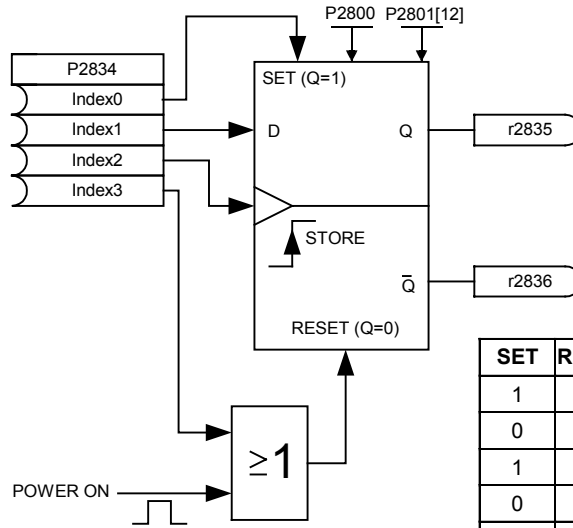
r2833	BO: NOT 3	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Output of NOT 3 element. Displays not logic of bit defined in P2832.

Dependency:
P2801[11] is active level for the NOT element.

P2834[4]	BI: D-FF 1	Datatype: U32	Unit: -	Min: 0:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 0:0	
	P-Group: TECH			Max: 4000:0	

P2834[0], P2834[1], P2834[2], P2834[3] define inputs of D-FlipFlop 1, outputs are P2835, P2836.



SET	RESET	D	STORE	Q	Q̄
1	0	x	x	1	0
0	1	x	x	0	1
1	1	x	x	Q _{n-1}	Q̄ _{n-1}
0	0	1	↑	1	0
0	0	0	↑	0	1
POWER-ON				0	1

Index:

- P2834[0] : Binector input: Set
- P2834[1] : Binector input: D input
- P2834[2] : Binector input: Store pulse
- P2834[3] : Binector input: Reset

Dependency:

P2801[12] is active level for the D-FlipFlop.

r2835	BO: Q D-FF 1	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Displays output of D-FlipFlop 1, inputs are defined in P2834[0], P2834[1], P2834[2], P2834[3]

Dependency:

P2801[12] is active level for the D-FlipFlop.

r2836	BO: NOT-Q D-FF 1	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Displays Not-output of D-FlipFlop 1, inputs are defined in P2834[0], P2834[1], P2834[2], P2834[3]

Dependency:

P2801[12] is active level for the D-FlipFlop.

P2837[4]	BI: D-FF 2	Datatype: U32	Unit: -	Min: 0:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 0:0	
	P-Group: TECH			Max: 4000:0	

P2837[0], P2837[1], P2837[2], P2837[3] define inputs of D-FlipFlop 2, outputs are P2838, 2839.

Index:

- P2837[0] : Binector input: Set
- P2837[1] : Binector input: D input
- P2837[2] : Binector input: Store pulse
- P2837[3] : Binector input: Reset

Dependency:

P2801[13] is active level for the D-FlipFlop.

r2838	BO: Q D-FF 2	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Displays output of D-FlipFlop 2, inputs are defined in P2837[0], P2837[1], P2837[2], P2837[3]

Dependency:

P2801[13] is active level for the D-FlipFlop.

r2839	BO: NOT-Q D-FF 2	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

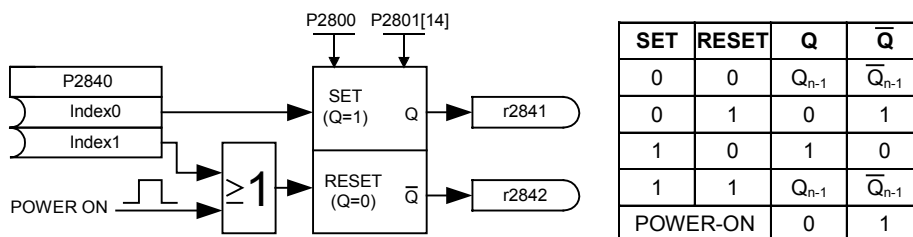
Displays Not-output of D-FlipFlop 2, inputs are defined in P2837[0], P2837[1], P2837[2], P2837[3]

Dependency:

P2801[13] is active level for the D-FlipFlop.

P2840[2]	BI: RS-FF 1	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT P-Group: TECH	Active: first confirm	QuickComm. No		

P2840[0], P2840[1] define inputs of RS-FlipFlop 1, outputs are P2841, P2842.



Index:

P2840[0] : Binector input: Set
P2840[1] : Binector input: Reset

Dependency:

P2801[14] is active level for the RS-FlipFlop.

r2841	BO: Q RS-FF 1	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Displays output of RS-FlipFlop 1, inputs are defined in P2840[0], P2840[1]

Dependency:

P2801[14] is active level for the RS-FlipFlop.

r2842	BO: NOT-Q RS-FF 1	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Displays Not-output of RS-FlipFlop 1, inputs are defined in P2840[0], P2840[1]

Dependency:

P2801[14] is active level for the RS-FlipFlop.

P2843[2]	BI: RS-FF 2	Datatype: U32	Unit: -	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
	CStat: CUT P-Group: TECH	Active: first confirm	QuickComm. No		

P2843[0], P2843[1] define inputs of RS-FlipFlop 2, outputs are P2844, P2845.

Index:

P2843[0] : Binector input: Set
P2843[1] : Binector input: Reset

Dependency:

P2801[15] is active level for the RS-FlipFlop.

r2844	BO: Q RS-FF 2	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Displays output of RS-FlipFlop 2, inputs are defined in P2843[0], P2843[1]

Dependency:

P2801[15] is active level for the RS-FlipFlop.

r2845	BO: NOT-Q RS-FF 2	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
	P-Group: TECH				

Displays Not-output of RS-FlipFlop 2, inputs are defined in P2843[0], P2843[1]

Dependency:

P2801[15] is active level for the RS-FlipFlop.

P2846[2]	BI: RS-FF 3			Min: 0:0	Level: 3
	CStat: CUT	Datatype: U32	Unit: -	Def: 0:0	
	P-Group: TECH	Active: first confirm	QuickComm. No	Max: 4000:0	

P2846[0], P2846[1] define inputs of RS-FlipFlop 3, outputs are P2847, P2848.

Index:

P2846[0] : Binector input: Set
 P2846[1] : Binector input: Reset

Dependency:

P2801[16] is active level for the RS-FlipFlop.

r2847	BO: Q RS-FF 3			Min: -	Level: 3
		Datatype: U16	Unit: -	Def: -	
	P-Group: TECH			Max: -	

Displays output of RS-FlipFlop 3, inputs are defined in P2846[0], P2846[1]

Dependency:

P2801[16] is active level for the RS-FlipFlop.

r2848	BO: NOT-Q RS-FF 3			Min: -	Level: 3
		Datatype: U16	Unit: -	Def: -	
	P-Group: TECH			Max: -	

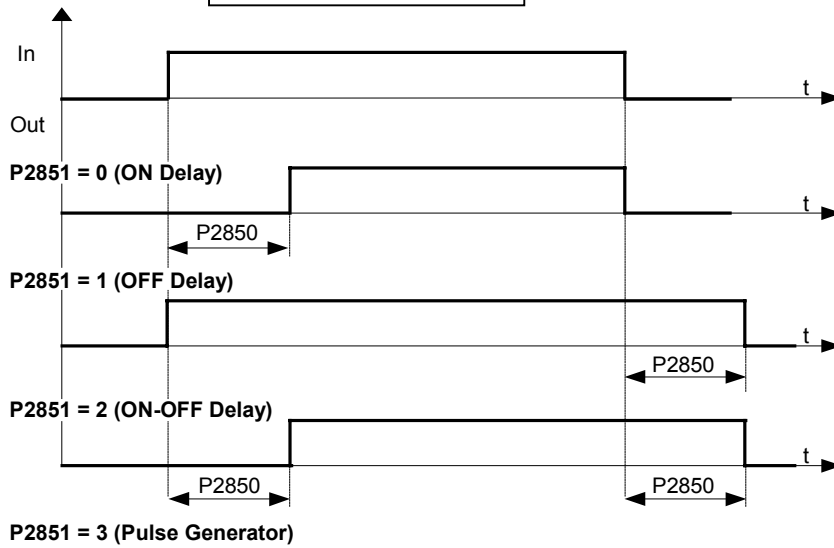
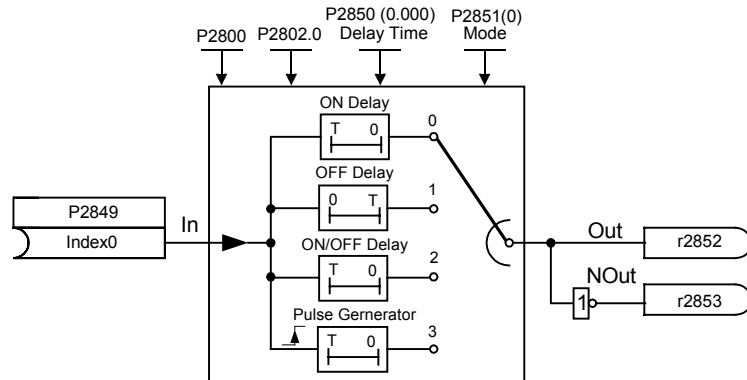
Displays Not-output of RS-FlipFlop 3, inputs are defined in P2846[0], P2846[1]

Dependency:

P2801[16] is active level for the RS-FlipFlop.

P2849	BI: Timer 1	Datatype: U32	Unit: -	Min: 0:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 0:0	
	P-Group: TECH			Max: 4000:0	

Define input signal of timer 1. P2849, P2850, P2851 are the inputs of the timer, outputs are P2852, P2853.



Dependency:
P2802[0] is active level for the timer.

P2850	Delay time of timer 1	Datatype: Float	Unit: -	Min: 0:0	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 0	
	P-Group: TECH			Max: 6000	

Defines delay time of timer 1. P2849, P2850, P2851 are the inputs of the timer, outputs are P2852, P2853.

Dependency:
P2802[0] is active level for the timer.

P2851	Mode timer 1	CStat: CUT P-Group: TECH	Datatype: U16 Active: first confirm	Unit: - QuickComm. No	Min: 0 Def: 0 Max: 3	Level: 3
Selects mode of timer 1. P2849, P2850, P2851 are the inputs of the timer, outputs are P2852, P2853.						
Settings:						
0 ON delay						
1 OFF delay						
2 ON/OFF delay						
3 Pulse generator						
Dependency: P2802[0] is active level for the timer.						
r2852	BO: Timer 1	P-Group: TECH	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
Displays output of timer 1. P2849, P2850, P2851 are the inputs of the timer, outputs are P2852, P2853.						
Dependency: P2802[0] is active level for the timer.						
r2853	BO: Nout timer 1	P-Group: TECH	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
Displays Not-output of timer 1. P2849, P2850, P2851 are the inputs of the timer, outputs are P2852, P2853.						
Dependency: P2802[0] is active level for the timer.						
P2854	BI: Timer 2	CStat: CUT P-Group: TECH	Datatype: U32 Active: first confirm	Unit: - QuickComm. No	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
Define input signal of timer 2. P2854, P2855, P2856 are the inputs of the timer, outputs are P2857, P2858.						
Dependency: P2802[1] is active level for the timer.						
P2855	Delay time of timer 2	CStat: CUT P-Group: TECH	Datatype: Float Active: first confirm	Unit: - QuickComm. No	Min: 0:0 Def: 0 Max: 6000	Level: 3
Defines delay time of timer 2. P2854, P2855, P2856 are the inputs of the timer, outputs are P2857, P2858.						
Dependency: P2802[1] is active level for the timer.						
P2856	Mode timer 2	CStat: CUT P-Group: TECH	Datatype: U16 Active: first confirm	Unit: - QuickComm. No	Min: 0 Def: 0 Max: 3	Level: 3
Selects mode of timer 2. P2854, P2855, P2856 are the inputs of the timer, outputs are P2857, P2858.						
Settings:						
0 ON delay						
1 OFF delay						
2 ON/OFF delay						
3 Pulse generator						
Dependency: P2802[1] is active level for the timer.						
r2857	BO: Timer 2	P-Group: TECH	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
Displays output of timer 2. P2854, P2855, P2856 are the inputs of the timer, outputs are P2857, P2858.						
Dependency: P2802[1] is active level for the timer.						
r2858	BO: Nout timer 2	P-Group: TECH	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 3
Displays Not-output of timer 2 P2854, P2855, P2856 are the inputs of the timer, outputs are P2857, P2858.						
Dependency: P2802[1] is active level for the timer.						
P2859	BI: Timer 3	CStat: CUT P-Group: TECH	Datatype: U32 Active: first confirm	Unit: - QuickComm. No	Min: 0:0 Def: 0:0 Max: 4000:0	Level: 3
Define input signal of timer 3. P2859, P2860, P2861 are the inputs of the timer, outputs are P2862, P2863.						
Dependency: P2802[2] is active level for the timer.						

P2860	Delay time of timer 3	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: TECH	Active: first confirm		QuickComm. No Def: 0 Max: 6000

Defines delay time of timer 3. P2859, P2860, P2861 are the inputs of the timer, outputs are P2862, P2863.

Dependency:

P2802[2] is active level for the timer.

P2861	Mode timer 3	Min: 0	Level: 3	
	CStat: CUT	Datatype: U16		Unit: -
	P-Group: TECH	Active: first confirm		QuickComm. No Def: 0 Max: 3

Selects mode of timer 3. P2859, P2860, P2861 are the inputs of the timer, outputs are P2862, P2863.

Settings:

- 0 ON delay
- 1 OFF delay
- 2 ON/OFF delay
- 3 Pulse generator

Dependency:

P2802[2] is active level for the timer.

r2862	BO: Timer 3	Min: -	Level: 3	
		Datatype: U16		Unit: -
	P-Group: TECH	Def: - Max: -		

Displays output of timer 3. P2859, P2860, P2861 are the inputs of the timer, outputs are P2862, P2863.

Dependency:

P2802[2] is active level for the timer.

r2863	BO: Nout timer 3	Min: -	Level: 3	
		Datatype: U16		Unit: -
	P-Group: TECH	Def: - Max: -		

Displays Not-output of timer 3. P2859, P2860, P2861 are the inputs of the timer, outputs are P2862, P2863.

Dependency:

P2802[2] is active level for the timer.

P2864	BI: Timer 4	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: U32		Unit: -
	P-Group: TECH	Active: first confirm		QuickComm. No Def: 0:0 Max: 4000:0

Define input signal of timer 4. P2864, P2865, P2866 are the inputs of the timer, outputs are P2867, P2868.

Dependency:

P2802[3] is active level for the timer.

P2865	Delay time of timer 4	Min: 0:0	Level: 3	
	CStat: CUT	Datatype: Float		Unit: -
	P-Group: TECH	Active: first confirm		QuickComm. No Def: 0 Max: 6000

Defines delay time of timer 4. P2864, P2865, P2866 are the inputs of the timer, outputs are P2867, P2868.

Dependency:

P2802[3] is active level for the timer.

P2866	Mode timer 4	Min: 0	Level: 3	
	CStat: CUT	Datatype: U16		Unit: -
	P-Group: TECH	Active: first confirm		QuickComm. No Def: 0 Max: 3

Selects mode of timer 4. P2864, P2865, P2866 are the inputs of the timer, outputs are P2867, P2868.

Settings:

- 0 ON delay
- 1 OFF delay
- 2 ON/OFF delay
- 3 Pulse generator

Dependency:

P2802[3] is active level for the timer.

r2867	BO: Timer 4	Min: -	Level: 3	
		Datatype: U16		Unit: -
	P-Group: TECH	Def: - Max: -		

Displays output of timer 4. P2864, P2865, P2866 are the inputs of the timer, outputs are P2867, P2868.

Dependency:

P2802[3] is active level for the timer.

r2868	BO: Nout timer 4	Min: -	Level: 3	
		Datatype: U16		Unit: -
	P-Group: TECH	Def: - Max: -		

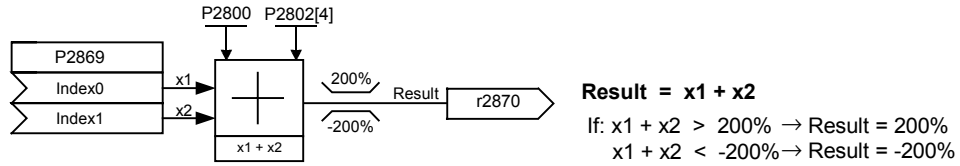
Displays Not-output of timer 4. P2864, P2865, P2866 are the inputs of the timer, outputs are P2867, P2868.

Dependency:

P2802[3] is active level for the timer.

P2869[2]	CI: ADD 1	Datatype: U32	Unit: -	Min: -	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 755:0	
	P-Group: TECH			Max: 4000:0	

Define inputs of Adder 1, result is in P2870.



Index:

P2869[0] : Connector input 0 (CI 0)
 P2869[1] : Connector input 1 (CI 1)

Dependency:

P2802[4] is the active level for the Adder.

r2870	CO: ADD 1	Datatype: Float	Unit: %	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Result of Adder 1.

Dependency:

P2802[4] is active level for the Adder.

P2871[2]	CI: ADD 2	Datatype: U32	Unit: -	Min: -	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 755:0	
	P-Group: TECH			Max: 4000:0	

Define inputs of Adder 2, result is in P2872.

Index:

P2871[0] : Connector input 0 (CI 0)
 P2871[1] : Connector input 1 (CI 1)

Dependency:

P2802[5] is active level for the Adder.

r2872	CO: ADD 2	Datatype: Float	Unit: %	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

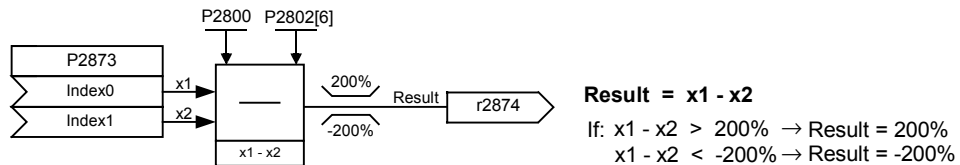
Result of Adder 2.

Dependency:

P2802[5] is active level for the Adder.

P2873[2]	CI: SUB 1	Datatype: U32	Unit: -	Min: -	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 755:0	
	P-Group: TECH			Max: 4000:0	

Define inputs of Subtractor 1, result is in P2874.



Index:

P2873[0] : Connector input 0 (CI 0)
 P2873[1] : Connector input 1 (CI 1)

Dependency:

P2802[6] is active level for the Subtractor.

r2874	CO: SUB 1	Datatype: Float	Unit: %	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Result of Subtractor 1.

Dependency:

P2802[6] is active level for the Subtractor.

P2875[2]	CI: SUB 2	Min: -	Level: 3	
	CStat: CUT	Datatype: U32		Def: 755:0
	P-Group: TECH	Active: first confirm		QuickComm. No Max: 4000:0

Define inputs of Subtractor 2, result is in P2876.

Index:

P2875[0] : Connector input 0 (CI 0)
P2875[1] : Connector input 1 (CI 1)

Dependency:

P2802[7] is active level for the Subtractor.

r2876	CO: SUB 2	Min: -	Level: 3	
	Datatype: Float	Unit: %		Def: -
	P-Group: TECH	Max: -		

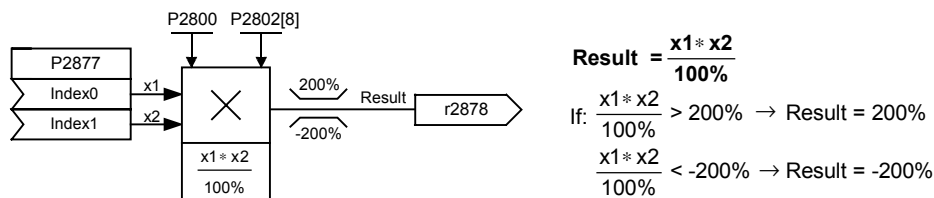
Result of Subtractor 2.

Dependency:

P2802[7] is active level for the Subtractor.

P2877[2]	CI: MUL 1	Min: -	Level: 3	
	CStat: CUT	Datatype: U32		Def: 755:0
	P-Group: TECH	Active: first confirm		QuickComm. No Max: 4000:0

Define inputs of Multiplier 1, result is in P2878.



Index:

P2877[0] : Connector input 0 (CI 0)
P2877[1] : Connector input 1 (CI 1)

Dependency:

P2802[8] is active level for the Multiplier.

r2878	CO: MUL 1	Min: -	Level: 3	
	Datatype: Float	Unit: %		Def: -
	P-Group: TECH	Max: -		

Result of Multiplier 1.

Dependency:

P2802[8] is active level for the Multiplier.

P2879[2]	CI: MUL 2	Min: -	Level: 3	
	CStat: CUT	Datatype: U32		Def: 755:0
	P-Group: TECH	Active: first confirm		QuickComm. No Max: 4000:0

Define inputs of Multiplier 2, result is in P2880.

Index:

P2879[0] : Connector input 0 (CI 0)
P2879[1] : Connector input 1 (CI 1)

Dependency:

P2802[9] is active level for the Multiplier.

r2880	CO: MUL 2	Min: -	Level: 3	
	Datatype: Float	Unit: %		Def: -
	P-Group: TECH	Max: -		

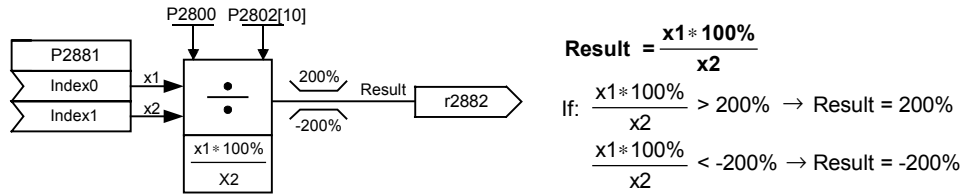
Result of Multiplier 2.

Dependency:

P2802[9] is active level for the Multiplier.

