



Digistart D4 – D5

Electronic controllers for fixed speed applications
24 to 1250 A

LERROY-SOMER[™]

Nidec
All for dreams

Digistart D4 – D5

Smart and Communicating

A new generation of starters

The Digistart soft starter has been upgraded and brings fresh features with the new D4 and D5 ranges. The new series are designed to better meet the productivity needs of your fixed-speed equipment, and incorporate the latest control and protection technologies as well as embedded intelligence functions.

The new starters not only start and stop your machines accurately and efficiently, they can also help minimise your energy bill and improve your operational performance by transmitting key data to operators and automatic control systems.

The communication functions of this new series have been significantly improved compared to the previous generation, to allow for the easy adjustment of basic parameters. Thanks to the integrated console, standard USB port and mobile app, Digistart offers immediate and intuitive access to configuration menus for applications such as pumping, ventilation, conveying, compression, crushing, etc.

The D4 model (24–580A) with its ultra-compact design is primarily dedicated to simple applications or redundant electronic drive solutions. The D5 model (24–1620A) incorporates more features, offering one of the most powerful electronic controllers for asynchronous motors on the market. Both models are compatible with all three-phase 200–525 V, 380–600 V or 690 V networks.

Why not make life easier?

Smart does not necessarily mean complex. The new Digistart units offer more functions, but they have been designed to provide a more user-friendly, ergonomic, simpler and richer user experience.

Thanks to an improved display and more intuitive connectivity, it is now easier to access useful information when you need it. Thanks to the new USB port, you can download and store starter performance data, helping you to efficiently manage the system.

Programming and automation functions allow for more customised operations to meet your facility's requirements, minimising the need for manual action and ensuring continuous operations.

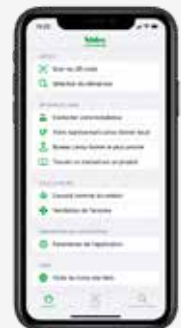
Digistart also includes starter, motor and system protection functions as well as alarms to prevent breakdowns. If a problem arises, you can continue to operate in degraded mode thanks to the Power Through and Emergency Run functions.



- **A smarter model able to adapt to specific application needs:**
 - Soft start technology with built-in adaptive acceleration control
 - Extensive and fully adjustable motor protection devices
 - Smart business cards for specific industrial applications
 - Multiple fieldbus communication options
- **A more robust model:**
 - A tough design for all environments, including the harshest environments
 - Starter and motor thermal models for maximum performance
 - A range of functions for improved used comfort
- **Easier to use:**
 - Full multilingual graphic display
 - Easy commissioning with integrated simulation and configuration features
 - Configuration backups by USB flash drive
 - Simplified firmware updates
- **More ergonomic interaction with the mobile app:**
 - Access the history of the last 3 faults by scanning the QR code of the display
 - Possibility to send start-up log data
 - Easy access to product manuals directly from the app
- **Easier to integrate with smart business cards:**
 - Functions and Inputs/Outputs to meet the specific needs of some industrial applications such as pumping
- **Greater energy efficient thanks to the internal bypass:**
 - Maximum energy efficiency and energy savings for fixed speed applications
 - Zero harmonic emissions during operation – no additional filters required
 - Energy savings reducing operating costs
 - An internal bypass design able to simplify the installation process
 - Less space and wiring required

A dynamic QR code can be generated on the display and read by the Nidec Leroy-Somer Digistart app installed on your smartphone, making it easy to access event logs, prepare a report, diagnose and view the history of the last 3 faults or simply view product documentation. Simple operation at your fingertips!

- **Select**
 - Enter the details for the industrial application to choose the most appropriate model for your situation and retrieve the corresponding data sheet.
- **Diagnose**
 - Scan the dynamic QR codes generated by Digistart soft starters in order to view starter details and comprehensive data for the last 3 faults.
Need help? Send QR code data at the touch of a button.
- **Download**
 - Use the quick links to easily access product documentation such as user manuals via the internet whenever and wherever.
- **Get in contact**
 - It's very easy to get in touch with the right people. The contact details of your nearest contact person are stored in the application's database.
- **Calculate**
 - The app. contains useful tools to make your life easier.



Digistart D4 – D5

Reliable and Robust

Trust Digistart

Whether you are responsible for installation, maintenance or operation, you can rely on the Digistart soft starter.

