LARSEN & TOUBRO

EMX4 & EMX4i
Digital Soft Starter

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The EMX4 series offers versatile motor control and protection, in a compact and user-friendly package.

Optimised for pumping and compressor-related applications, the EMX4 delivers a refined feature set, including adaptive control to prevent water hammer.

For easy customisation in more complex applications, the EMX4i includes additional features such as soft braking and auto-scheduling.

FEATURES

- Compact design saves valuable space within your motor control panel
- Full graphical display with support for multiple languages. A simple menu structure with quick setup option makes it easy to commission and maintain your system
- Remote keypad option provides full remote control and graphical monitoring in place of separate meters and interfaces
- Adaptive control provides optimal start and stop in pumping applications, eliminating water hammer
- On-board USB provides quick setup and backup of starting parameters to greatly improve the level of in-field support and minimise downtime.
- Internal bypass across the entire range
- Integrate your starter with external sensors or a communications network, using slot-in accessory modules

Space-saving footprint

Their compact form makes EMX4 series starters easier to integrate into electrical panels where space is limited, saving you time and effort in the panel design process. With two frame size serving the entire range from 22A to 580A, they are up to 30% smaller than other soft starter solutions.

Energy saving

All models have an internal bypass to reduce your energy usage and operating expenditure. A bypassed soft starter is the most efficient electronic motor control solution for fixed speed applications, and provides maximum energy saving when used in conjunction with an IE3 motor.

Accessory Modules

The specialised smart module provides enhanced functionality and control for a variety of standalone applications, including pumping and compressors. For larger networked installations, a wide range of communication options are available. All accessory modules slot directly into the starter, making them easy to fit and use without adding to the footprint.

FEATURES

Streamlined setup process
- Configuration profiles for common applications
- Built-in metering and inputs/outputs

Easy to understand interface
- Multi-language menus and displays
- Descriptive option names and feedback messages
- Real-time performance graphs

Support energy efficiency
- IE3 compatible
- 99% energy efficient when running
- Internal bypass
- Soft start technology avoids harmonic distortion

Extensive range of models
- 24 A to 580 A (nominal)
- 200 VAC to 525 VAC
- 380 VAC to 690 VAC
- Inside delta installation

Versatile starting and stopping options
- Adaptive control
- Constant current
- Current ramp
- Timed voltage ramp soft stop
- Coast to stop
- DC brake
- Soft brake

Customisable protection
- Motor overload
- Excess start time
- Undercurrent
- Overcurrent
- Current imbalance
- Input trip
- Motor thermistor

Extensive input and output options
- Remove control inputs (2 x fixed, 2 x programmable)
- Relay outputs (1 x fixed, 2 x programmable)
- Analog output

Optional features for advanced applications
- Smart cards
- Communication modules: DeviceNet, Ethernet/IP, Modbus RTU, Modbus TCP, Profibus, Profinet

SPECIFICATION

General
Current range..24 A ~ 580 A (nominal)
Bypass..Integrated internal

Supply
Main voltage (L1, L2, L3)
EMX4-xxxx-V5...200 ~ 525 VAC (± 10%)
EMX4-xxxx-V7...380 ~ 690 VAC (± 10%)
Control voltage (A1, A2, A3)........110 ~ 120 VAC (+10% / -15%)
....or 220 ~ 240 VAC (+10% / -15%)
Mains frequency...45 Hz to 66 Hz

Inputs
Inputs ....Active 24 VDC, 8mA approx.
Reset/Starter disable (10, 11)................................Normally closed
Start/Stop(11,12)...Normally open
Programmable input A (13, 14)..............Normally open or closed
Programmable input B (13, 15)..............Normally open or closed
Motor thermistor (B4, B5)

Outputs
Relay outputs..10 A at 250 VAC resistive
....5 A at 250 VAC, AC15 pf 0.3
Main contactor (33, 34)..Normally open
Programmable relay A (41, 42, 44).............................Changeover
Programmable relay B (53, 54)................................Normally open
Analog output (21, 2.......................................0-20 mA or 4-20 mA

Environmental
Protection
EMX4-0024B ~ EMX4-0135B...IP20
EMX4-0184B ~ EMX4-0580B...IP00
Operating temperature (with derating)......................-10°C ~ 60°C
Storage temperature ....-10°C ~ 60°C
Humidity..5% to 95% Relative humidity

Optional accessories
Finger guards
External keypad
Smart module for input/output expansion
Network communication
(DeviceNet, Ethernet/IP, Modbus RTU, Modbus TCP, Profibus, Profinet)

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Feature set	EMX4	EMX4i
INTEGRATION & MANAGEMENT		
Multi-language graphical display	✓	✓
I/O and networking expansion options	✓	✓
USB port and data logging	✓	✓
Analog output	✓	✓
Emergency run	✓	✓
SCR fail power through operation		✓
Daily on/off scheduling		✓
MOTOR CONTROL		
Motor sets	1	2
Constant current and current ramp start	✓	✓
Adaptive control starting/stopping	✓	✓
Kickstart		✓
Coast to stop and TVR stop	✓	✓
DC brake		✓
Soft brake		✓
Jog (forward and reverse)		✓
Inside delta (6 wire) control		✓
Soft trip		✓
MOTOR PROTECTION		
Motor thermistor	✓	✓
Current imbalance	✓	✓
Under/overcurrent	✓	✓
Phase sequence	✓	✓
Phase loss	✓	✓
Power loss	✓	✓

ACCESSORIES

Expansion Cards

The EMX4i offers expansion cards for users requiring additional inputs and outputs or advanced functionality.
Each EMX4i can support a maximum of one expansion card.