P2881[2]	CI: DIV 1	Datatype: U32	Unit: -	Min: -	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 755:0	
	P-Group: TECH			Max: 4000:0	

Define inputs of Divider 1, result is in P2882.



Index:

P2881[0] : Connector input 0 (CI 0)
P2881[1] : Connector input 1 (CI 1)

Dependency:

P2802[10] is active level for the Divider.

r2882	CO: DIV 1	Datatype: Float	Unit: %	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Result of Divider 1.

Dependency:

P2802[10] is active level for the Divider.

P2883[2]	CI: DIV 2	Datatype: U32	Unit: -	Min: -	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 755:0	
	P-Group: TECH			Max: 4000:0	

Define inputs of Divider 2, result is in P2884.

Index:

P2883[0] : Connector input 0 (CI 0)
P2883[1] : Connector input 1 (CI 1)

Dependency:

P2802[11] is active level for the Divider.

r2884	CO: DIV 2	Datatype: Float	Unit: %	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

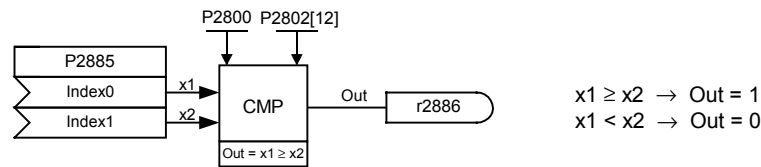
Result of Divider 2.

Dependency:

P2802[11] is active level for the Divider.

P2885[2]	CI: CMP 1	Datatype: U32	Unit: -	Min: -	Level: 3
	CStat: CUT	Active: first confirm	QuickComm. No	Def: 755:0	
	P-Group: TECH			Max: 4000:0	

Defines inputs of Comparator 1, output is P2886.



Index:

P2885[0] : Connector input 0 (CI 0)
P2885[1] : Connector input 1 (CI 1)

Dependency:

P2802[12] is active level for the Comparator.

r2886	BO: CMP 1	Datatype: U16	Unit: -	Min: -	Level: 3
	P-Group: TECH			Def: -	
				Max: -	

Displays result bit of Comparator 1.

Dependency:

P2802[12] is active level for the Comparator.

P2887[2]	CI: CMP 2			Min: -	Level: 3
	CStat: CUT	Datatype: U32	Unit: -	Def: 755:0	
	P-Group: TECH	Active: first confirm	QuickComm. No	Max: 4000:0	

Defines inputs of Comparator 2, output is P2888.

Index:

P2887[0] : Connector input 0 (CI 0)
 P2887[1] : Connector input 1 (CI 1)

Dependency:

P2802[13] is active level for the Comparator.

r2888	BO: CMP 2			Min: -	Level: 3
		Datatype: U16	Unit: -	Def: -	
	P-Group: TECH			Max: -	

Displays result bit of Comparator 2.

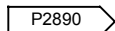
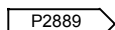
Dependency:

P2802[13] is active level for the Comparator.

P2889	CO: Fixed setpoint 1 in [%]			Min: -	Level: 3
	CStat: CUT	Datatype: Float	Unit: %	Def: 0	
	P-Group: TECH	Active: first confirm	QuickComm. No	Max: 200	

Fixed percent setting 1.

Connector Setting in %



Range : -200% ... 200%

P2890	CO: Fixed setpoint 2 in [%]			Min: -	Level: 3
	CStat: CUT	Datatype: Float	Unit: %	Def: 0	
	P-Group: TECH	Active: first confirm	QuickComm. No	Max: 200	

Fixed percent setting 2.

P3900	End of quick commissioning			Min: 0	Level: 1
	CStat: C	Datatype: U16	Unit: -	Def: 0	
	P-Group: QUICK	Active: first confirm	QuickComm. Yes	Max: 3	

Performs calculations necessary for optimized motor operation.

After completion of calculation, P3900 and P0010 (parameter groups for commissioning) are automatically reset to their original value 0.

Settings:

- 0 No quick commissioning
- 1 Start quick commissioning with factory reset
- 2 Start quick commissioning
- 3 Start quick commissioning only for motor data

Dependency:

Changeable only when P0010 = 1 (quick commissioning)

Note:

P3900 = 1 :
 When setting 1 is selected, only the parameter settings carried out via the commissioning menu "Quick commissioning", are retained; all other parameter changes, including the I/O settings, are lost. Motor calculations are also performed.

P3900 = 2 :
 When setting 2 is selected, only those parameters, which depend on the parameters in the commissioning menu "Quick commissioning" (P0010 = 1) are calculated. The I/O settings are also reset to default and the motor calculations performed.

P3900 = 3 :
 When setting 3 is selected, only the motor and controller calculations are performed. Exiting quick commissioning with this setting saves time (for example, if only motor rating plate data have been changed).

Calculates a variety of motor parameters, overwriting previous values. These include P0344 (motor weight), P0350 (demagnetization time), P2000 (reference frequency), P2002 (reference current).

P3950	Access of hidden parameters			Min: 0	Level: 4
	CStat: CUT	Datatype: U16	Unit: -	Def: 0	
	P-Group: ALWAYS	Active: first confirm	QuickComm. No	Max: 255	

Accesses special parameters for development (expert only) and factory functionality (calibration parameter).

r3954[13]	CM version and GUI ID	Datatype: U16	Unit: -	Min: -	Level: 4
	P-Group: -			Def: -	
				Max: -	

Used to classify firmware (only for SIEMENS internal purposes).

Index:

- r3954[0] : CM version (major release)
- r3954[1] : CM version (minor release)
- r3954[2] : CM version (baselevel or patch)
- r3954[3] : GUI ID
- r3954[4] : GUI ID
- r3954[5] : GUI ID
- r3954[6] : GUI ID
- r3954[7] : GUI ID
- r3954[8] : GUI ID
- r3954[9] : GUI ID
- r3954[10] : GUI ID
- r3954[11] : GUI ID major release
- r3954[12] : GUI ID minor release

P3980	Commissioning command selection	Datatype: U16	Unit: -	Min: 0	Level: 4
	CStat: T			Def: 0	
	P-Group: -	Active: first confirm	QuickComm. No	Max: 66	

Toggles command and setpoint sources between freely programmable BICO parameters and fixed command/setpoint profiles for commissioning.

The command and setpoint sources can be changed independently. The tens digit selects the command source, the ones digit the setpoint source.

Settings:

0	Cmd = BICO parameter	Setpoint = BICO parameter
1	Cmd = BICO parameter	Setpoint = MOP setpoint
2	Cmd = BICO parameter	Setpoint = Analog setpoint
3	Cmd = BICO parameter	Setpoint = Fixed frequency
4	Cmd = BICO parameter	Setpoint = USS on BOP link
5	Cmd = BICO parameter	Setpoint = USS on COM link
6	Cmd = BICO parameter	Setpoint = CB on COM link
10	Cmd = BOP	Setpoint = BICO parameter
11	Cmd = BOP	Setpoint = MOP setpoint
12	Cmd = BOP	Setpoint = Analog setpoint
13	Cmd = BOP	Setpoint = Fixed frequency
15	Cmd = BOP	Setpoint = USS on COM link
16	Cmd = BOP	Setpoint = CB on COM link
40	Cmd = USS on BOP link	Setpoint = BICO parameter
41	Cmd = USS on BOP link	Setpoint = MOP setpoint
42	Cmd = USS on BOP link	Setpoint = Analog setpoint
43	Cmd = USS on BOP link	Setpoint = Fixed frequency
44	Cmd = USS on BOP link	Setpoint = USS on BOP link
45	Cmd = USS on BOP link	Setpoint = USS on COM link
46	Cmd = USS on BOP link	Setpoint = CB on COM link
50	Cmd = USS on COM link	Setpoint = BICO parameter
51	Cmd = USS on COM link	Setpoint = MOP setpoint
52	Cmd = USS on COM link	Setpoint = Analog setpoint
53	Cmd = USS on COM link	Setpoint = Fixed frequency
54	Cmd = USS on COM link	Setpoint = USS on BOP link
55	Cmd = USS on COM link	Setpoint = USS on COM link
60	Cmd = CB on COM link	Setpoint = BICO parameter
61	Cmd = CB on COM link	Setpoint = MOP setpoint
62	Cmd = CB on COM link	Setpoint = Analog setpoint
63	Cmd = CB on COM link	Setpoint = Fixed frequency
64	Cmd = CB on COM link	Setpoint = USS on BOP link
66	Cmd = CB on COM link	Setpoint = CB on COM link

P3981	Reset active fault	Datatype: U16	Unit: -	Min: 0	Level: 4
	CStat: CT			Def: 0	
	P-Group: ALARMS	Active: first confirm	QuickComm. No	Max: 1	

Resets active faults when changed from 0 to 1.

Settings:

0	No fault reset
1	Reset fault

Note:

Automatically reset to 0.

Details:

See P0947 (last fault code)

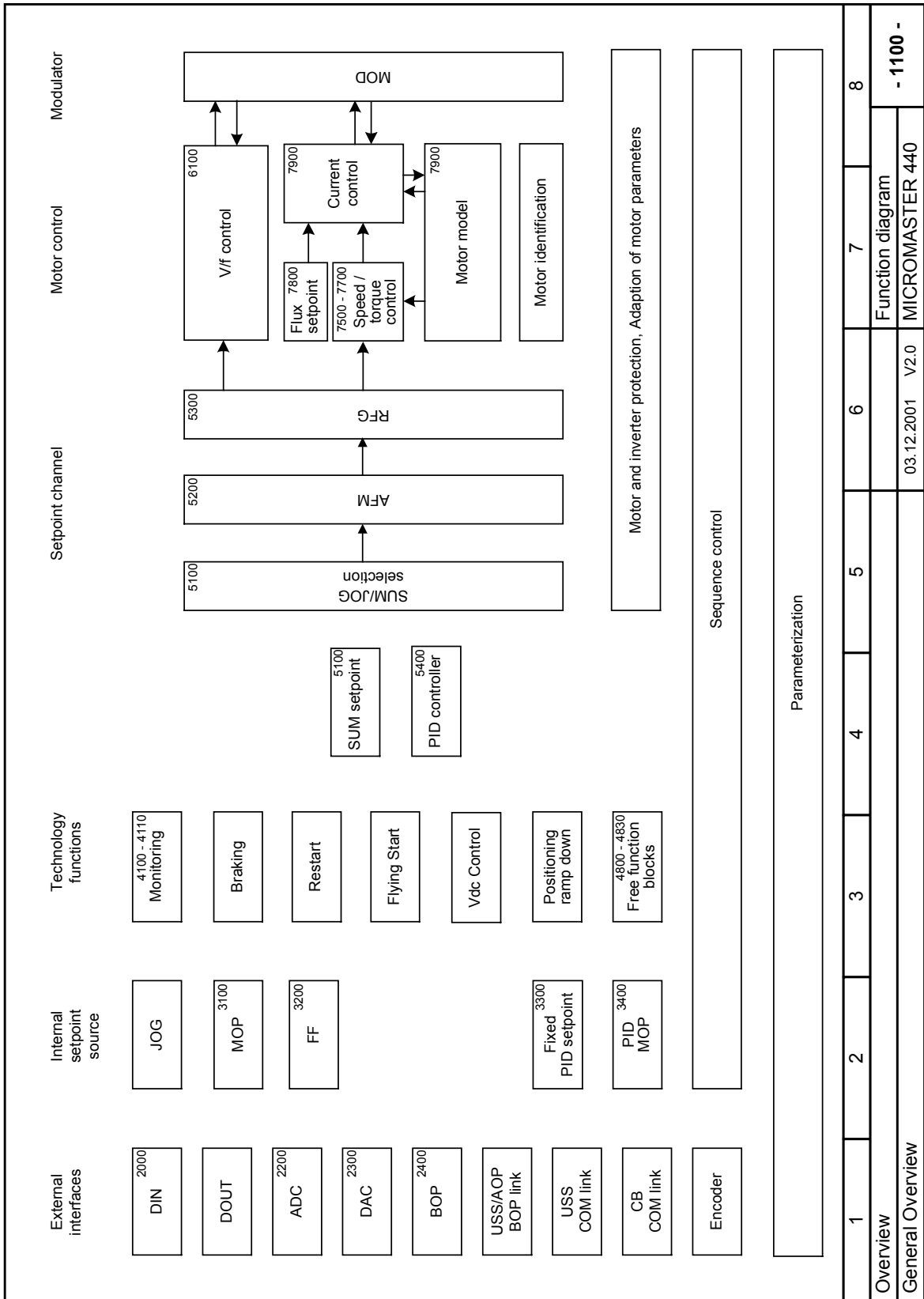
r3986[2]	Number of parameters	Datatype: U16	Unit: -	Min: - Def: - Max: -	Level: 4
	P-Group: -				

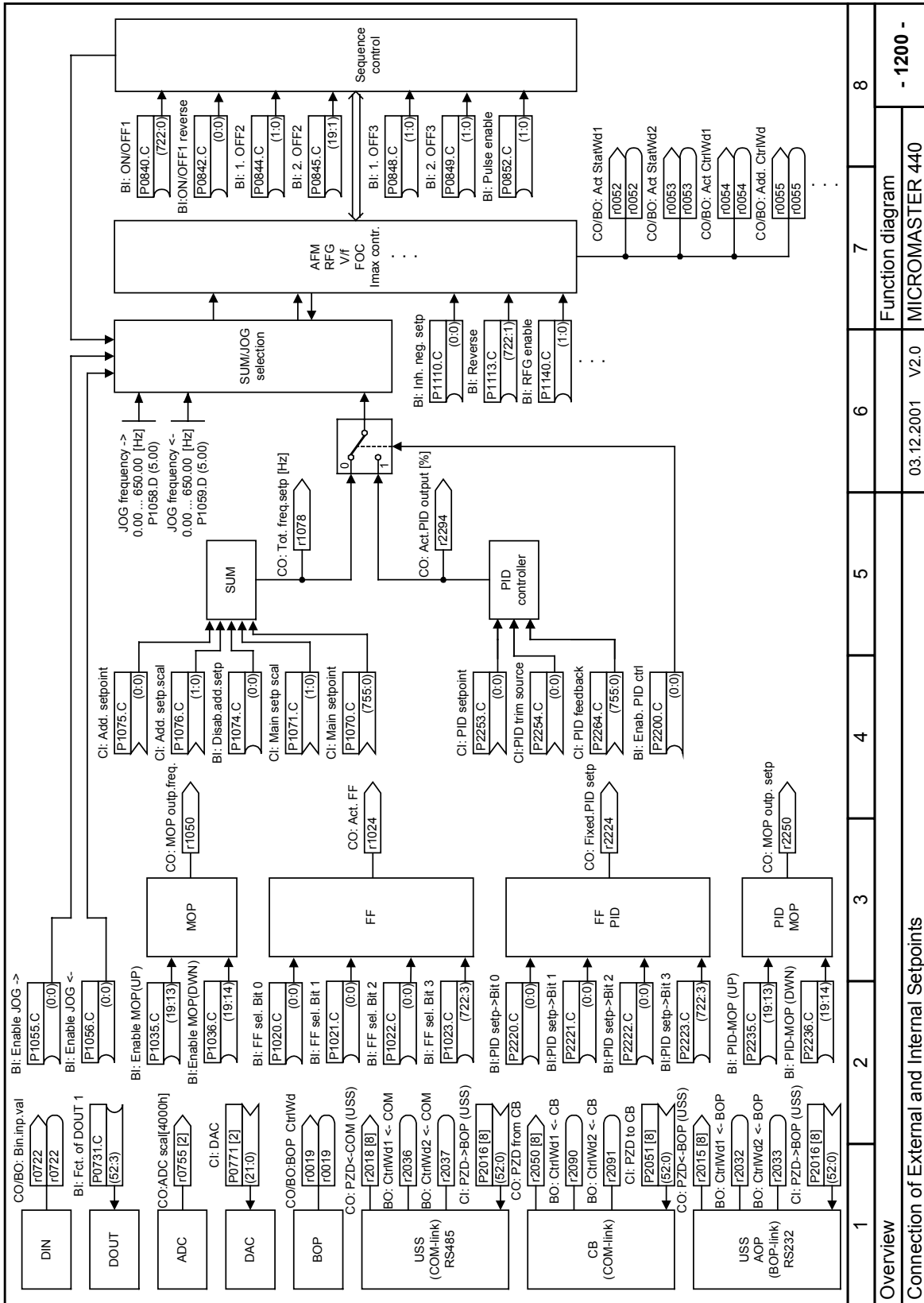
Number of parameters on the drive

Index:

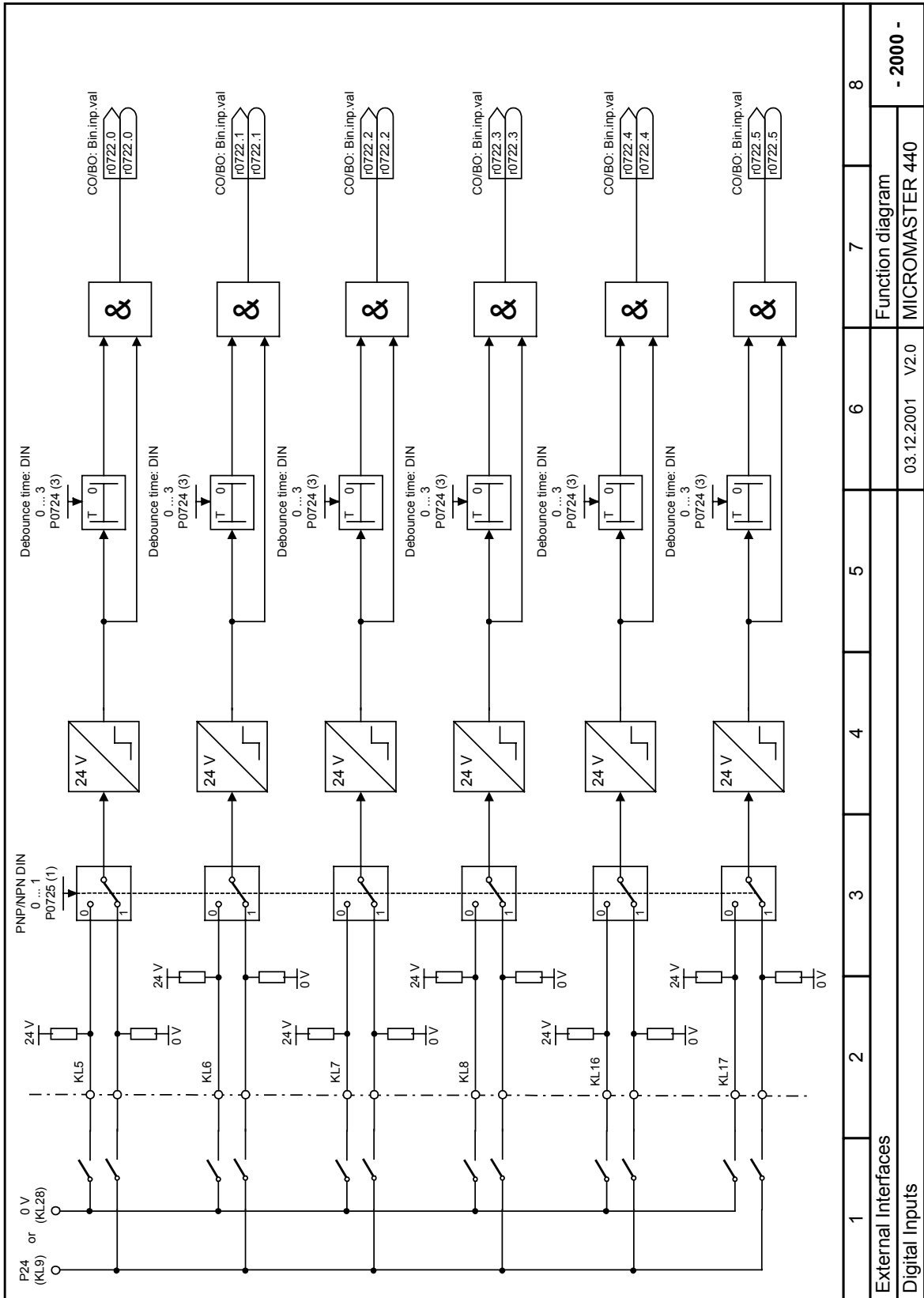
r3986[0] : Read only
r3986[1] : Read & write