Characteristics	Advantages
Quick setup via the mobile app.	Easy commissioning
Simulation mode	Quick and easy fast testing during installation and commissioning. No need for a mains supply and motor.
Automatic timers and date-based operation	Quick and easy cycle time programming. No need for external timers.
Power Through (operation in degraded mode)	Minimal downtime at the site. Maintains most control and protection functions.
Emergency mode	Continuous operation in degraded mode
USB port	Easy data retrieval with no need for a PC or network. No need for an adapter or cable. Easy software updates. Quick and easy commissioning.
Plug-in terminals	Quick installation or replacement



A well designed start-up

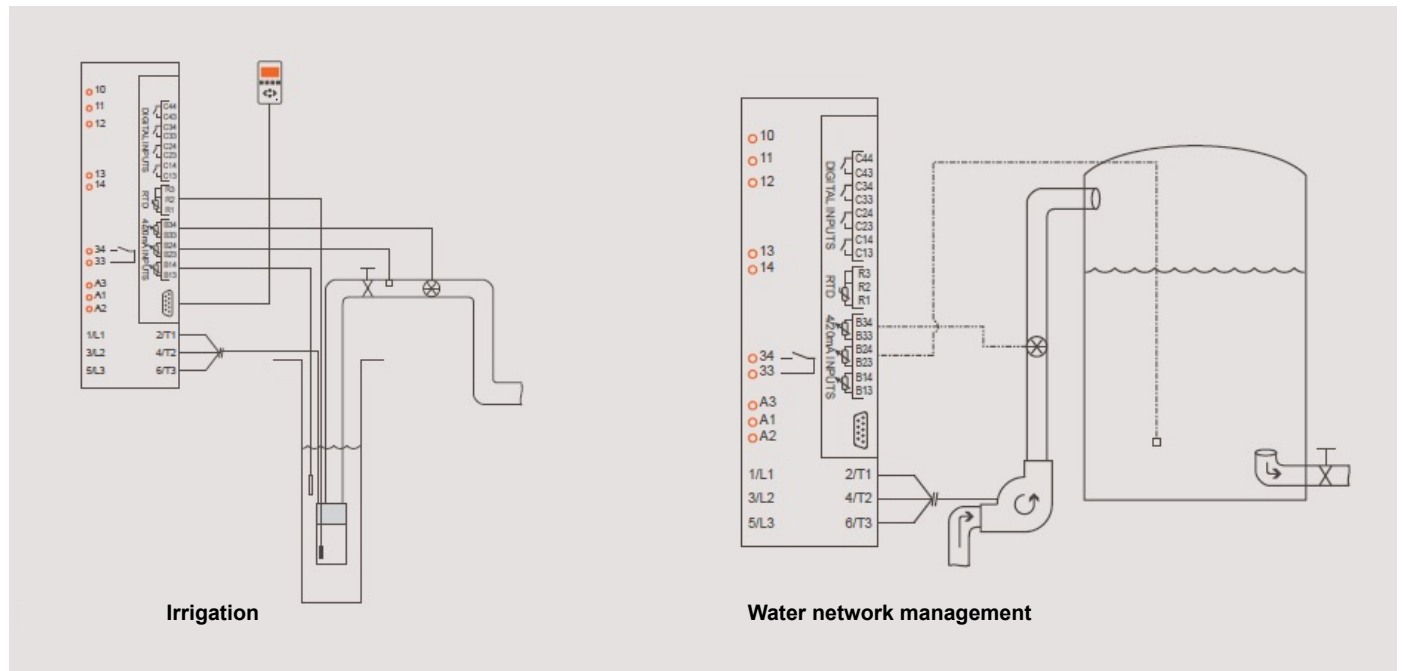
Digistart is redefining the role of soft starters with its smart option cards. Several business cards are available and can be used to manage specific applications such as pumping. By using the appropriate card, Digistart can function as a complete system controller.

Business smart cards are easy to integrate, and offer specific functions and Inputs/Outputs designed to meet the needs of a particular industry or application, simplifying design, installation and integration and giving you real control over your fixed-speed equipment.



Smart card for pumping

Installing the pumping card allows the sensors in question to be connected directly to the Digistart. On this basis, there is no need to install additional components, as generally required to provide this level of information and control functions specific to your system.