- **Smart Cards**
  The smart card has been designed to support integration with pumping applications and provides the following additional inputs and outputs:
  - 3 x digital inputs
  - 3 x 4-20 mA transducer inputs
  - 1 x RTD input
  - 1 x USB-B port
  - Remote keypad connector

- **Communication Expansion Cards**
  EMX4i soft starters support network communication via easy-to-install communications expansion cards.
  Each communication card includes a remote keypad connector port.

  Available protocols:
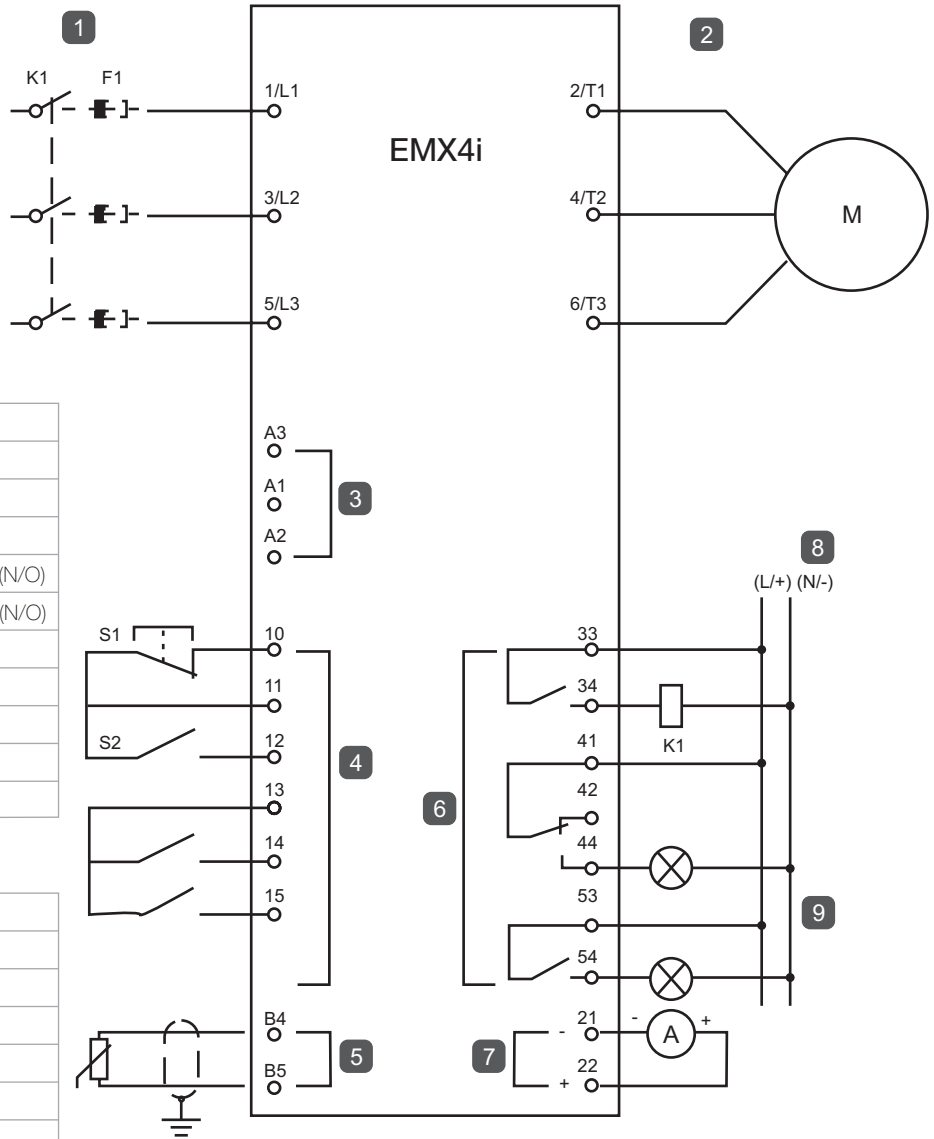 DeviceNet, Ethernet/IP, Modbus RTU, Modbus TCP, Profibus, Profinet.

Remote Keypad

EMX4i starters can be used with a remote keypad, mounted upto 3 meters away from the starter.
Each expansion card includes a keypad connection port, or a dedicated keypad connector card is available.

TYPICAL MOTOR CONNECTION

The EMX4i is installed with a main contactor (AC3 rated). Control voltage must be supplied from the input side of the contactor.

The main contactor is controlled by the main contactor output (33, 34).

K1	Main contactor
F1	Semiconductor fuses (optional)
10, 11 (S1)	Reset
11, 12 (S2)	Start/Stop
13, 14	Programmable input A (default = Input Trip (N/O)
13, 15	Programmable input B (default = Input Trip (N/O)
B4, B5	Motor thermistor input
33, 34	Main contactor output
41, 42, 44	Relay output A (default = Run)
53, 54	Relay output b (default = Trip)
21, 22	Analog output

1	Three-phase supply
2	Motor
3	Control voltage (soft starter)
4	Digital inputs
5	Motor thermistor input
6	Relay outputs
7	Analog outputs
8	Control voltage (external equipment)
9	Pilot lamps

Product improvement is a continuous process. For the latest information and special applications, please contact CIC to reach our nearest branch office.

L&T SWITCHGEAR SAFE & SURE

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