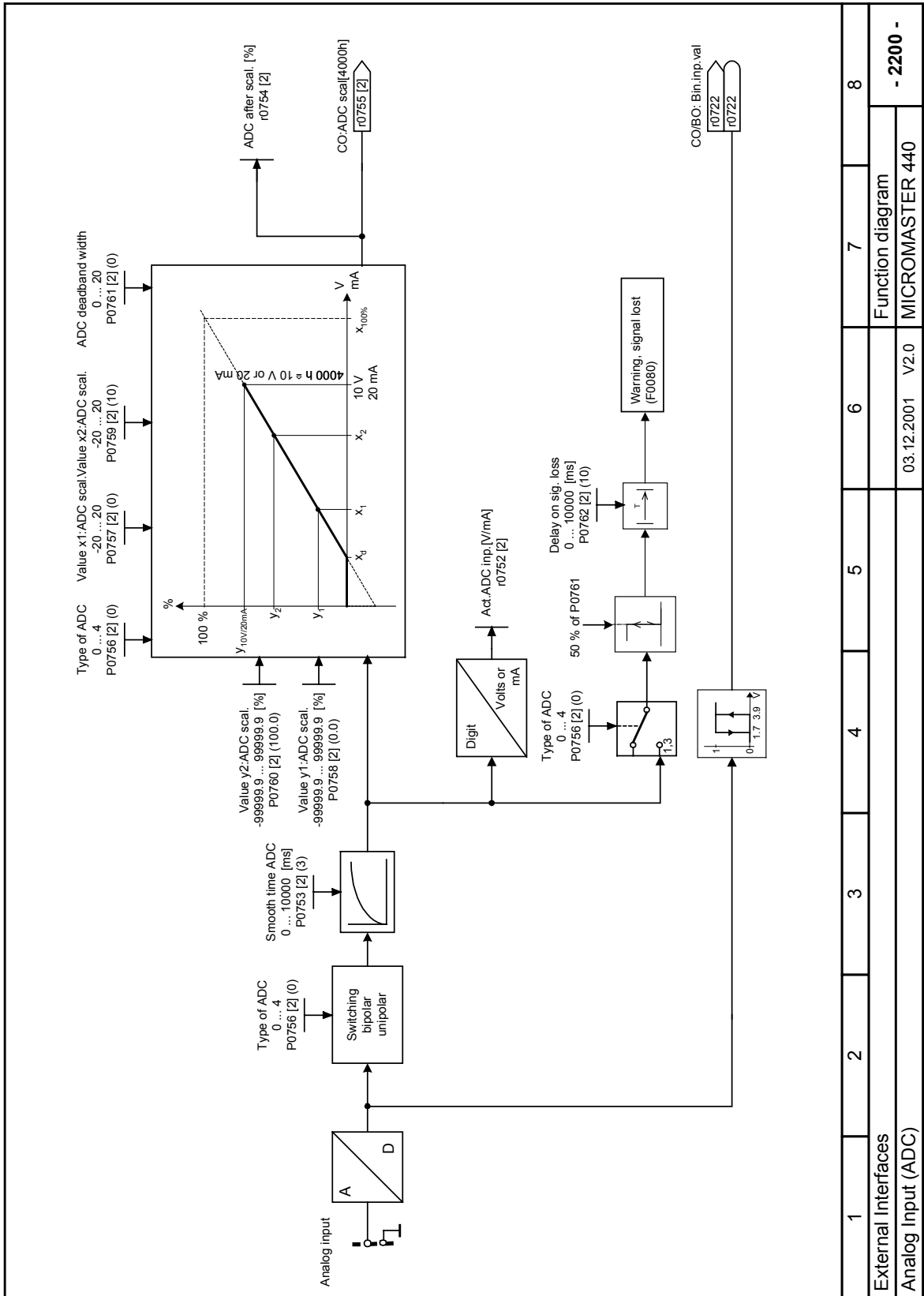
2 Function Diagrams



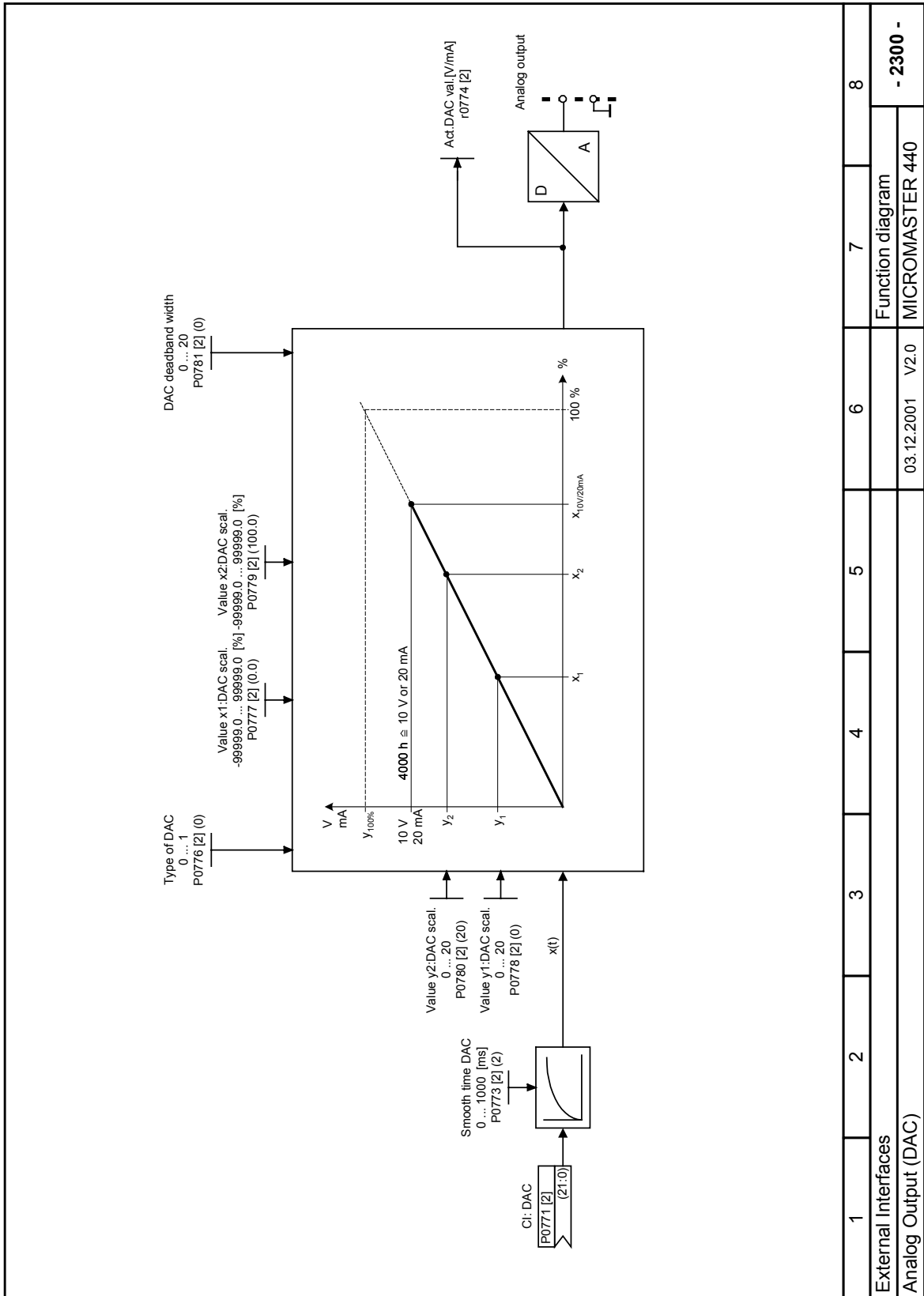


Overview
Connection of External and Internal Setpoints

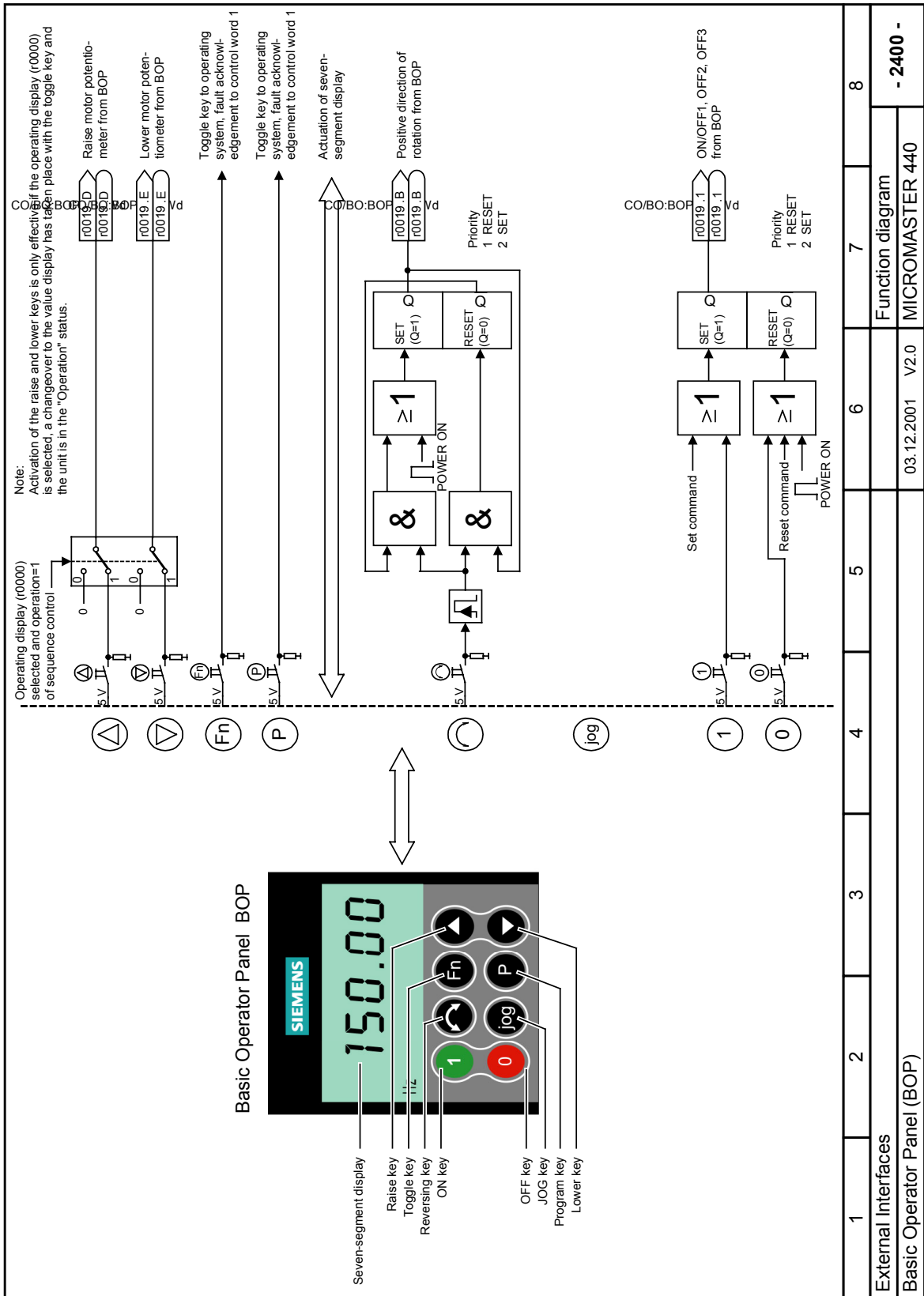


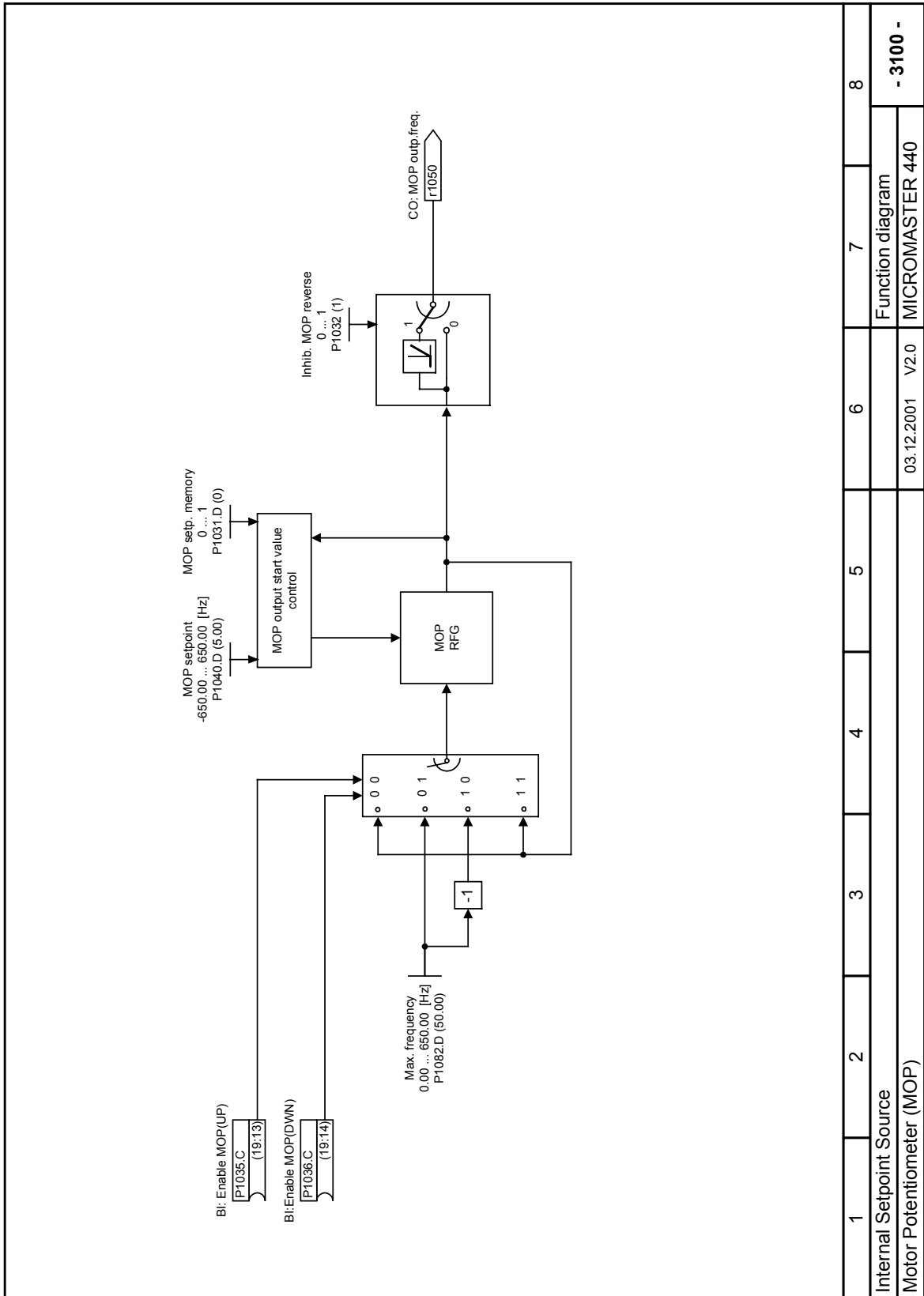


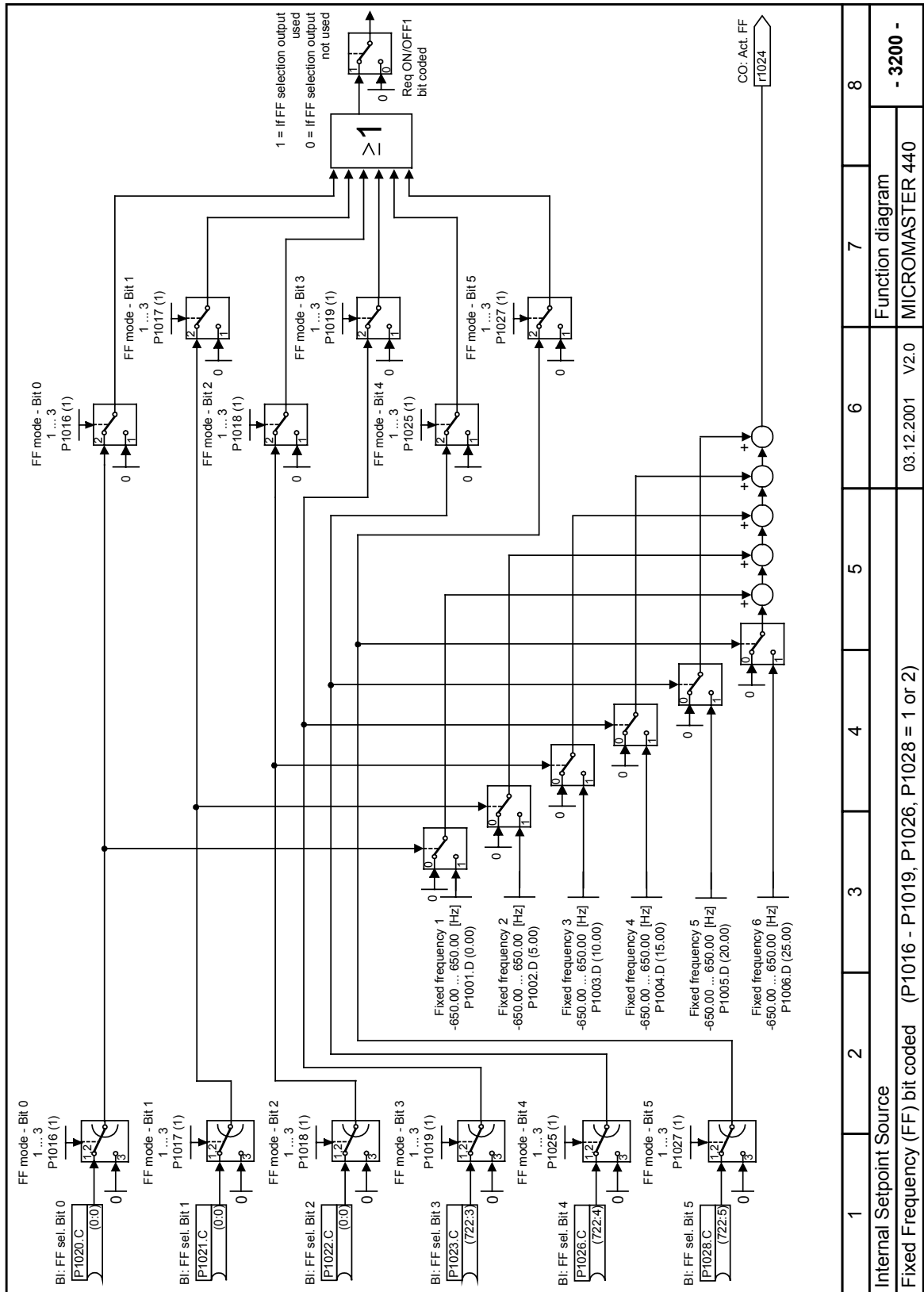
1	2	3	4	5	6	7	8
External Interfaces							
Analog Input (ADC)				03.12.2001 V2.0		Function diagram	
				MICROMASTER 440		- 2200 -	



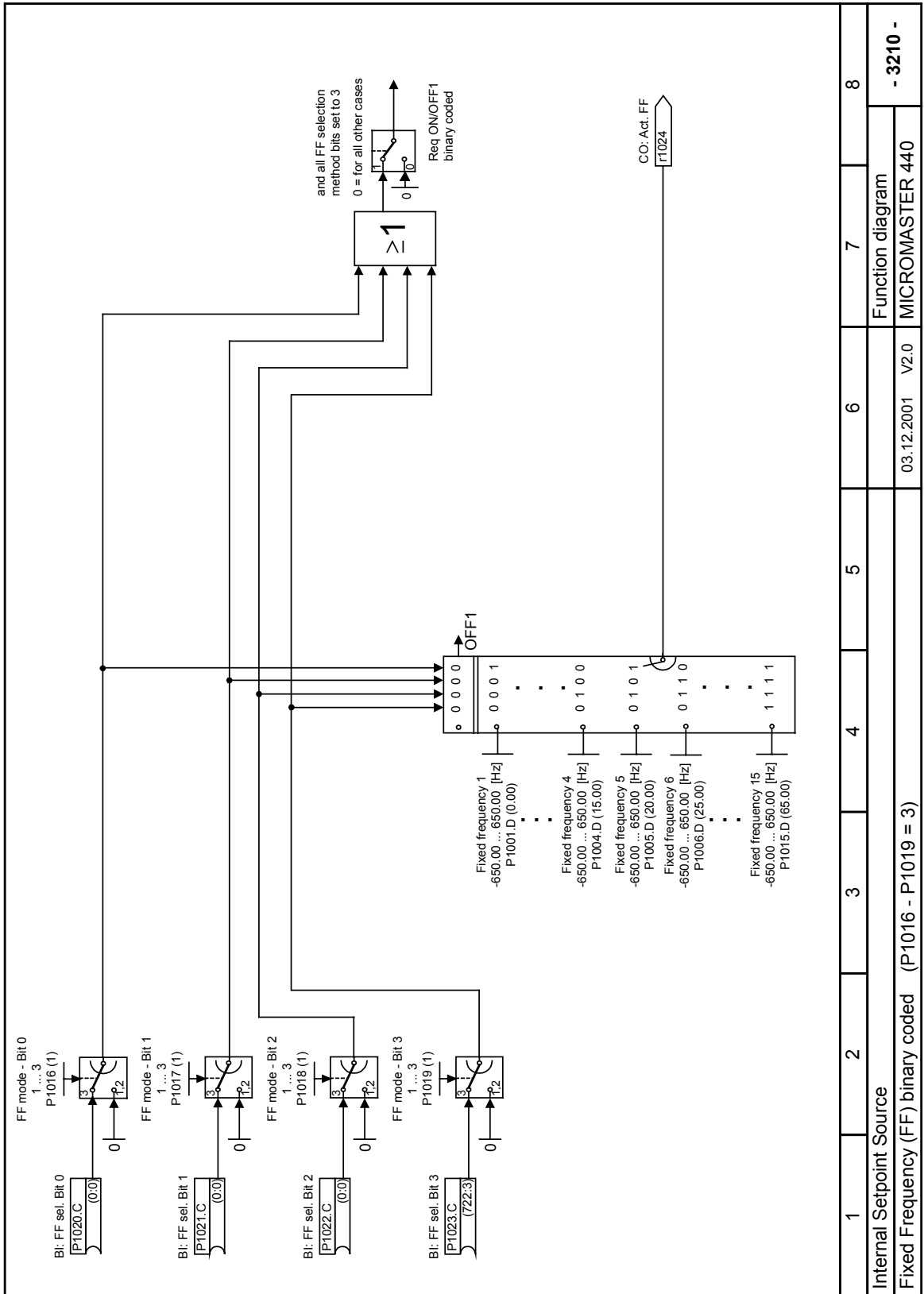
1	2	3	4	5	6	7	8
External Interfaces							
Analog Output (DAC)						Function diagram	
						MICROMASTER 440	
03.12.2001 V2.0						- 2300 -	