For cards for other applications, please contact your usual sales contact.

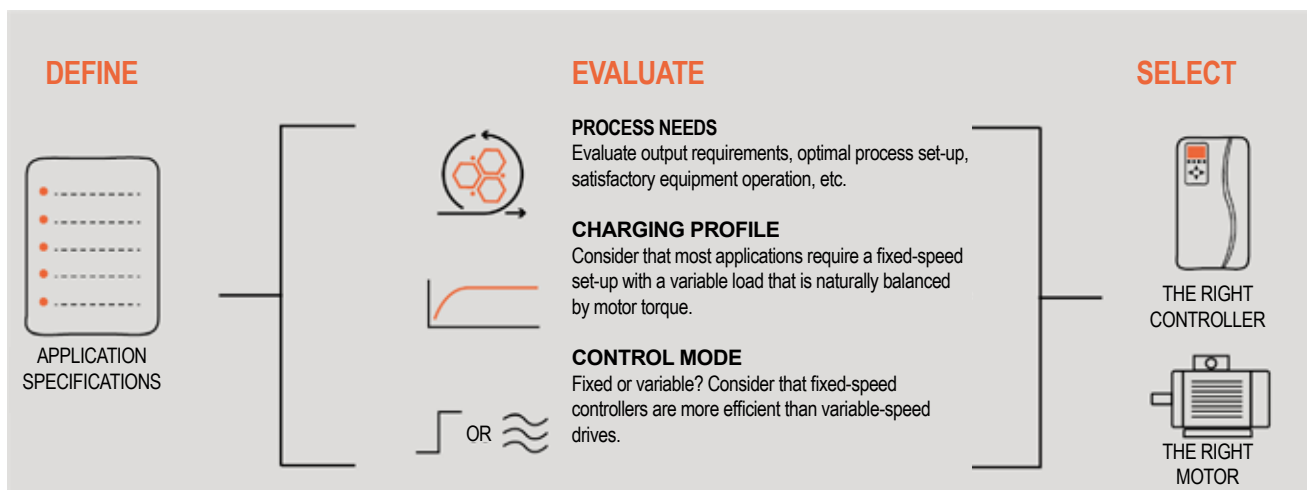
Digistart D4 - D5

Efficient and Powerful

Aim for efficiency right from start-up



When designing energy-efficient systems, the system as a whole must be taken into consideration. Using energy efficient components is important, but selecting the most appropriate motor control mode (fixed or variable speed) is also critical.



The Digistart starter range is optimised for use with IE3 motors. This is the most efficient control mode for a fixed speed and variable load system.

Digistart – Maximum energy efficiency for fixed-speed applications

99.5% efficiency	The internal bypass optimises energy consumption and achieves 99.5% efficiency in operation.
80% reduction in lost energy	The 99.5% efficiency achieved by Digistart is equivalent to an 80% reduction in lost energy.
0% harmonics	Digistart does not produce harmonics when operating, which helps to improve the quality of the power and limits equipment losses.

IE3 compatibility

IE3 motors can be used in order to maximise energy efficiency and save on operating costs, but starting such motors can be more difficult, especially due to:

- higher inrush and start-up currents, which place high demands on the power supply circuits
- “Sawtooth” breakaway torque curves that make smooth control more difficult.

This is not a problem for the Digistart starter, which has been designed to make it easier to control IE3 motors. The Digistart features a new adaptive control system able to read the characteristics of the motor during the first start/stop and then adjusts control to optimise performance. Simply select the most appropriate profile for the load type and the soft starter will automatically manage the smoothest possible acceleration for the load.



OPT FOR THE INTERNAL BYPASS FOR ADDITIONAL SAVINGS

Digistart has a built-in bypass to optimise energy consumption.

Thanks to this device, energy efficiency and thus energy savings are maximised for fixed-speed applications. This approach significantly reduces operating costs.