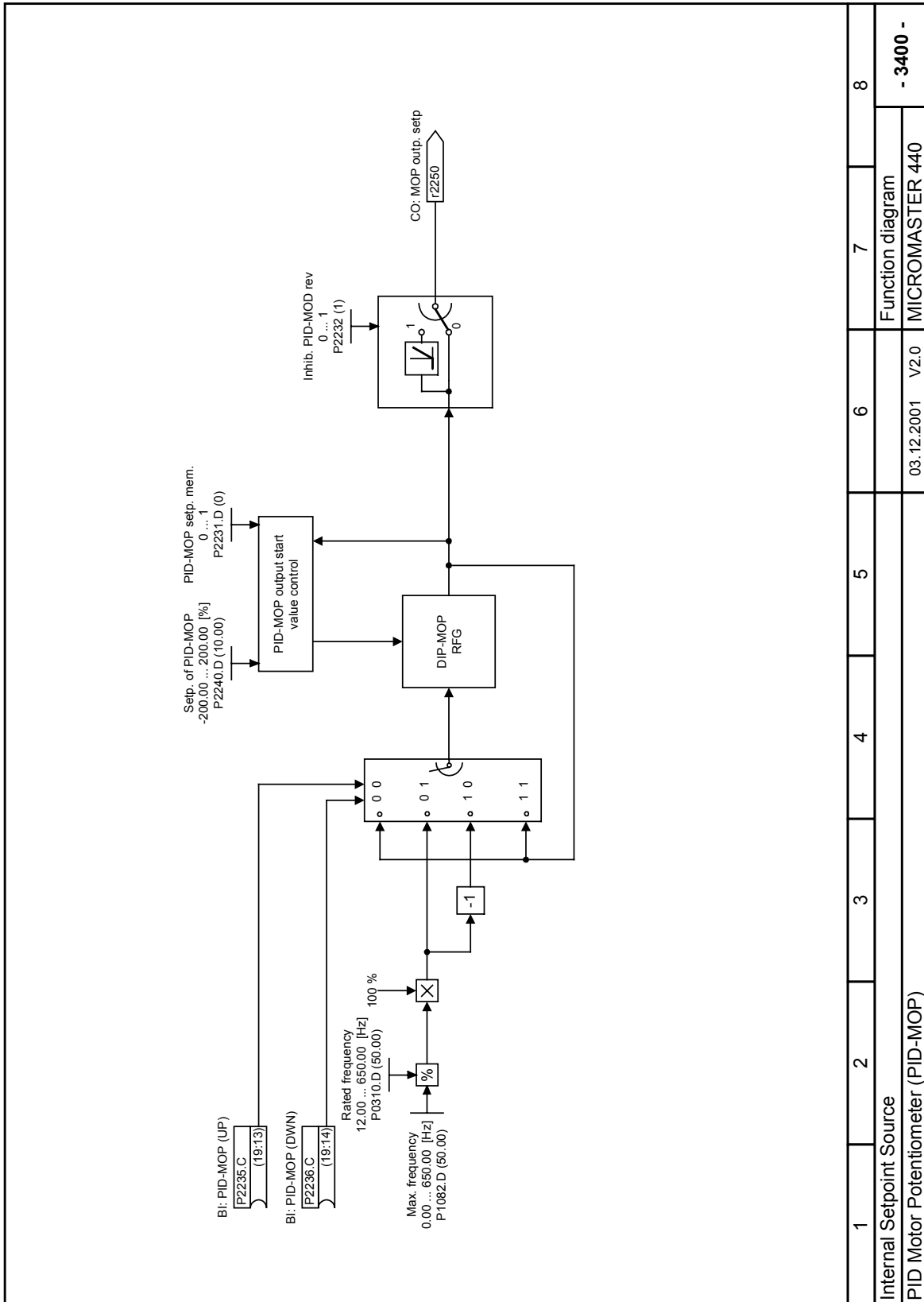




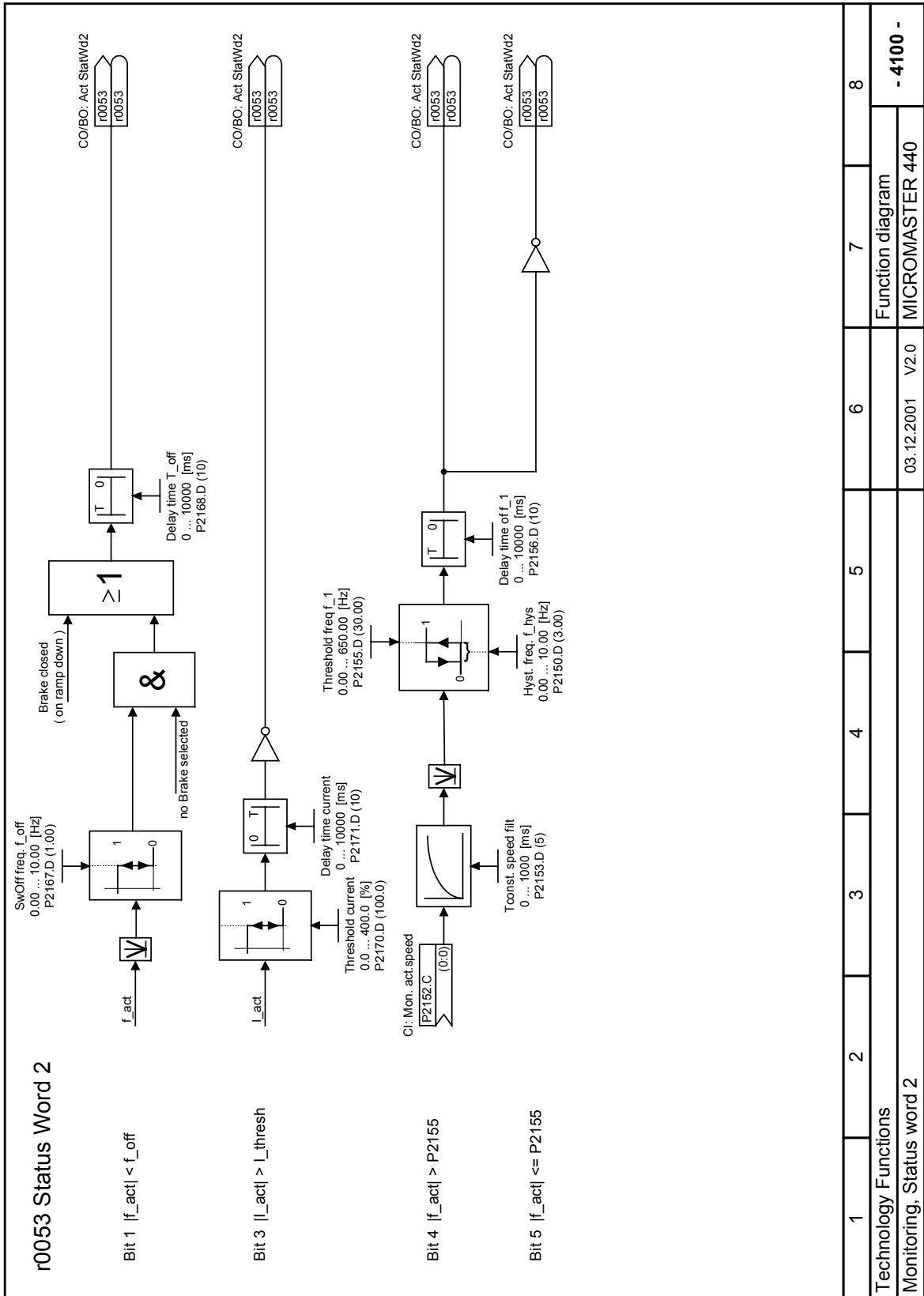


1	2	3	4	5	6	7	8
Internal Setpoint Source							
Fixed Frequency (FF) bit coded (P1016 - P1019, P1026, P1028 = 1 or 2)							
03.12.2001 V2.0						Function diagram	
MICROMASTER 440						- 3200 -	

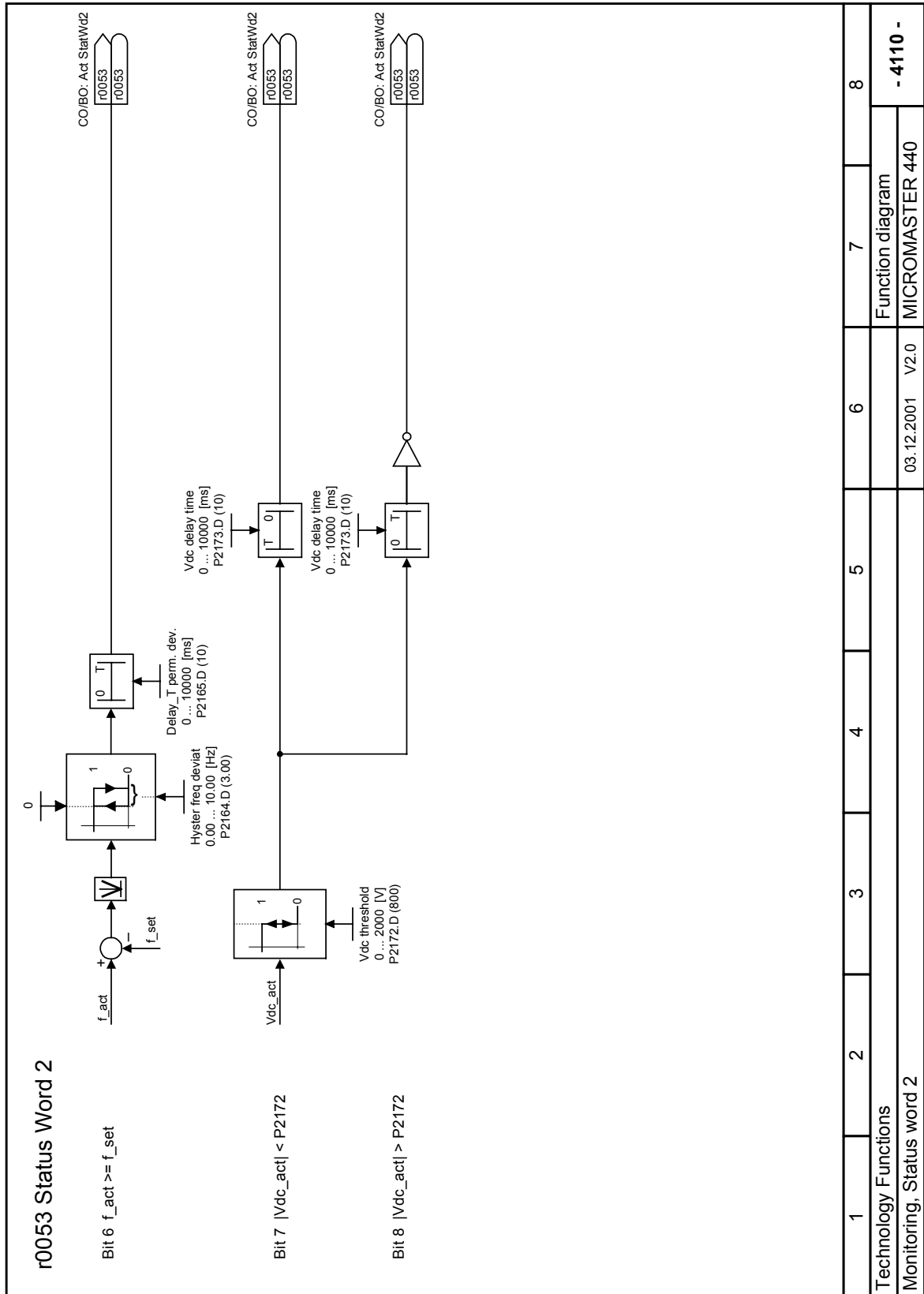


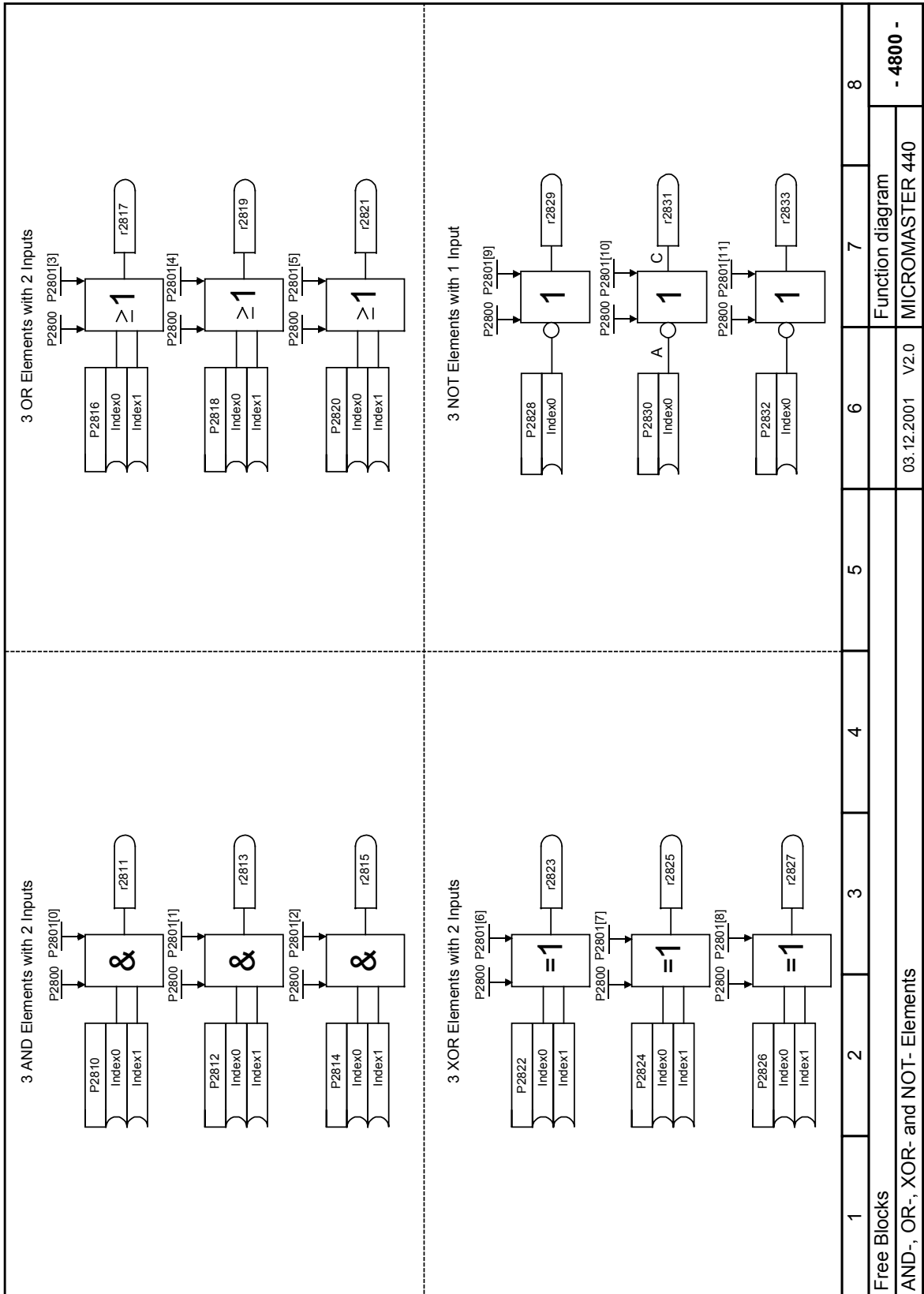


1	2	3	4	5	6	7	8
Internal Setpoint Source							
PID Motor Potentiometer (PID-MOP)							
03.12.2001 V2.0						Function diagram	
						MICROMASTER 440	
						- 3400 -	

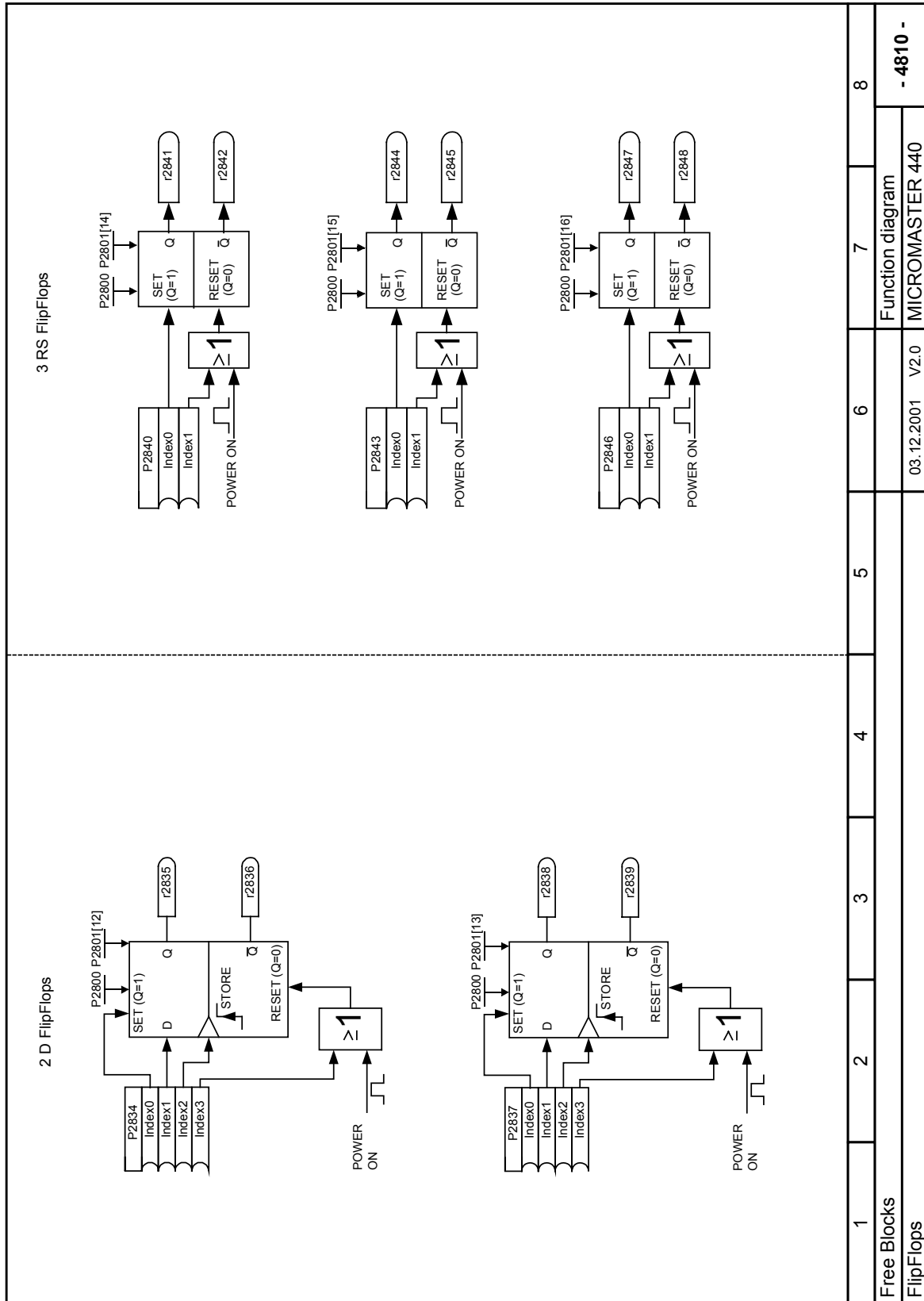


1	2	3	4	5	6	7	8
Technology Functions							
Monitoring, Status word 2							
03.12.2001 V2.0						Function diagram	
MICROMASTER 440						- 4100 -	