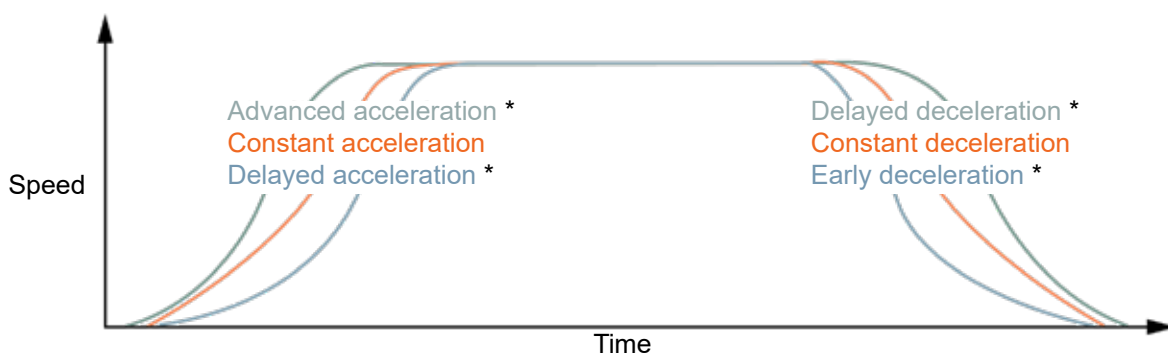
In addition, Digistart does not produce harmonics during operation, so no additional filters are required and system losses resulting from harmonics are eliminated. This bypass also reduces heat loss during operation.

Opting for an internal Bypass simplifies the installation process and reduces the overall dimensions of the equipment.

USING ADAPTIVE CONTROL TO OPTIMISE PERFORMANCE

Digistart offers 4 control modes to cover all requirements:

- Timed voltage ramp for applications with low inertial loads
- Constant current/current ramp for applications with variable loads such as conveyor belts
- Torque control for applications requiring a linear start-up and shutdown, such as ski lifts
- Adaptive control for all types of applications



* D5 only

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Ergonomic and Practical

Features and options

	Digistart D4	Digistart D5
Motor control		
Double set of motor parameters		✓
Start-up at a constant current and current ramp	✓	✓
Adaptive Start/Stop Control	✓	✓
Kickstart		✓
Coasting stop and Timed Voltage Ramp (TVR)	✓	✓
DC braking		✓
Progressive braking		✓
Jog (low-speed operation)		✓
Internal delta connection (6 wires)		✓
Gradual stop in safe conditions	✓	✓
Pump cleaning		✓
Direction change switch control		✓
Motor protection		
Motor thermistor	✓	✓
Current imbalance	✓	✓
Current under/overcharging	✓	✓
Under/over voltage		✓
Under/overload (dry pump protection)		✓
Phase sequence (Forward/Reverse/None)	✓	✓
Phase loss	✓	✓
Power loss	✓	✓
Start-up limiter per hour	✓	✓
Restart time (return to pump time)	✓	✓
Integration and Management		
Multi-language graphic display	✓	✓
Configurable display	✓	✓
Network expansion and I/O options	✓	✓
Built-in USB port (copying parameters, updating and reading data)	✓	✓
Analogue output	✓	✓
Fire mode (operational emergency)	✓	✓
Voltage measurement		✓
PowerThrough (degraded mode operation)		✓
Daily Start/Stop programming		✓
Timer for use programming cycle time		✓
Operating simulation	✓	✓



Designation

Dx - XXXX X - XX - XX

- Type of Digistart** (4: D4 series; 5: D5 series)
- Current rating(A)**
- Version B:** Internal bypass
C: Permanent connection (without Bypass)
- Mains voltage** V5: 200–525 VAC
V7: D4 380–600 VAC; D5 380–690 VAC
- Control voltage** C1: 110~120 VAC or 220~240 VAC
C2: 24 VAC/VDC

Operating categories according to IEC standard 60947-4-2

AC53b format (current rating WITH bypass)

80 A: AC-53b 3.5 - 15: 345

- Starter current rating (A)**
- Start-up current (multiple of the motor current rating)**
- Start-up time (s)**
- Rest time (s)**

AC53a format (current rating WITHOUT bypass)

315 A: AC-53a 3.5 - 15: 50 - 6

- Starter current rating (A)**
- Start-up current (multiple of the motor current rating)**
- Start-up time (sec)**
- Operating cycle with a load (%)**
- Number of start-ups per hour**

Digistart D4 - D5

Safe and Compact

Environment

Operating temperature	-10°C to +60°C (derating above +40°C)
Storage temperature	-25°C to +60°C
Operating altitude	0 – 1000 m (derating above 1000 m)
Relative humidity	5% to 95%
Pollution level	3
Vibration	IEC 60068-2-6
Protection: 0024B to 0135B 0184B to 1250B 0735C to 1220C	IP20 IP00 IP00