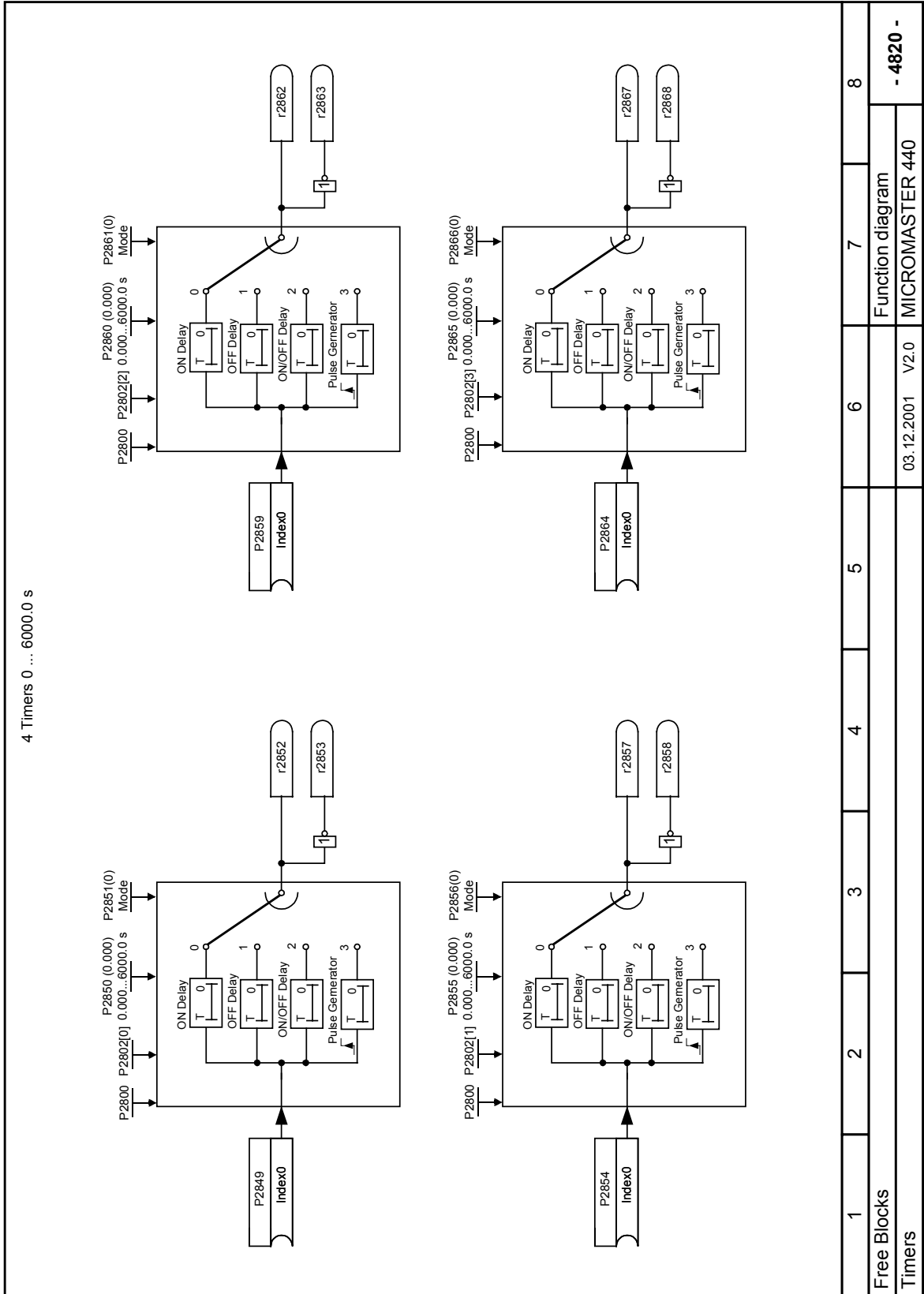




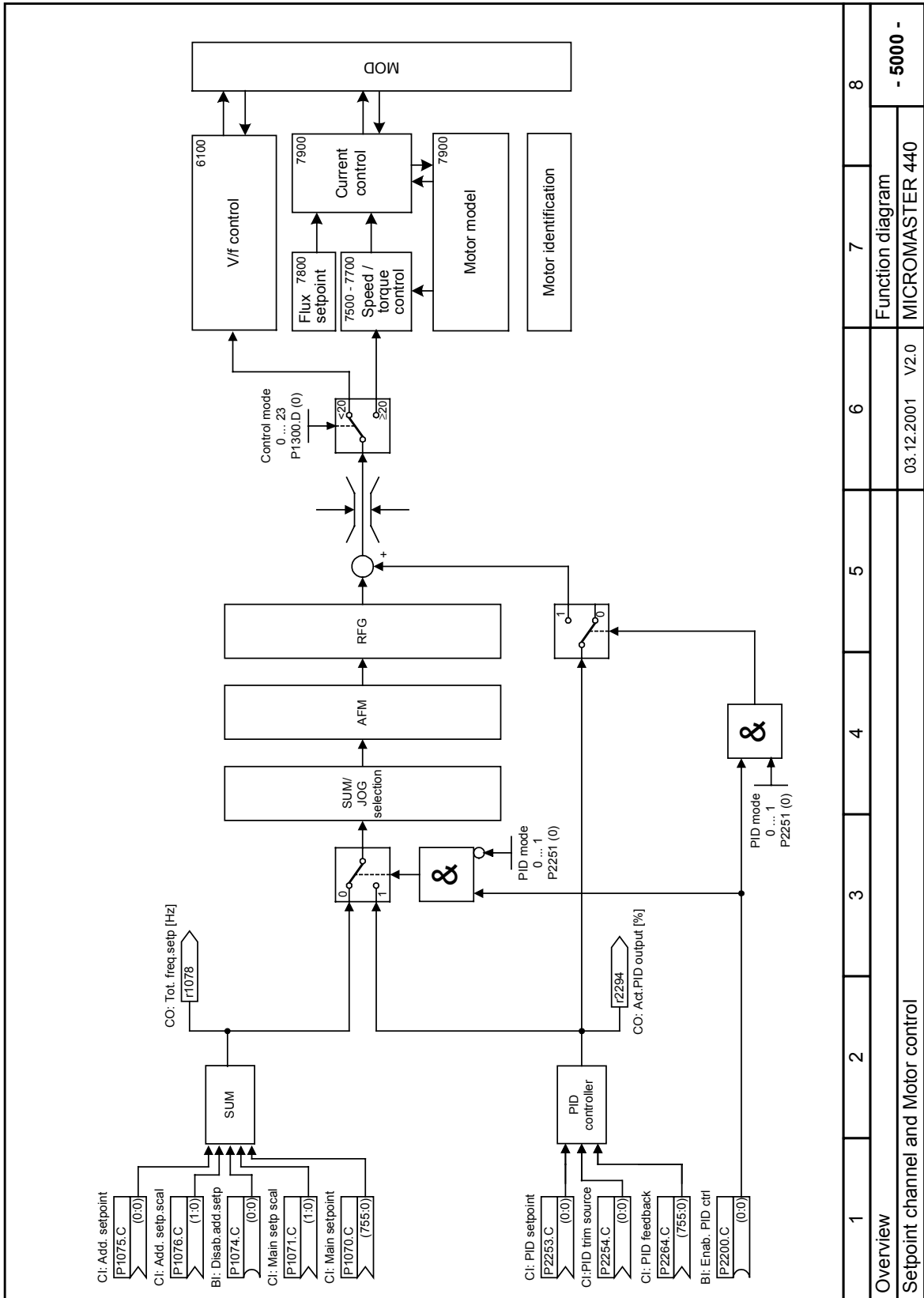
1	2	3	4	5	6	7	8
Free Blocks							
AND-, OR-, XOR- and NOT- Elements							
03.12.2001 V2.0						Function diagram	
MICROMASTER 440						- 4800 -	

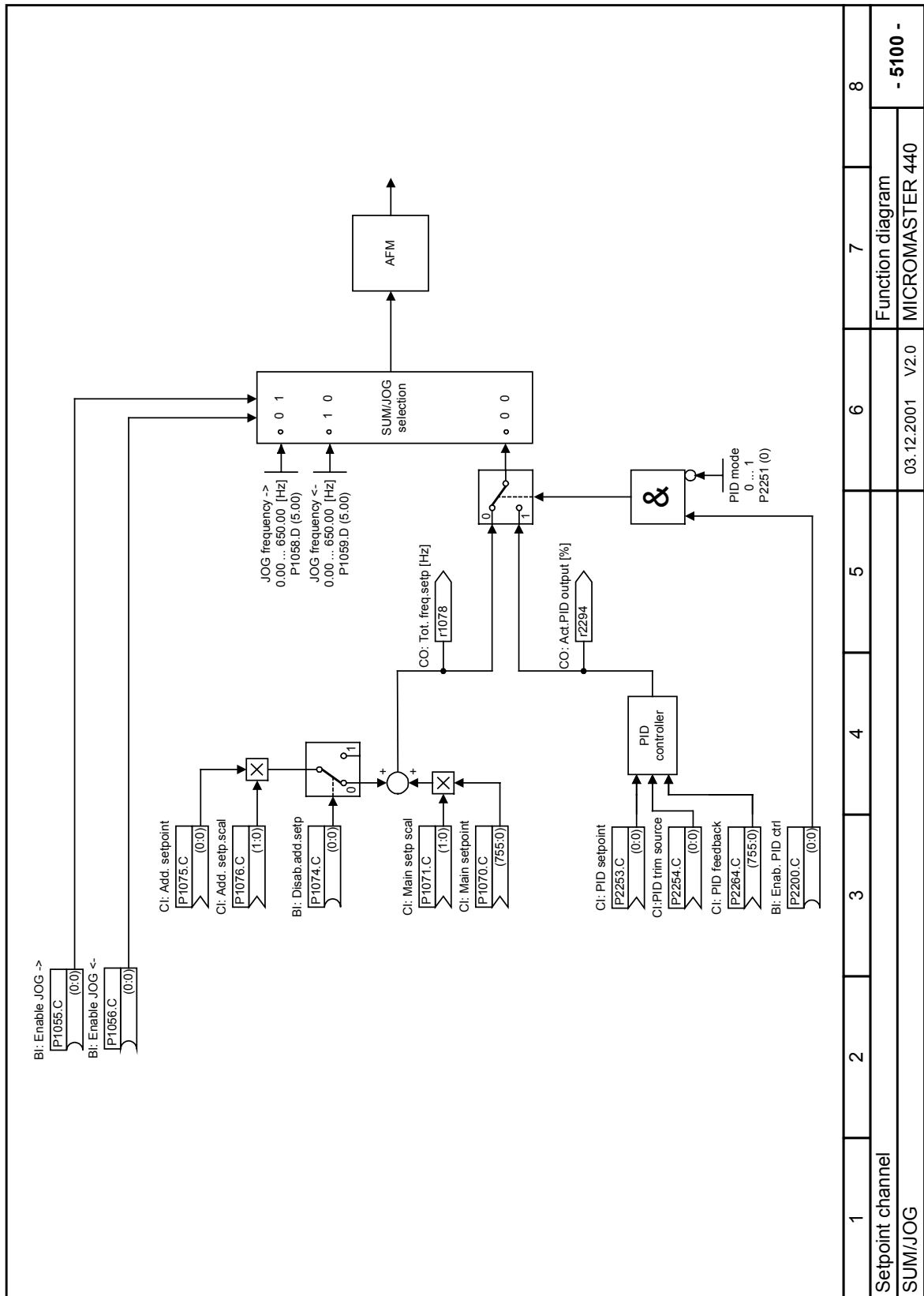


1	2	3	4	5	6	7	8
Free Blocks							
Function diagram							
FlipFlops							
03.12.2001 V2.0						MICROMASTER 440	
						- 4810 -	

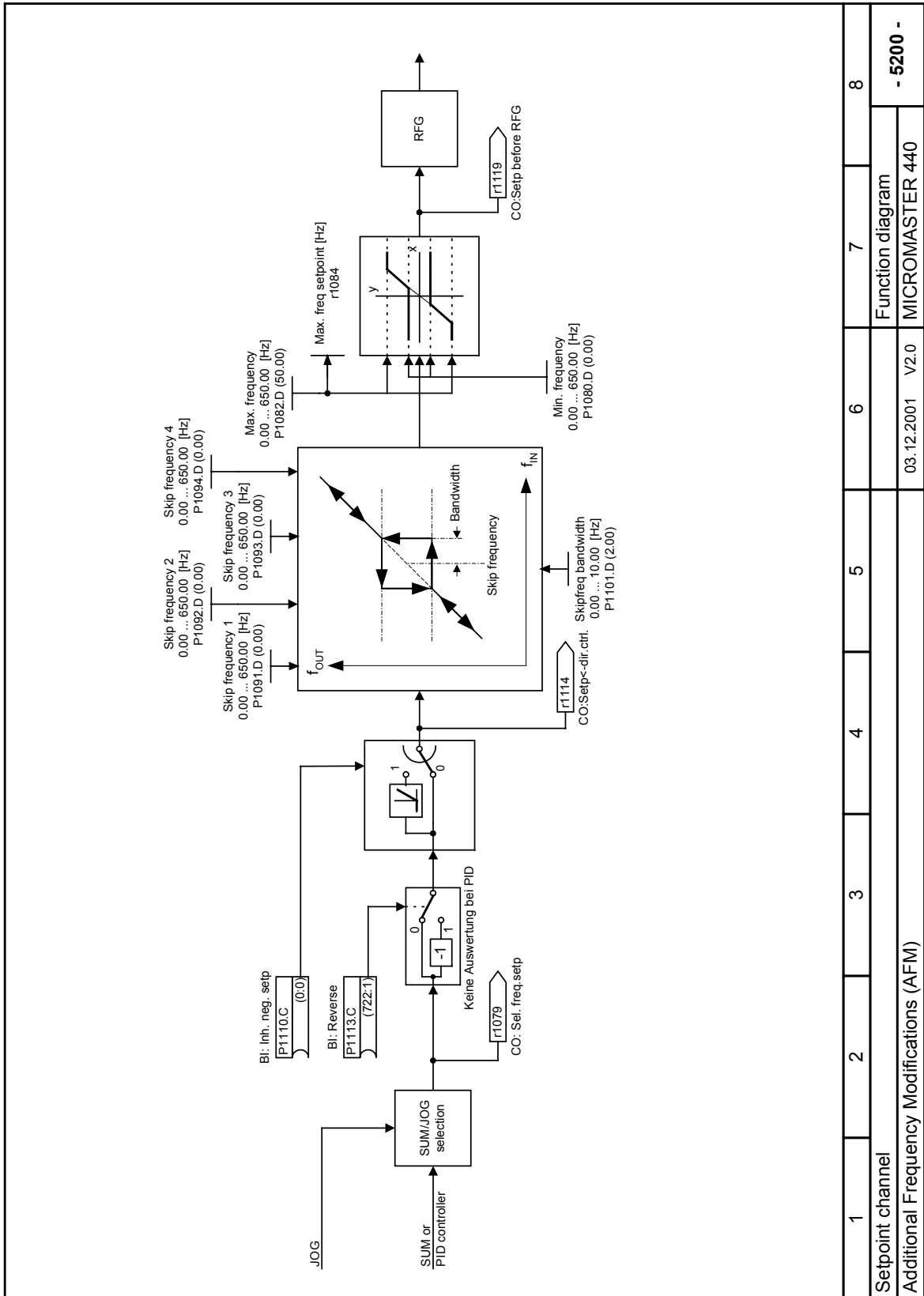


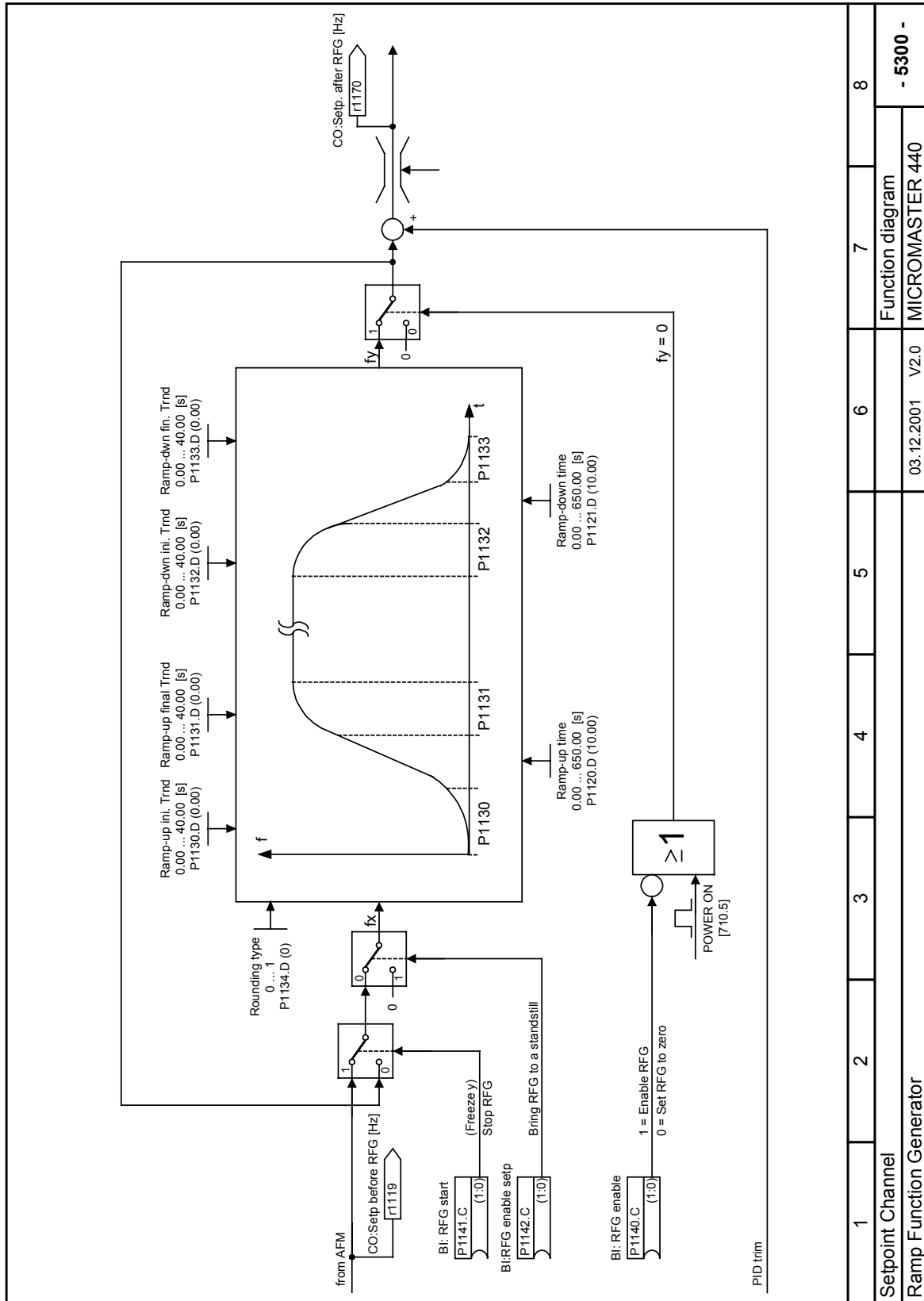
<p>2 Adders with 2 Inputs (1 Word)</p>	<p>2 Subtractors with 2 Inputs (1 Word)</p>	<p>2 Multipliers (1 Word)</p>																													
<p>2 Dividers (1 Word)</p>			<p>Word Compare</p>			<p>Connector Setting in %</p>																									
<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>	<p>6</p>	<p>7</p>	<p>8</p>																								
<p>Free Blocks</p>								<p>Function diagram</p>								<p>MICROMASTER 440</p>								<p>- 4830 -</p>							



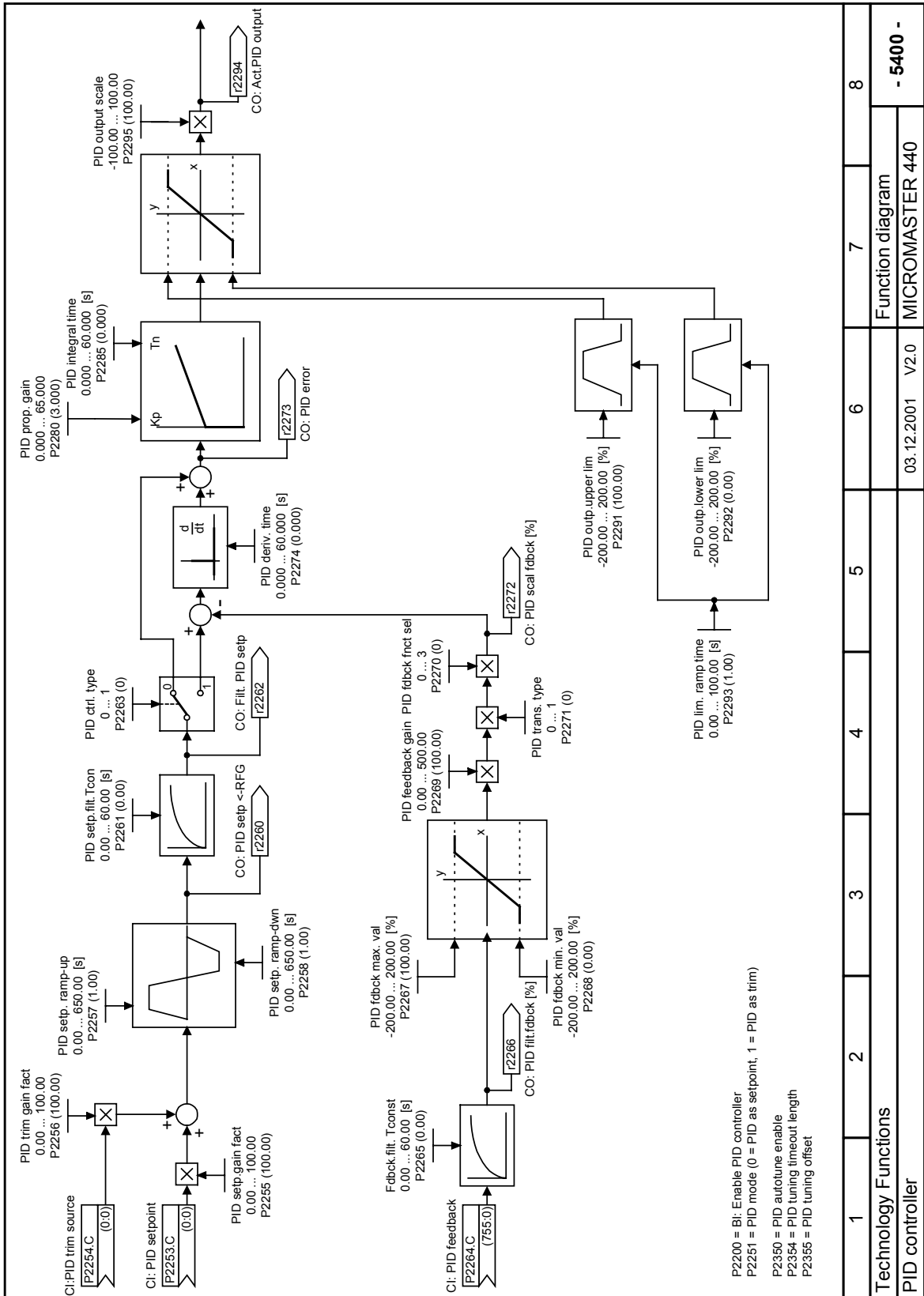


1	2	3	4	5	6	7	8
Setpoint channel							
SUM/JOG							
					03.12.2001	V2.0	
						Function diagram	
						MICROMASTER 440	
							- 5100 -