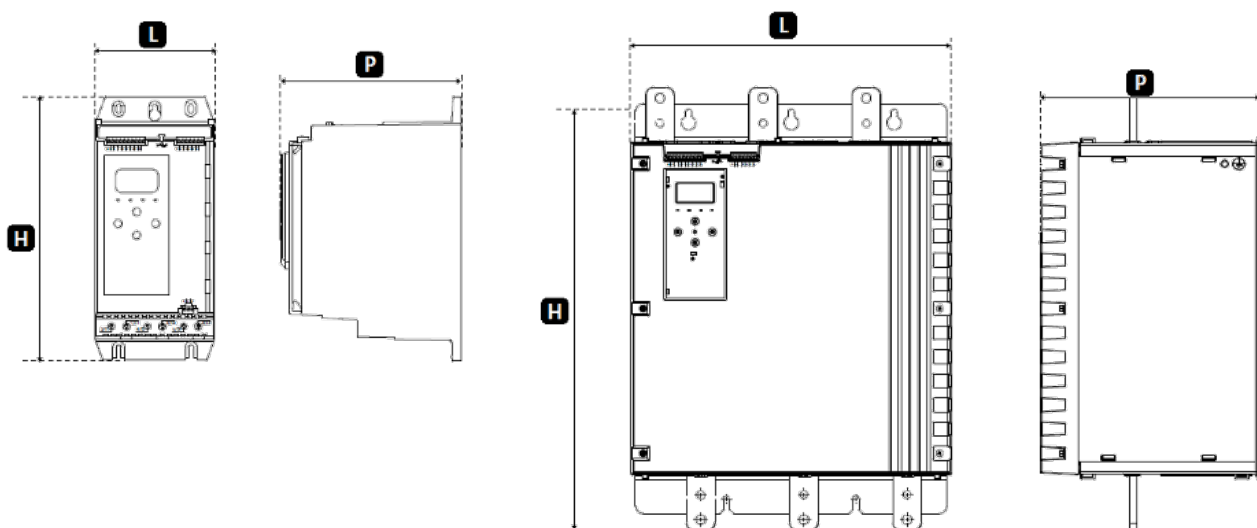
Electromagnetic compatibility (in accordance with EU Directive 2014/35/EU)

EMC immunity	IEC 60947-4-2
EMC emission	IEC 60947-4-2 Class B

General information

Power supply	
Mains voltage (L1, L2, L3)	
xxxxX-V5	200 to 525 VAC (±10%)
xxxxX-V7	380 to 690 VAC (±10%)
Control voltage (A1, A2, A3)	
xxxxX-xx-C1 (A1, A2)	110 to 120 VAC (+10%/-15%), 600 mA
xxxxX-xx-C1 (A2, A3)	220 to 240 VAC (+10%/-15%), 600 mA
xxxxX-xx-C2 (A1, A2)	24 VAC/VDC (±20%), 2.8 A
Mains frequency	50 Hz to 60 Hz (±5 Hz)
Inputs/Outputs	
Control input	Active 24 VDC, approx. 8 mA
Reset input (10, 11)	
Start/stop input (11, 12)	
Programmable input A (13, 14)	
Programmable input B (13, 15)	
PTC input (B4, B5)	Safe conditions > 3.6 kΩ, reset < 1.6 kΩ
Relay outputs	250 VAC with a resistive load, 10 A
Main switch (33, 34)	NO.
Bypass switch (03, 04)	NO.
Relay A (41, 42, 43)	NO, NC
Relay B (53, 54)	NO.
Analogue output (21, 22)	0–20 mA or 4–20 mA