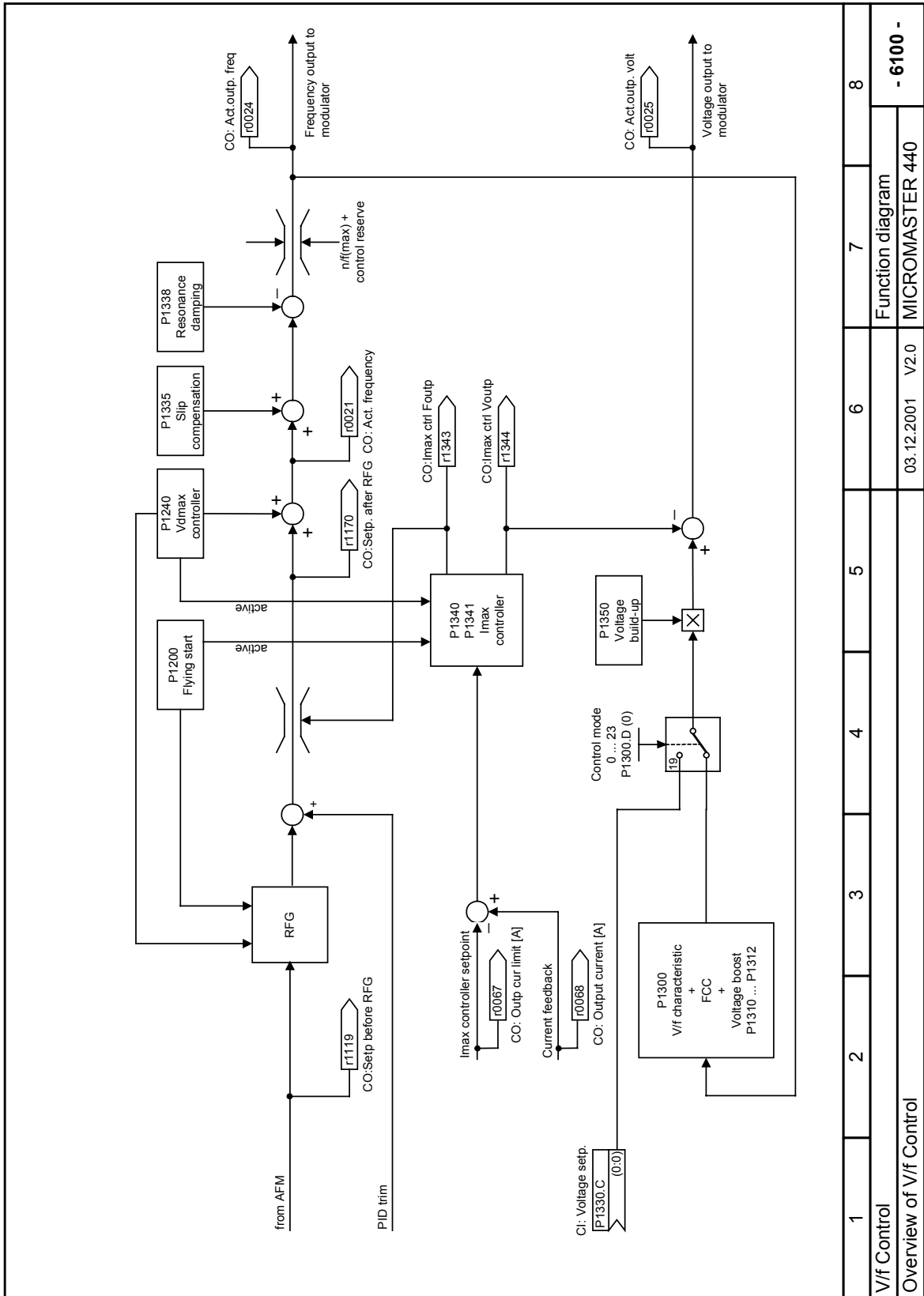




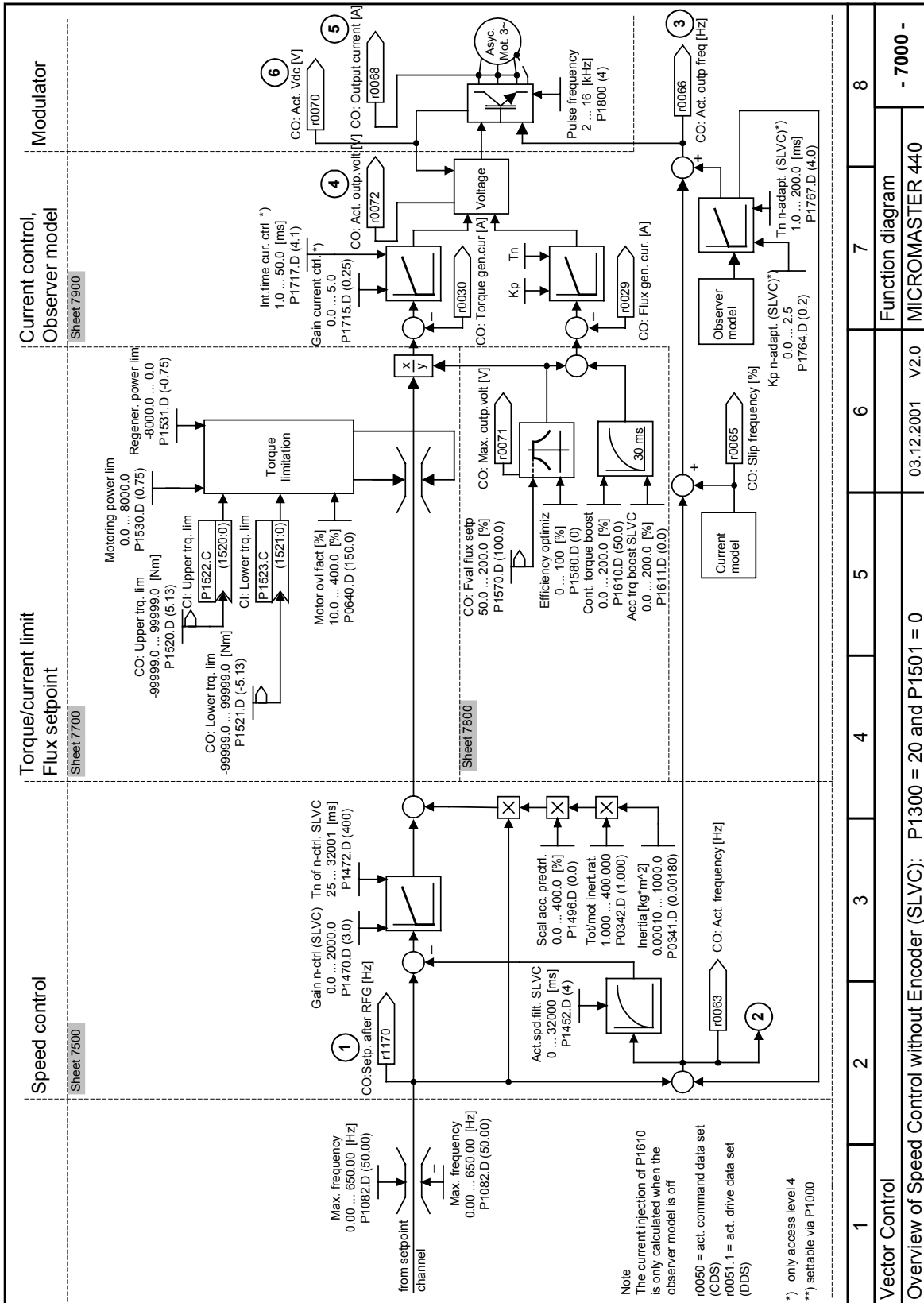
1	2	3	4	5	6	7	8
Setpoint Channel							
Ramp Function Generator							
03.12.2001 V2.0						Function diagram	
						MICROMASTER 440	
						- 5300 -	

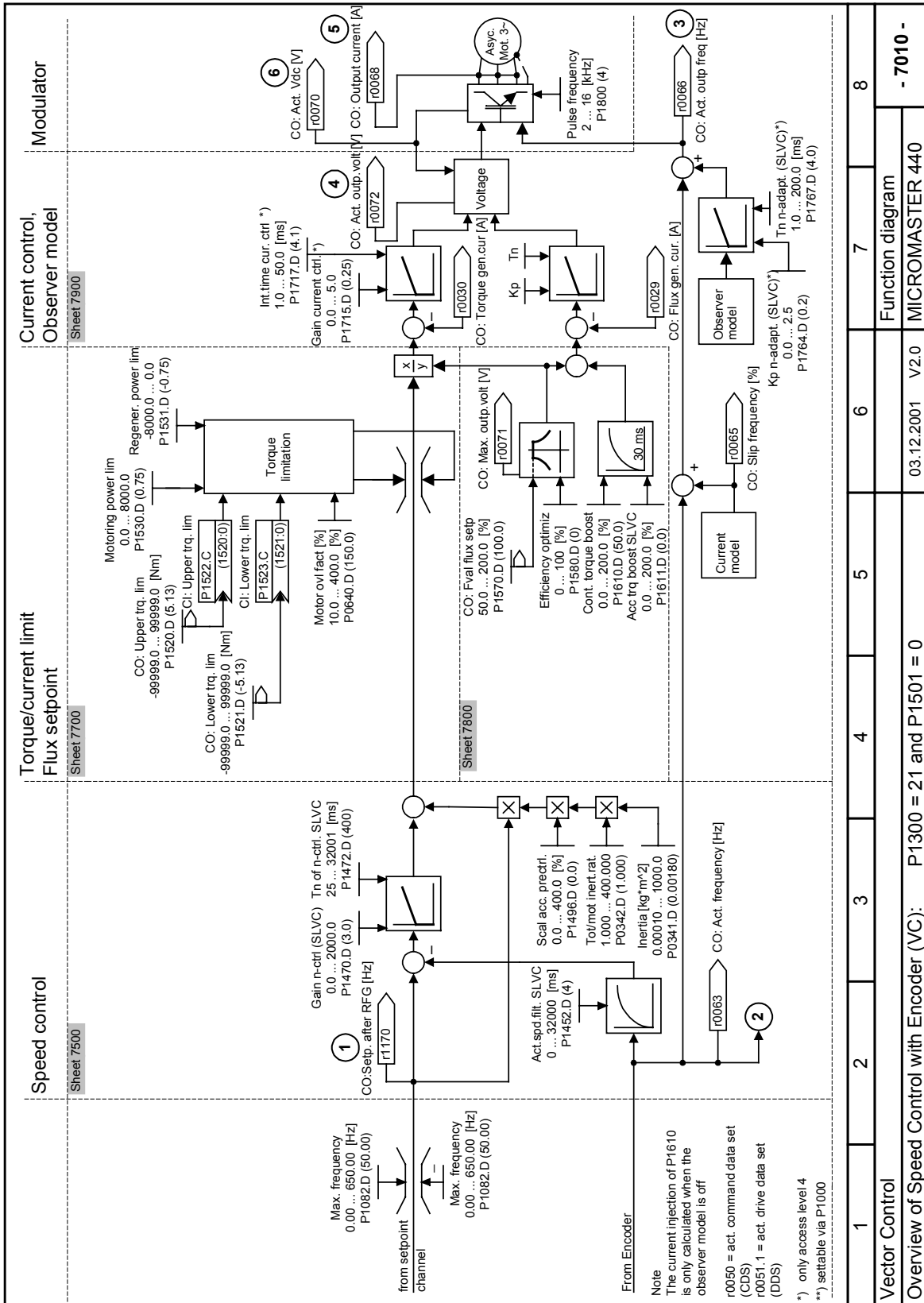


1	2	3	4	5	6	7	8
Technology Functions							
PID controller					03.12.2001	V2.0	MICROMASTER 440
						Function diagram	- 5400 -

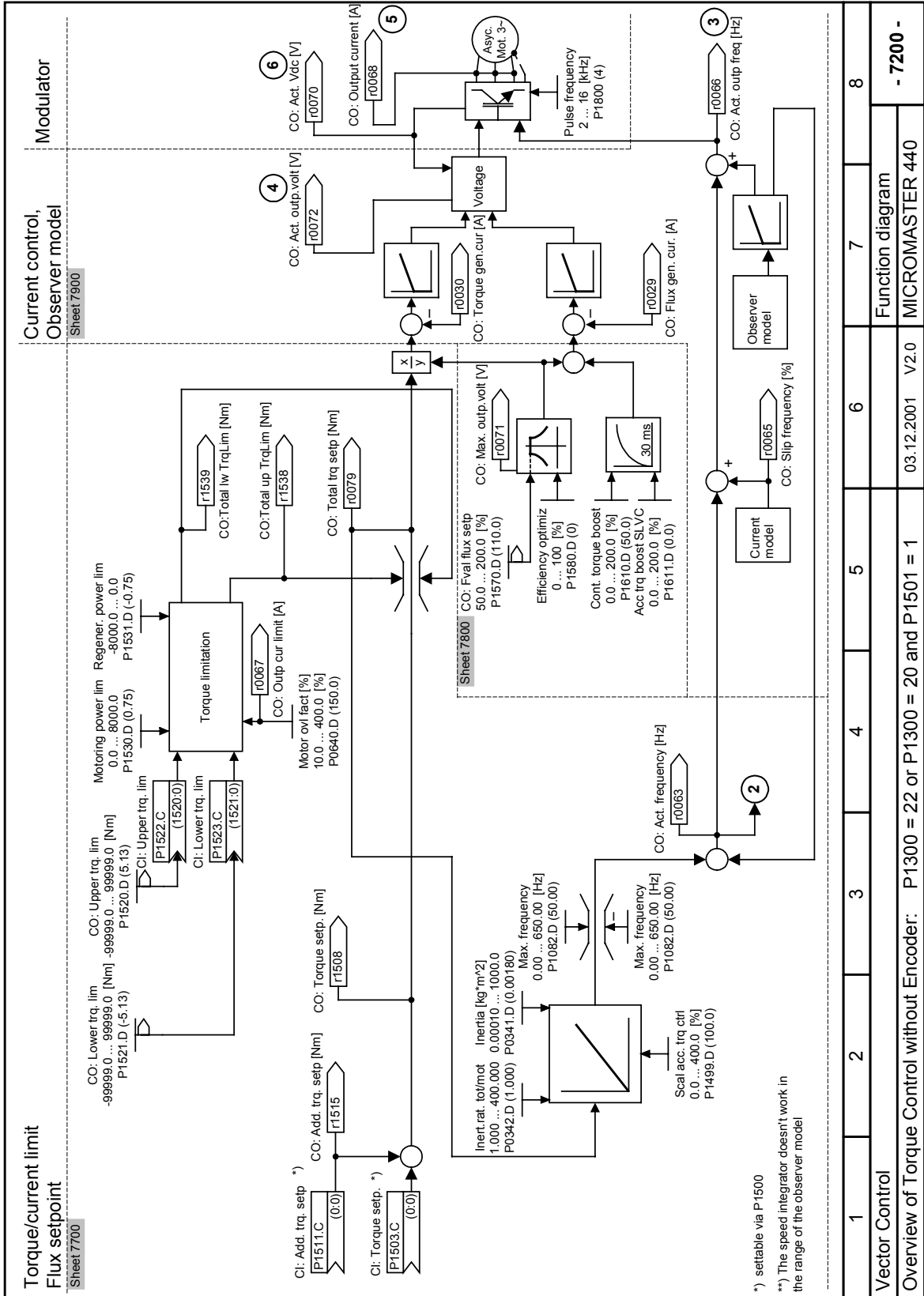


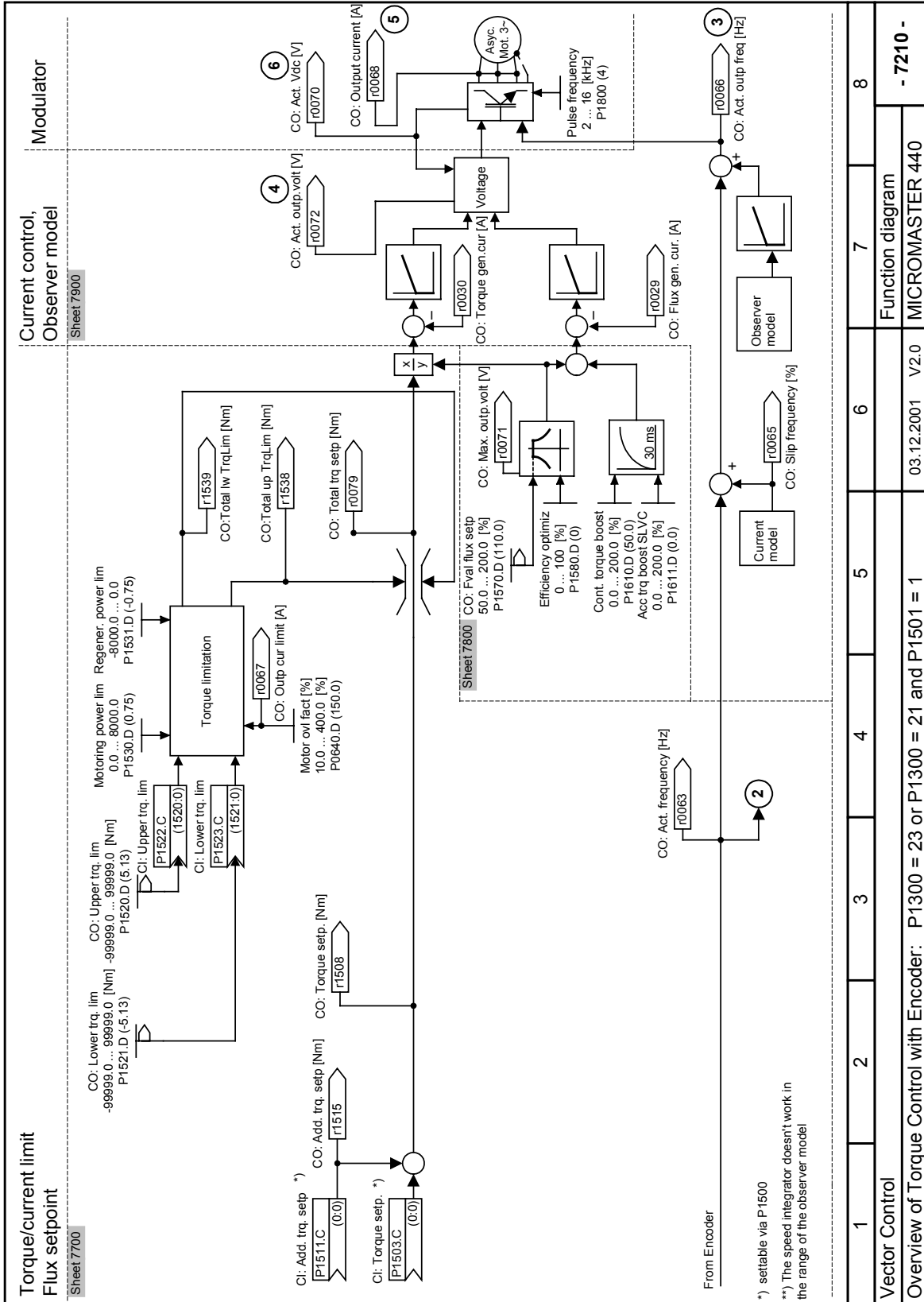
1	2	3	4	5	6	7	8
V/f Control							
Overview of V/f Control							
Function diagram						- 6100 -	
MICROMASTER 440						03.12.2001 V2.0	



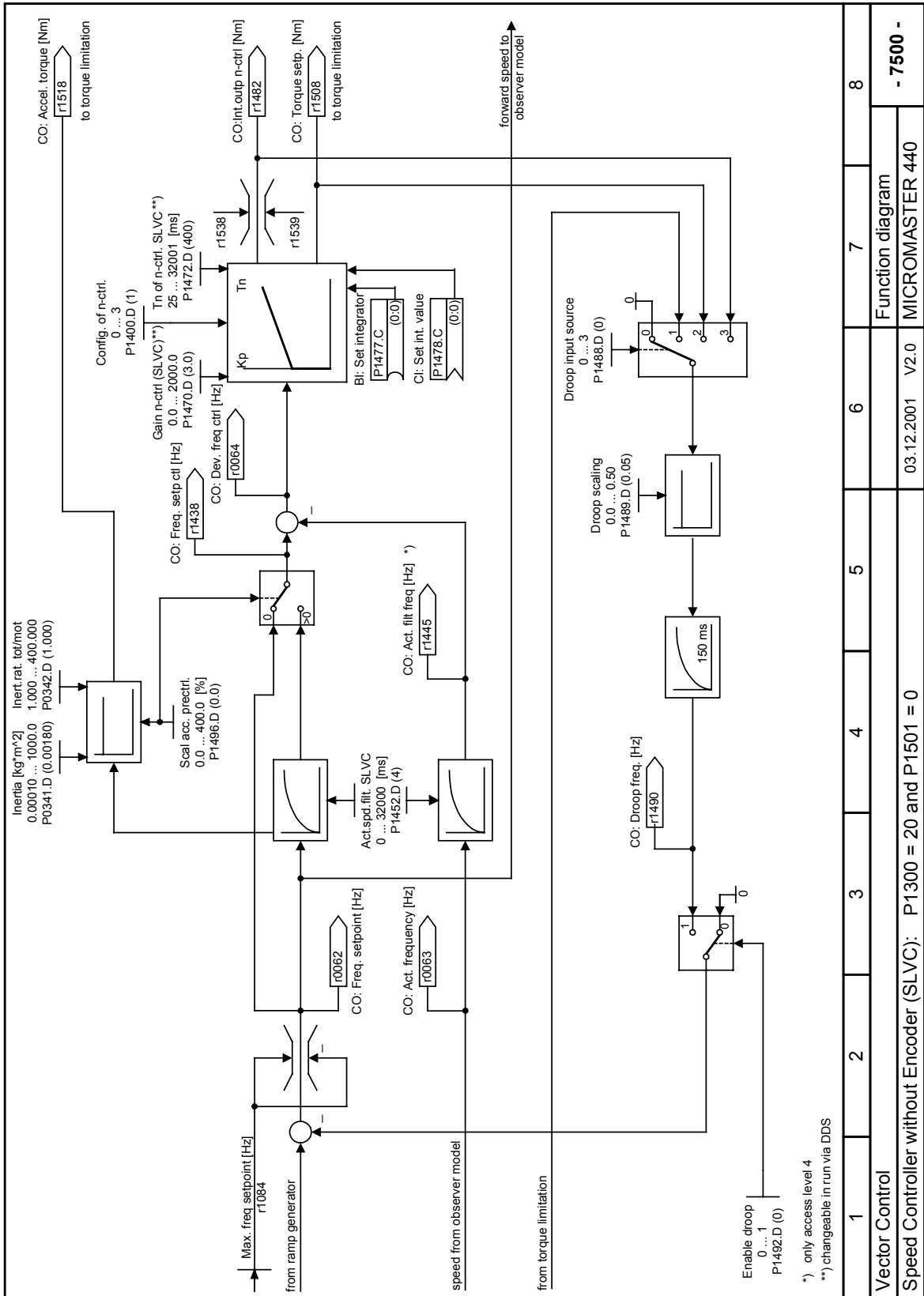


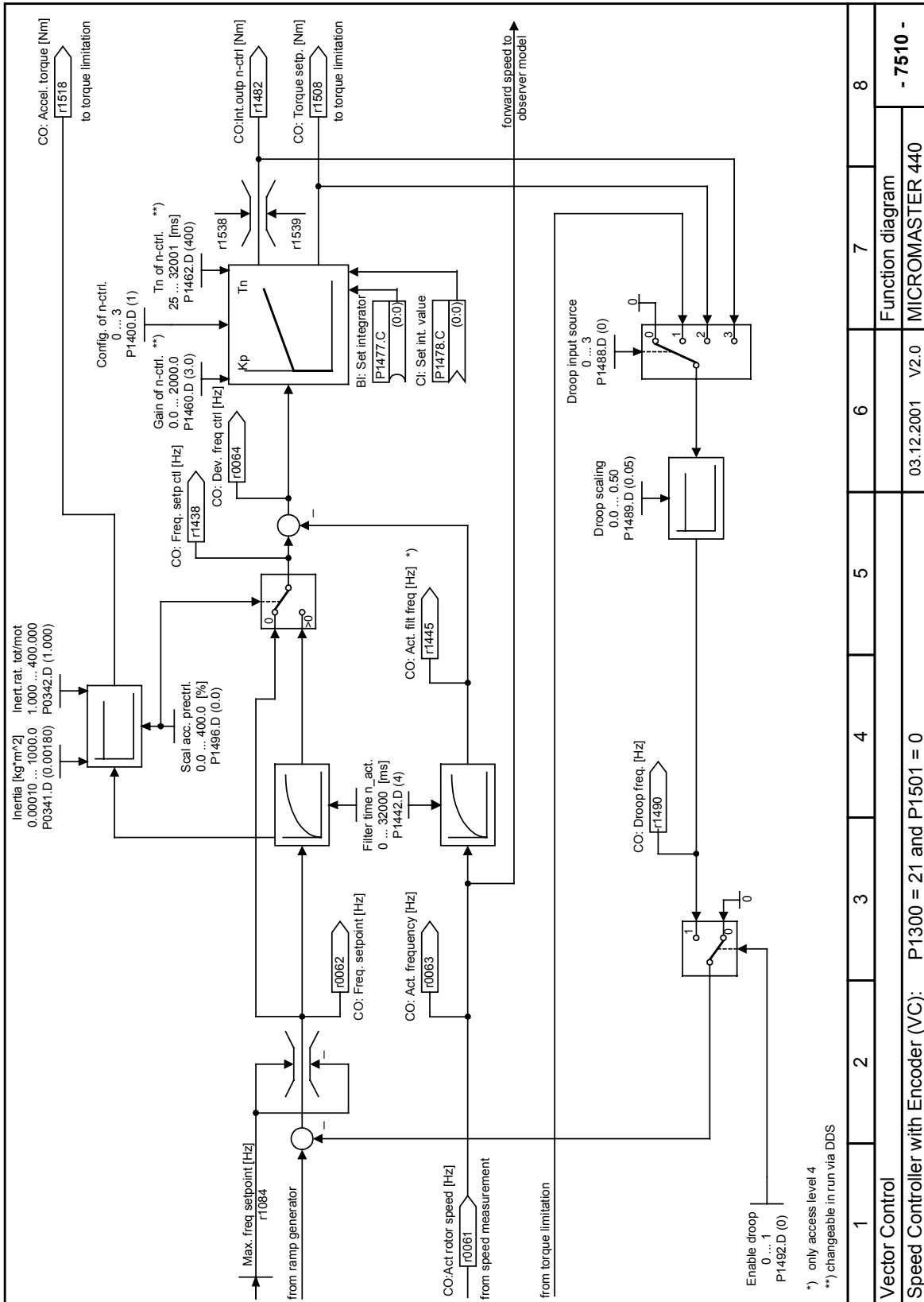
1	2	3	4	5	6	7	8	
Vector Control							Function diagram	- 7010 -
Overview of Speed Control with Encoder (VC): P1300 = 21 and P1501 = 0							MICROMASTER 440	
					03.12.2001	V2.0		



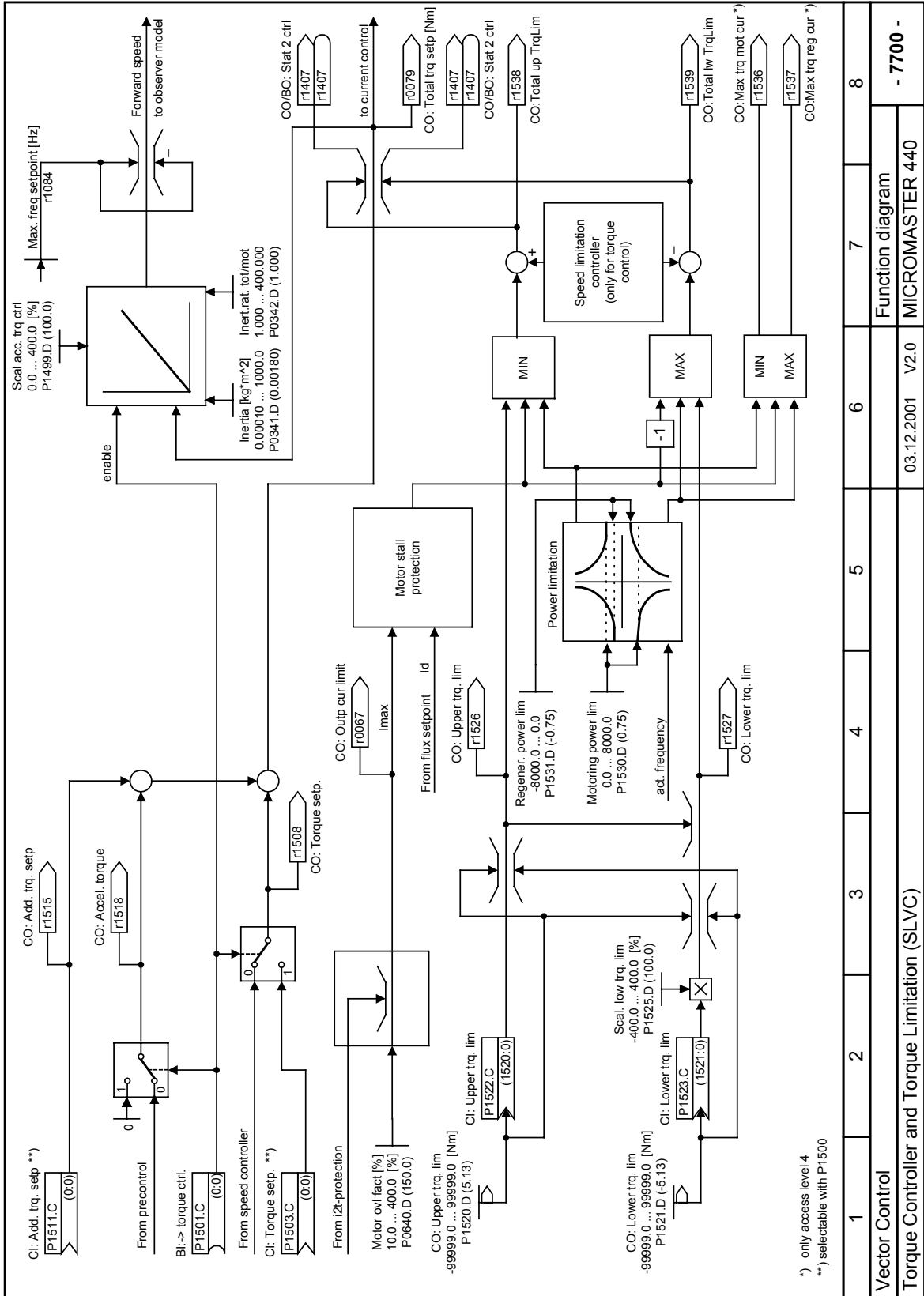


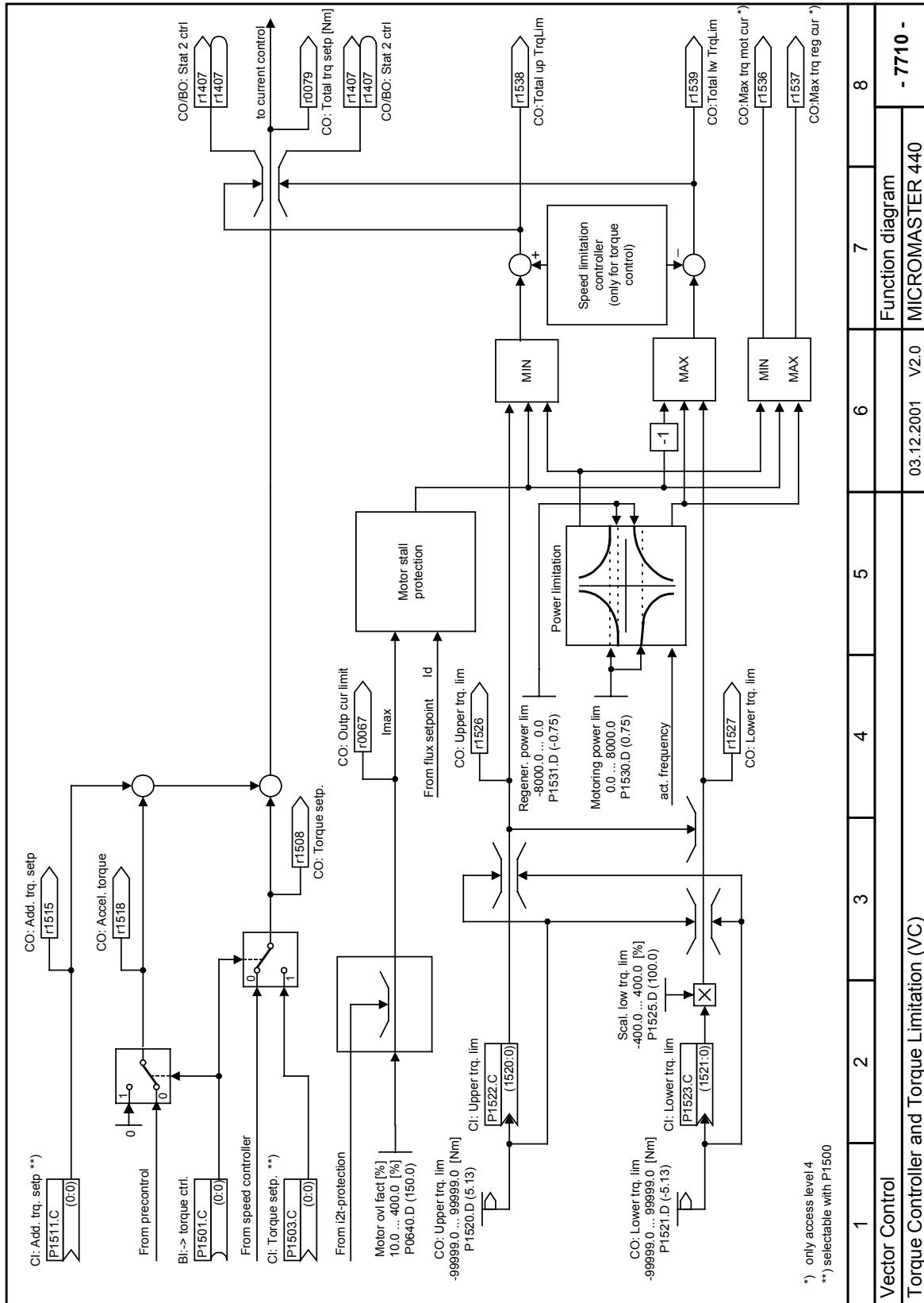
1	2	3	4	5	6	7	8
Vector Control							
Overview of Torque Control with Encoder: P1300 = 23 or P1300 = 21 and P1501 = 1							
Function diagram						- 7210 -	
MICROMASTER 440						V2.0	
03.12.2001							



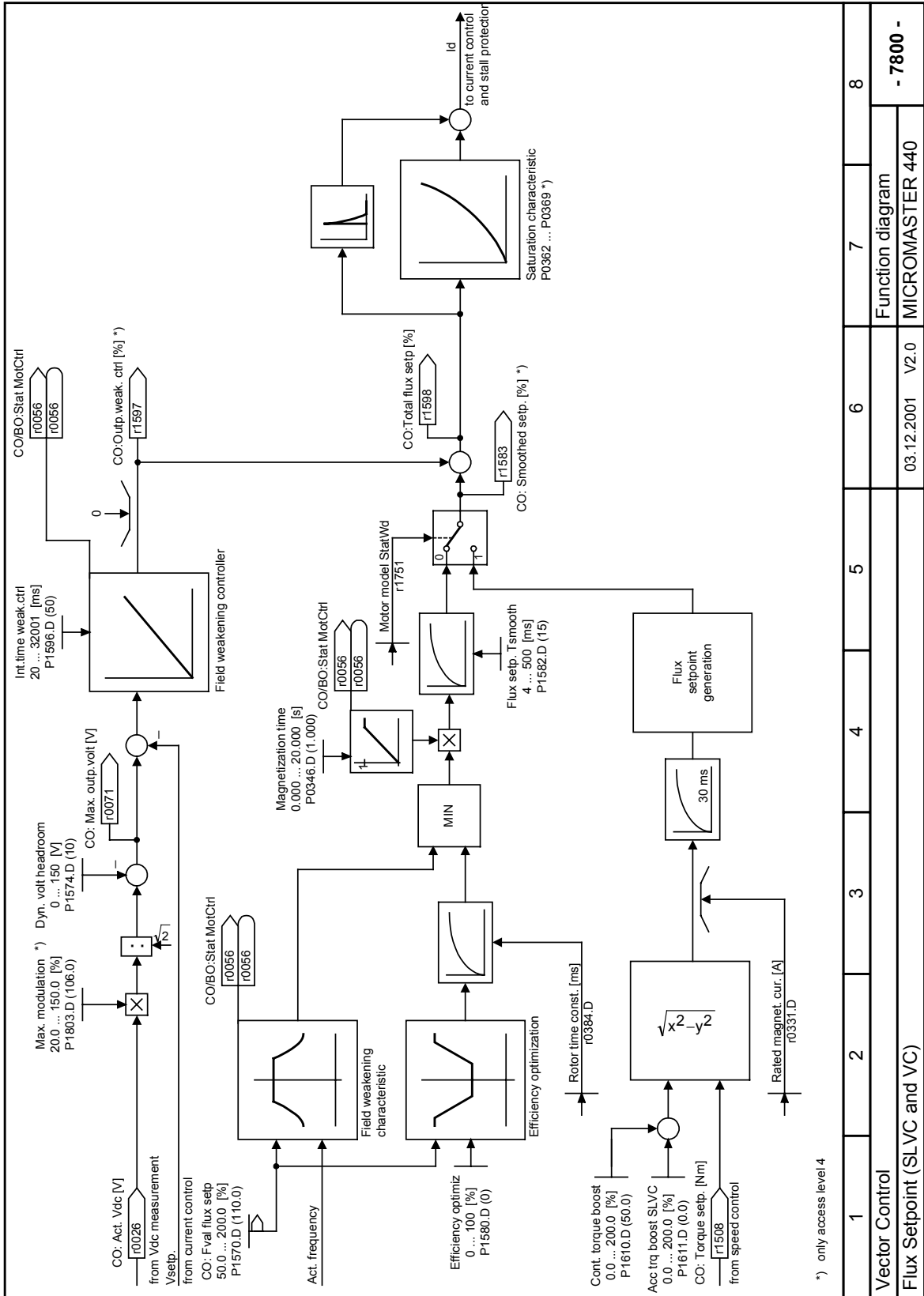


1	2	3	4	5	6	7	8
Vector Control							
Speed Controller with Encoder (VC): P1300 = 21 and P1501 = 0							
Function diagram						- 7510 -	
MICROMASTER 440						V2.0	
03.12.2001							



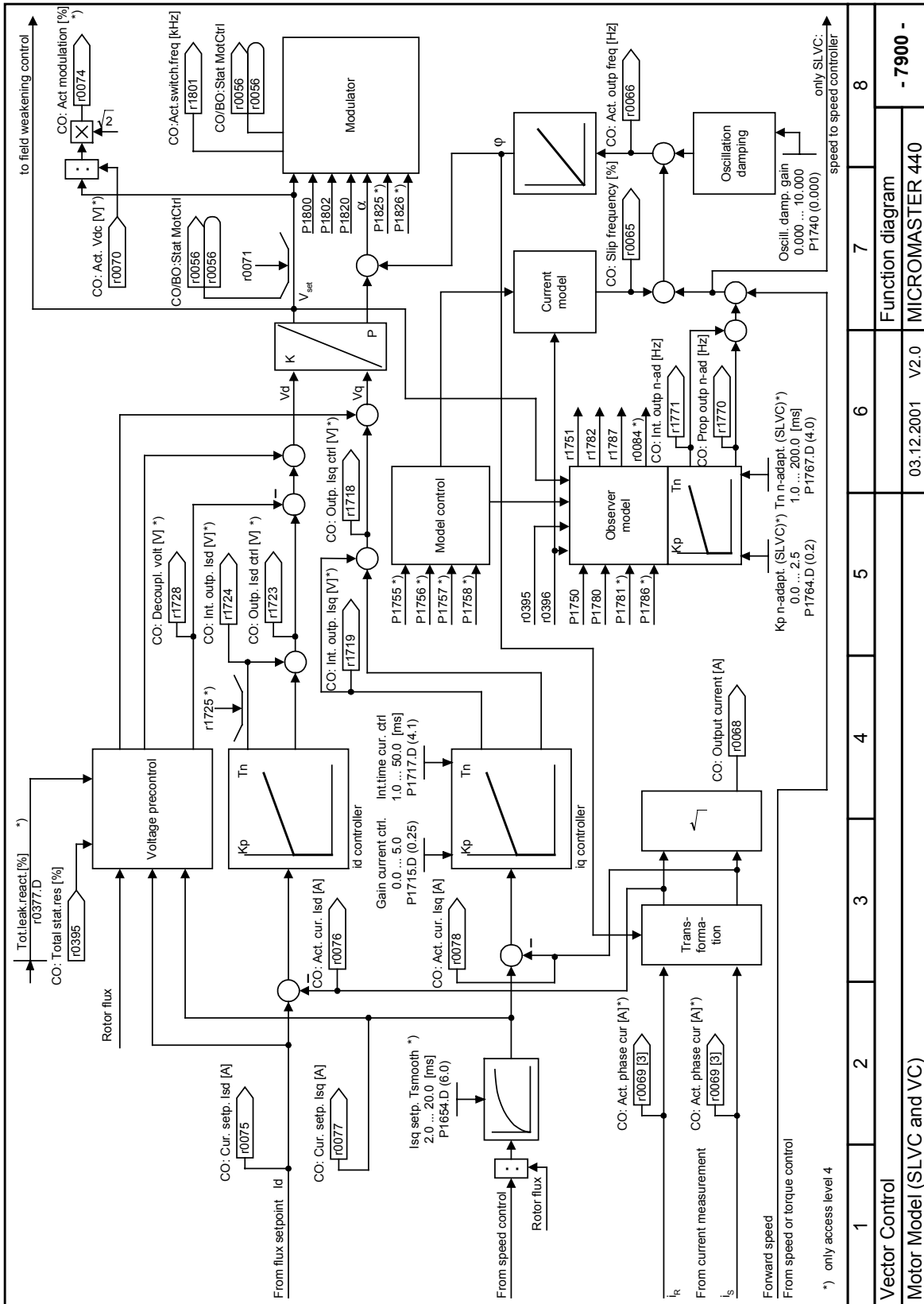


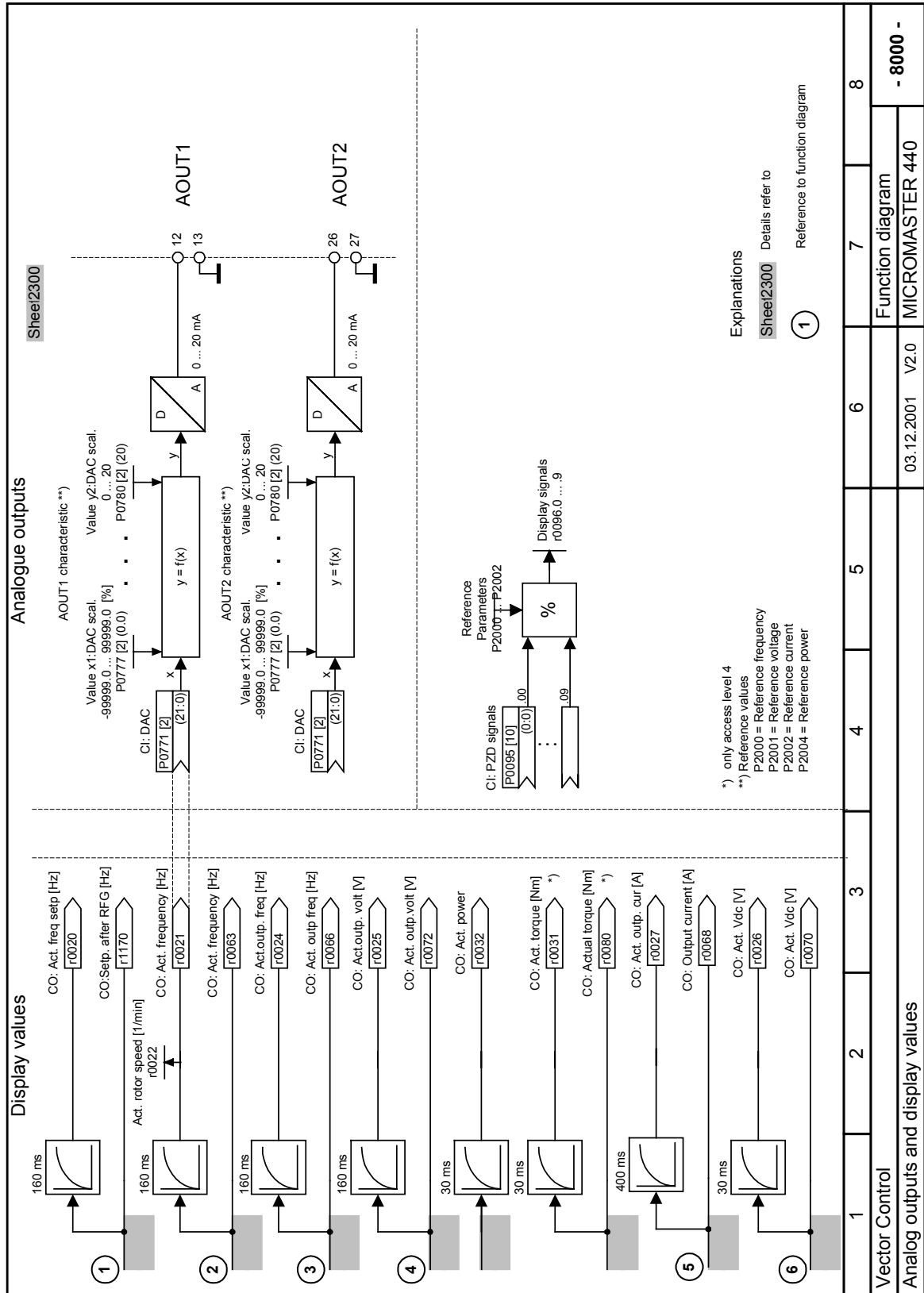
1	2	3	4	5	6	7	8
Vector Control							
Torque Controller and Torque Limitation (VC)							
						Function diagram	
						MICROMASTER 440	
						03.12.2001 V2.0	
- 7710 -							



*) only access level 4

1	2	3	4	5	6	7	8
Vector Control							
Flux Setpoint (SLVC and VC)							
Function diagram						MICROMASTER 440	
03.12.2001 V2.0						- 7800 -	






3 Faults and Alarms

3.1 Fault messages

In the event of a failure, the inverter switches off and a fault code appears on the display.