Dimensions



Type	W (mm)	H (mm)	D (mm)	Weight (kg)
T1B				
Dx-0024B-xx-xx				4.8
Dx-0042B-xx-xx				
Dx-0052B-xx-xx				
Dx-0064B-xx-xx	152	336	233	4.9
Dx-0069B-xx-xx				
Dx-0105B-xx-xx				
Dx-0115B-xx-xx				5.5
Dx-0135B-xx-xx				
T2B - T3B				
Dx-0184B-xx-xx				
Dx-0200B-xx-xx		495		12.7
Dx-0229B-xx-xx				
Dx-0250B-xx-xx				
Dx-0352B-xx-xx	216		245	
Dx-0397B-xx-xx				15.5
Dx-0410B-xx-xx		523		
Dx-0550B-xx-xx				19
Dx-0580B-xx-xx				
T4B				
Dx-0835B-xx-xx				51
Dx-0940B-xx-xx				
Dx-1070B-xx-xx	447	618	310	62
Dx-1230B-xx-xx				63
Dx-1250B-xx-xx				65
T4C				
Dx-0735C-xx-xx				47
Dx-0830C-xx-xx				
Dx-1025C-xx-xx	447	618	310	58
Dx-1170C-xx-xx				59
Dx-1220C-xx-xx				61

Digistart D4 - D5

Complete and Adaptable

Current ratings

Calculated values for an ambient temperature of +40°C and altitude < 1000 m.

	AC53b 3.0 – 10:350	AC53b 3.5 – 15:345	AC53b 4.0 – 10:350	AC53b 4.0 – 20:340	AC53b 5.0 – 5:355	Express Availability (D5)
Dx-0024B-xx-xx	24	20	19	16	16	✓
Dx-0042B-xx-xx	42	34	34	27	31	✓
Dx-0052B-xx-xx	52	42	39	35	34	✓
	AC53b 3.0 – 10:590	AC53b 3.5 – 15:585	AC53b 4.0 – 10:590	AC53b 4.0 – 20:580	AC53b 5.0 – 5:595	Express availability (D5)
Dx-0064B-xx-xx	64	62	60	50	53	
Dx-0069B-xx-xx	69	69	69	62	64	✓
Dx-0105B-xx-xx	105	86	84	68	76	
Dx-0115B-xx-xx	115	107	104	86	95	✓
Dx-0135B-xx-xx	135	129	126	103	115	✓
Dx-0184B-xx-xx	184	143	139	115	127	✓
Dx-0200B-xx-xx	200	170	165	138	150	
Dx-0229B-xx-xx	229	194	187	157	170	
Dx-0250B-xx-xx	250	244	230	200	202	✓
Dx-0352B-xx-xx	352	286	277	234	257	✓
Dx-0397B-xx-xx	397	322	311	263	288	
Dx-0410B-xx-xx	410	410	410	379	400	
Dx-0550B-xx-xx	550	526	505	427	462	
Dx-0580B-xx-xx	580	579	554	470	507	✓
Dx-0835B-xx-xx	835	654	630	535	592	
Dx-0940B-xx-xx	940	736	708	603	663	✓
Dx-1070B-xx-xx	1 070	950	905	785	834	
Dx-1230B-xx-xx	1 230	1 154	1 090	959	989	✓
Dx-1250B-xx-xx	1 250	1 250	1 250	1 155	1 250	
*	AC53a 3.0 – 10: 50 - 6	AC53a 3.5 – 15: 50 - 6	AC53a 4.0 – 10: 50 - 6	AC53a 4.0 – 20: 50 - 6	AC53a 5.0 - 5: 50 - 6	Express availability (D5)
Dx-0735C-xx-xx	735	590	572	492	542	
Dx-0830C-xx-xx	830	667	645	557	609	
Dx-1025C-xx-xx	1 025	839	805	710	751	
Dx-1170C-xx-xx	1 170	979	934	838	862	
Dx-1220C-xx-xx	1 220	1 134	1 109	964	1 075	

* Dx-XXXXC-xx-xx models are not fitted with an internal bypass, currents are given for online connections.

**	AC53b 3.0 – 10:590	AC53b 3.5 – 15:585	AC53b 4.0 – 10:590	AC53b 4.0 – 20:580	AC53b 5.0 – 5:595	Express availability (D5)
Dx-0735C-xx-xx	835	732	716	593	695	
Dx-0830C-xx-xx	940	822	803	667	776	
Dx-1025C-xx-xx	1 210	1 067	1 033	874	1 170	
Dx-1170C-xx-xx	1 430	1 307	1 252	1 076	1 170	
Dx-1220C-xx-xx	1 620	1 620	1 616	1 309	1 620	

** Dx-XXXXC-xx-xx models will only be able to achieve these currents with the addition of an external bypass switch.



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