NOTE

To reset the fault code, one of three methods listed below can be used:

1. Cycle the power to the drive.
2. Press the  button on the BOP or AOP.
3. Via Digital Input 3 (default setting)

Fault	Possible Causes	Diagnose & Remedy	Quit
F0001 OverCurrent	<ul style="list-style-type: none"> ➢ Motor power (P0307) does not correspond to the inverter power (r0206) ➢ Motor lead short circuit ➢ Earth faults 	Check the following: <ol style="list-style-type: none"> 1. Motor power (P0307) must correspond to inverter power (r0206). 2. Cable length limits must not be exceeded. 3. Motor cable and motor must have no short-circuits or earth faults 4. Motor parameters must match the motor in use 5. Value of stator resistance (P0350) must be correct 6. Motor must not be obstructed or overloaded <ul style="list-style-type: none"> ➢ Increase the ramp time ➢ Reduce the boost level 	OFF2
F0002 OverVoltage	<ul style="list-style-type: none"> ➢ DC-link voltage (r0026) exceeds trip level (P2172) ➢ Overvoltage can be caused either by too high main supply voltage or if motor is in regenerative mode. Regenerative mode can be cause by fast ramp downs or if the motor is driven from an active load. 	Check the following: <ol style="list-style-type: none"> 1. Supply voltage (P0210) must lie within limits indicated on rating plate . 2. DC-link voltage controller must be enabled (P1240) and parameterized properly. 3. Ramp-down time (P1121) must match inertia of load. 4. Required braking power must lie within specified limits. <p>NOTE Higher inertia requires longer ramp times; otherwise, apply braking resistor.</p>	OFF2
F0003 UnderVoltage	<ul style="list-style-type: none"> ➢ Main supply failed. ➢ Shock load outside specified limits. 	Check the following: <ol style="list-style-type: none"> 1. Supply voltage (P0210) must lie within limits indicated on rating plate. 2. Supply must not be susceptible to temporary failures or voltage reductions. 	OFF2
F0004 Inverter Over Temperature	<ul style="list-style-type: none"> ➢ Ventilation inadequate ➢ Ambient temperature is too high. 	Check the following: <ul style="list-style-type: none"> ➢ Fan must turn when inverter is running ➢ Pulse frequency must be set to default value ➢ Ambient temperature could be higher than specified for the inverter ➢ Additional meaning for Mega Master: <ul style="list-style-type: none"> ➢ P949 = 1: Rectifiere overtemperature ➢ P949 = 2: Ambient overtemperature ➢ P949 = 3: EBOX overtemperature 	OFF2
F0005 Inverter I2T	<ul style="list-style-type: none"> ➢ Inverter overloaded. ➢ Duty cycle too demanding. ➢ Motor power (P0307) exceeds inverter power capability (r0206). 	Check the following: <ol style="list-style-type: none"> 1. Load duty cycle must lie within specified limits. 2. Motor power (P0307) must match inverter power (r0206) 	OFF2
F0011 Motor Over Temperature	<ul style="list-style-type: none"> ➢ Motor overloaded 	Check the following: <ol style="list-style-type: none"> 1. Load duty cycle must be correct 2. Motor nominal overtemperatures (P0626-P0628) must be correct 3. Motor temperature warning level (P0604) must match 	OFF1
F0012 Inverter temp. signal lost	Wire breakage of inverter temperature (heatsink) sensor		OFF2

Fault	Possible Causes	Diagnose & Remedy	Quit
F0015 Motor temperature signal lost	Open or short circuit of motor temperature sensor. If signal loss is detected, temperature monitoring switches over to monitoring with the motor thermal model.		OFF2
F0020 Mains Phase Missing	Fault occurs if one of the three input phases are missed and the pulses are enabled and drive is loaded	Check the input wiring of the mains phases	OFF2
F0021 Earth fault	Fault occurs if the sum of the phase currents is higher than 5 % of the nominal inverter current. NOTE - Framesizes D to F This fault only occurs on inverters that have 3 current sensors.		OFF2
F0022 Powerstack fault	That hardware fault (P0947 = 22 and P0949 = 1) caused by the following events: (1) DC-link overcurrent = short circuit of IGBT (2) Short circuit of chopper (3) Earth fault (4) I/O board is not properly inserted. ➤ Framesizes A to C (1),(2),(3),(4) ➤ Framesizes D to E (1),(2),(4) ➤ FramesizeF(2),(4) ➤ Since all these faults are assigned to one signal on the power stack, it is not possible to establish which one actually occurred. ➤ UCE failure was detected, when P0947 = 22 and fault value P0949 =12 or 13 or 14, depending on UCE (for MegaMaster only).	Check the I/O board. It has to be fully pressed home.	OFF2
F0023 Output fault	One phase of output is disconnected		OFF2
F0024 Rectifier Over Temperature	➤ Ventilation inadequate ➤ Fan inoperative ➤ Ambient temperature is too high.	Check the following: ➤ Fan must turn when inverter is running ➤ Pulse frequency must be set to default value ➤ Ambient temperature could be higher than specified for the inverter	OFF2
F0030 Fan has failed	Fan no longer working	➤ Fault cannot be masked while options module (AOP or BOP) is connected. ➤ Need a new fan.	OFF2
F0035 Auto restart after n	Auto restart fault after n-restart try		OFF2
F0040 Automatic Calibration Failure	MICROMASTER 440 only		OFF2

Fault	Possible Causes	Diagnose & Remedy	Quit
F0041 Motor Data Identification Failure	<p>Motor data identification failed.</p> <ul style="list-style-type: none"> ➤ Alarm value =0: Load missing ➤ Alarm value =1: Current limit level reached during identification. ➤ Alarm value =2: Identified stator resistance less than 0.1% or greater than 100%. ➤ Alarm value =3: Identified rotorresistance less than 0.1% or greater than 100%. ➤ Alarm value =4: Identified stator reactance less than 50% and greater than 500% ➤ Alarm value =5: Identified main reactance less than 50% and greater than 500% ➤ Alarm value =6: Identified rotor time constant less than 10ms or greater than 5s ➤ Alarm value =7: Identified total leakage reactance less than 5% and greater than 50% ➤ Alarm value =8: Identified stator leakage reactance less than 25% and greater than 250% ➤ Alarm value =9: Identified rotor leakage inductance less than 25% and greater than 250% ➤ Alarm value = 20: Identified IGBT on-voltage less than 0.5 or greater than 10V ➤ Alarm value = 30: Current controller at voltage limit ➤ Alarm value = 40: Inconsistence of identified data set, at least one identification failed <p>Percentage values based on the impedance $Z_b = V_{mot,nom} / \sqrt{3} / I_{mot,nom}$</p>	<p>0: Check that the motor is connected to the inverter.</p> <p>1-40: Check if motor data in P304-311 are correct. Check what type of motor wiring is required (star, delta).</p>	OFF2
F0042 Speed Control Optimisation Failure	<ul style="list-style-type: none"> ➤ Motor data identification failed. ➤ Alarm value =0: Time out waiting for stable speed ➤ Alarm value =1: Inconsistent readings 		OFF2
F0051 Parameter EEPROM Fault	<ul style="list-style-type: none"> ➤ Read or write failure while saving non-volatile parameter. 	<ul style="list-style-type: none"> ➤ Factory Reset and new parameterization ➤ Change drive 	OFF2
F0052 power stack Fault	<ul style="list-style-type: none"> ➤ Read failure for power stack information or invalid data. 	<ul style="list-style-type: none"> ➤ Change drive 	OFF2
F0053 IO Eeprom Fault	<ul style="list-style-type: none"> ➤ Read failure for IO EEPROM information or invalid data. 	<ul style="list-style-type: none"> ➤ Check data ➤ Change IO module 	OFF2
F0054 Wrong IO Board	<ol style="list-style-type: none"> 1. Wrong IO board is connected. 2. No ID detected on IO board, No data. 	<ul style="list-style-type: none"> ➤ Check data ➤ Change IO module 	OFF2
F0060 Asic Timeout	<ul style="list-style-type: none"> ➤ Internal communications failure 	<ul style="list-style-type: none"> ➤ If fault persists, change inverter ➤ Contact Service Department 	OFF2
F0070 CB setpoint fault	<ul style="list-style-type: none"> ➤ No setpoint values from CB (communication board) during telegram off time 	<ul style="list-style-type: none"> ➤ Check CB and communication partner 	OFF2
F0071 USS (BOP-link) setpoint fault	<ul style="list-style-type: none"> ➤ No setpoint values from USS during telegram off time 	<ul style="list-style-type: none"> ➤ Check USS master 	OFF2
F0072 USS (COMM link) setpoint fault	<ul style="list-style-type: none"> ➤ No setpoint values from USS during telegram off time 	<ul style="list-style-type: none"> ➤ Check USS master 	OFF2
F0080 ADC lost input signal	<ul style="list-style-type: none"> ➤ Broken wire ➤ Signal out of limits 		OFF2
F0085 External Fault	<ul style="list-style-type: none"> ➤ External fault triggered via terminal inputs 	<ul style="list-style-type: none"> ➤ Disable terminal input for fault trigger. 	OFF2
F0090 Encoder feedback loss	<ul style="list-style-type: none"> ➤ Signal from Encoder lost 	<ol style="list-style-type: none"> 1. Check encoder fitted. If encoder not fitted, set P400 = 0 and select SLVC mode (P1300 = 20 or 22) 2. Check connections between encoder and inverter 3. Check encoder not faulty (select P1300 = 0, run at fixed speed, check encoder feedback signal in P66) <p>Increase encoder loss threshold in P492</p>	OFF2
F0101 Stack Overflow	<ul style="list-style-type: none"> ➤ Software error or processor failure 	<ul style="list-style-type: none"> ➤ Run self test routines 	OFF2

Fault	Possible Causes	Diagnose & Remedy	Quit
F0221 PID Feedback below min. value	➤ PID Feedback below min. value P2268.	➤ Change value of P2268.Adjust feedback gain.	OFF2
F0222 PID Feedback above max. value	➤ PID feedback above max. value P2267.	➤ Change value of P2267.Adjust feedback gain.	OFF2
F0450 BIST Tests Failure	Fault value: 1. Some power section tests have failed 2. Some control board tests have failed 4. Some functional tests have failed 8. Some IO module tests have failed. (MM 420 only) 16. Internal RAM failed on power-up check	➤ Drive may run but some features will not work properly. ➤ Replace drive.	OFF2
F0452 Belt Failure Detected	➤ Load conditions on motor indicate belt failure or mechanical fault.	Check the following: 1. No breakage, seizure or obstruction of drive train. 1. If using an external speed sensor, check for correct function.Check parameters: ➤ P0409 (pulse per min at rated speed). ➤ P2191 (Belt failure speed tolerance). ➤ P2192 (delay time for permitted deviation) 2. If using the torque envelope, check parameters: ➤ P2182 (threshold frequency f1) ➤ P2183 (threshold frequency f2) ➤ P2184 (threshold frequency f3) ➤ P2185 (upper torque threshold 1) ➤ P2186 (lower torque threshold 1) ➤ P2187 (upper torque threshold 2) ➤ P2188 (lower torque threshold 2) ➤ P2189 (upper torque threshold 3) ➤ P2190 (lower torque threshold 3) ➤ P2192 (delay time for permitted deviation) 4. Apply lubrication if required.	OFF2

3.2 Alarm messages

Alarms	Possible Causes	Diagnose & Remedy	Quit
A0501 Current Limit	<ul style="list-style-type: none"> ➤ Motor power does not correspond to the inverter power ➤ Motor leads are too long ➤ Earth faults 	Check the following: <ol style="list-style-type: none"> 1. Motor power (P0307) must correspond to inverter power (r0206). 2. Cable length limits must not be exceeded. 3. Motor cable and motor must have no short-circuits or earth faults 4. Motor parameters must match the motor in use 5. Value of stator resistance (P0350) must be correct 6. Motor must not be obstructed or overloaded <ul style="list-style-type: none"> ➤ Increase the ramp-up-time. ➤ Reduce the boost. 	---
A0502 Overvoltage limit	Overvoltage limit is reached. This warning can occur during ramp down, if the dc-link controller is disabled (P1240 = 0).	If this warning is displayed permanently, check drive input voltage .	---
A0503 UnderVoltage Limit	Main supply failed Main supply (P0210) and consequently DC-link voltage (R0026) below specified limit (P2172).	Check main supply voltage (P0210).	---
A0504 Inverter OverTemperature	Warning level of inverter heat-sink temperature (P0614) is exceeded, resulting in pulse frequency reduction and/or output frequency reduction (depending on parametrization in (P0610)	Check the following: <ol style="list-style-type: none"> 1. Ambient temperature must lie within specified limits 2. Load conditions and duty cycle must be appropriate 	---
A0505 Inverter I2T	<ul style="list-style-type: none"> ➤ Warning level exceeded, current will be reduced if parameterized (P0610 = 1) 	<ul style="list-style-type: none"> ➤ Check that duty cycle lies within specified limits 	---
A0506 Inverter duty cycle	<ul style="list-style-type: none"> ➤ Difference between heatsink and IGBT junction temperature exceeds warning limits 	<ul style="list-style-type: none"> ➤ Check that duty cycle and shock loads lie within specified limits 	---
A0511 Motor OverTemperature I2T	<ul style="list-style-type: none"> ➤ Motor overloaded. ➤ Load duty cycle too high. 	Independently of the kind of temperature determination check: <ul style="list-style-type: none"> ➤ P0604 motor temperature warning threshold ➤ P0625 motor ambient temperature ➤ If (P601 = 0 or 1) Check the following: <ol style="list-style-type: none"> 1. Check if name plate data are correct (if not perform quick commissioning) 2. Accurate equivalent circuit data can be found by performing motor identification (P1910=1). 3. Check if motor weight (P344) is reasonable. Change if necessary. 4. Via P626, P627, P628 the standard overtemperatures can be changed, if the motor is nota Siemens standard motor. ➤ If (P601 = 2) Check the following: <ol style="list-style-type: none"> 1. Check if temperature shown in r35 is reasonable. 2. Check if the sensor is a KTY84 (other sensors are not supported) 	---
A0512 Motor temperature signal lost	Wire break to motor temperature sensor. If a wire breakage is be detected, temperature monitoring switches over to monitoring with the motor thermal model.		---
A0520 Rectifier OverTemperature	Warning level of rectifier heat-sink temperature (P) is exceeded	Check the following: <ol style="list-style-type: none"> 1. Ambient temperature must lie within specified limits 2. Load conditions and duty cycle must be appropriate 3. Fan must turn when drive is running 	---
A0521 Ambient OverTemperature	Warning level of ambient temperature (P) is exceeded	Check the following: <ol style="list-style-type: none"> 1. Ambient temperature must lie within specified limits 2. Fan must turn when drive is running 3. Fan intake air has to be without any resistance 	---
A0522 I2C read out timeout	The cyclic access to the UCE Values and powerstack temperatures via the i2c bus (Mega Master) is disturbed		---
A0523 Output fault	One phase of output is disconnected	Warning can be masked.	---
A0535 Braking Resistor Hot			---

Alarms	Possible Causes	Diagnose & Remedy	Quit
A0541 Motor Data Identification Active	Motor data identification (P1910) selected or running		---
A0542 Speed Control Optimisation Active	Speed Control Optimisation (P1960) is selected or running		---
A0590 Encoder feedback loss warning	Signal from Encoder lost and Inverter has switched to sensorless vector control	Stop inverter and then 1. Check encoder fitted. If encoder not fitted, set P400 = 0 and select SLVC mode (P1300 = 20 or 22) 2. Check connections between encoder and inverter 3. Check encoder not faulty (select P1300 = 0, run at fixed speed, check encoder feedback signal in P66) 4. Increase encoder loss threshold in P492	---
A0600 RTOS Overrun Warning			---
A0700 CB warning 1 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0701 CB warning 2 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0702 CB warning 3 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0703 CB warning 4 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0704 CB warning 5 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0705 CB warning 6 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0706 CB warning 7 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0707 CB warning 8 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0708 CB warning 9 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0709 CB warning 10 see CB manual for details.	CB (communication board) specific	See CB user manual	---
A0710 CB communication error	Communication with CB (communication board) is lost	Check CB hardware	---
A0711 CB configuration error	CB (communication board) reports a configuration error.	Check CB parameters	---
A0910 Vdc-max controller de-activated	Vdc max controller has been de-activated, since controller is not capable of keeping DC-link voltage (r0026) within limits (P2172). ➤ Occurs if main supply voltage (P0210) is permanently too high. ➤ Occurs if motor is driven by an active load, causing motor to go into regenerative mode. ➤ Occurs at very high load inertias, when ramping down.	Check the following: 1. Input voltage (P0210) must lie within range. 2. Load must be match.	---

Alarms	Possible Causes	Diagnose & Remedy	Quit
A0911 Vdc-max controller active	<ul style="list-style-type: none"> ➤ Vdc max controller is active; so ramp-down times will be increased automatically to keep DC-link voltage (r0026) within limits (P2172). 		---
A0912 Vdc-min controller active	<p>Vdc min controller will be activated if DC-link voltage (r0026) falls below minimum level (P2172).</p> <ul style="list-style-type: none"> ➤ The kinetic energy of the motor is used to buffer the DC-link voltage, thus causing deceleration of the drive! ➤ So short mains failures do not necessarily lead to an undervoltage trip. 		---
A0920 ADC parameters not set properly.	<p>ADC parameters should not be set to identical values, since this would produce illogical results.</p> <ul style="list-style-type: none"> ➤ Index 0: Parameter settings for output identical ➤ Index 1: Parameter settings for input identical ➤ Index 2: Parameter settings for input do not correspond to ADC type 	➤	---
A0921 DAC parameters not set properly.	<p>DAC parameters should not be set to identical values, since this would produce illogical results.</p> <ul style="list-style-type: none"> ➤ Index 0: Parameter settings for output identical ➤ Index 1: Parameter settings for input identical ➤ Index 2: Parameter settings for output do not correspond to DAC type 	➤	---
A0922 No load applied to inverter	<p>No Load is applied to the inverter. As a result, some functions may not work as under normal load conditions.</p>	➤	---
A0923 Both JOG Left and JOG Right are requested	<p>Both JOG right and JOG left (P1055/P1056) have been requested. This freezes the RFG output frequency at its current value.</p>	➤	---
A0952 Belt Failure Detected	<p>Load conditions on motor indicate belt failure or mechanical fault.</p>	<p>Apply lubrication if required. Check the following:</p> <ol style="list-style-type: none"> 1. No breakage, seizure or obstruction of drive train. 2. If using an external speed sensor, check for correct function. Check parameters: <ul style="list-style-type: none"> ➤ P0409 (pulse per min at rated speed). ➤ P2191 (Belt failure speed tolerance). ➤ P2192 (delay time for permitted deviation) 3. If using the torque envelope, check parameters: <ul style="list-style-type: none"> ➤ P2182 (threshold frequency f1) ➤ P2183 (threshold frequency f2) ➤ P2184 (threshold frequency f3) ➤ P2185 (upper torque threshold 1) ➤ P2186 (lower torque threshold 1) ➤ P2187 (upper torque threshold 2) ➤ P2188 (lower torque threshold 2) ➤ P2189 (upper torque threshold 3) ➤ P2190 (lower torque threshold 3) ➤ P2192 (delay time for permitted deviation) 4. Apply lubrication if required. 	---
A0936 PID Autouning Active	<p>PID Autotuning (P2350) selected or running</p>		---

Suggestions and/or Corrections

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[Suggestions for technical documentation](#)

**Suggestions
Corrections**

For Publication/Manual:
MICROMASTER 440
Parameter List

User Documentation

From

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Company/Service Department

Address: _____

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Order number: 6SE6400-5BB00-0BP0

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