



- 12A to 1200A soft starter ratings
- Standard and severe duty types
- Internal bypass contactor up to 320A rating
- Startup with torque control, voltage ramp or current limit
- Integrated total motor protection
- Clock calendar
- Digital control and adjustment
- RS232 and RS485 for monitoring and remote control
- Modbus-RTU and proprietary ASCII communication protocols.

Soft starters

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Dimensions

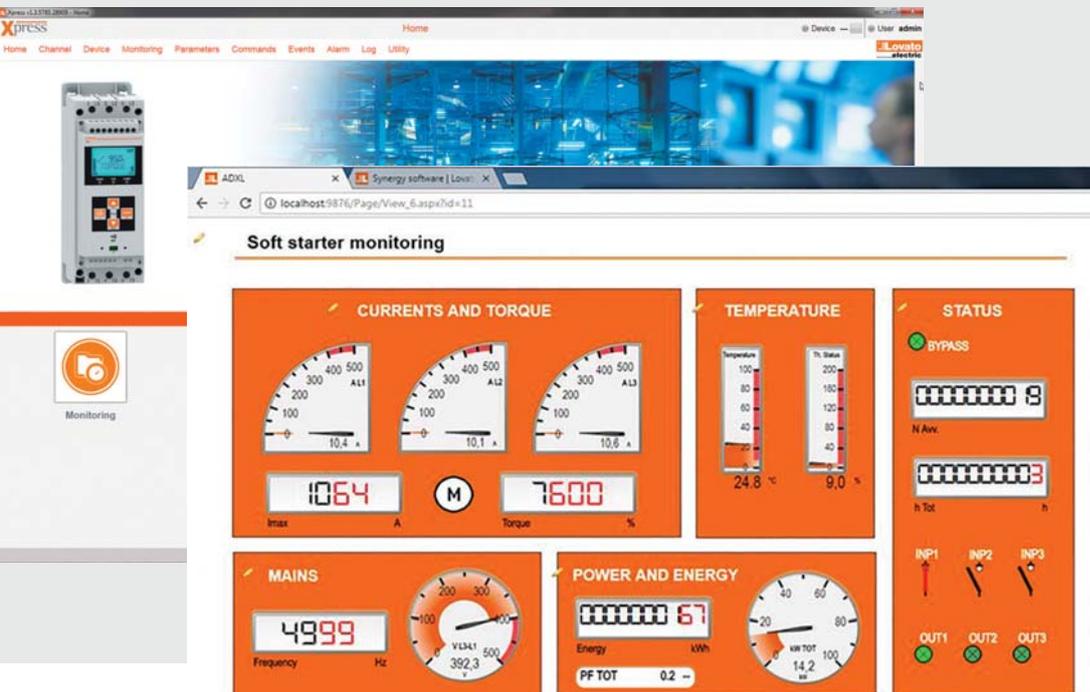
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Wiring diagrams

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Technical characteristics

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ADXC

- Two phase control
- IEC rated starter current Ie 12...45A
- IEC rated motor power 5.5...22kW at 400VAC and 9...37kW at 600VAC
- UL/CSA ratings 3 to 25HP at 400VAC and 10 to 40HP at 600VAC
- Built-in bypass relay
- Total protection against over temperature and wrong phase sequence
- Initial voltage, ramp up and ramp down time adjustable on front
- LED indication for starter status
- DIN rail mount and only 45mm wide.



NFC

Page 5-5

ADXL...

- Two phase control
- For standard and severe duty
- Reduced voltage starter with torque control and built-in bypass relay
- Rated operational voltage 208...600VAC
- IEC rated starter current Ie 18...320A
- Selectable motor current from 50 to 100% of the rated starter current
- IEC rated motor power 7.5...160kW (400VAC)
- Maximum starting current limitation
- PC remote control
- Programming, data download and diagnostics via optical port
- Parameter programming via NFC and APP
- Modbus-ASCII, Modbus-RTU and Modbus-TCP communication protocols
- Backlit LCD icon display
- Integrated protections for the motor and soft starter
- LED for the signalling of the status of the soft starter.

Guide for selecting



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ADX...

- Three phase control
- Reduced voltage starter with torque control and built-in bypass contactor up to 245A
- For severe duty, IEC starting current 5•Ie
- Rated operational voltage 208...500VAC (ADX...B) 208...415VAC (ADX...)
- IEC rated starter current Ie 17...1200A
- IEC rated motor power 7.5...710kW (400VAC)
- Maximum starting current limitation
- PC remote control supervision
- Modbus-RTU and property ASCII communication protocols
- Backlit LCD icon display.



	ADXC	ADXL	ADX
Controlled phases	2	2	3
Built-in bypass	●	●	● (up to 245A)
Built-in display and keypad	—	●	●
Languages	—	6	4
View measurements	—	●	●
Torque control	—	●	●
Adjustable current limit	—	●	●
Dynamic braking	—	—	●
Kick Start function	—	●	●
Motor overload electronic protection	—	●	●
Motor protection PTC input	—	●	●
Protection against phase reversal	●	●	●
Protection against phase inversion	●	●	●
Protection against locked rotor	—	●	●
Protection against thyristor overtemperature	●	●	●
Protection against low load	—	●	●
Programmable alarm functions	—	●	●
Programmable digital inputs	—	●	●
Programmable analog inputs	—	—	●
Programmable digital outputs	—	●	●
Programmable analog output	—	—	●
Monitoring communication via RS485	—	○	●
Programming communication	—	●	●
Event log	—	●	●
Motor hour counter	—	●	●
Startup counter	—	●	●
Clock calendar	—	—	●
Remotable external keypad	—	○	○

- Standard
- Optional
- Not available

ADXL SERIES SIMPLE, EFFICIENT AND SAFE MOTOR CONTROL



SIMPLE

The new ADXL soft starter series is equipped with a backlit LCD display with icons and NFC connectivity, for a simple configuration, possible also via smartphones and tablets. They are ideal for simple “plug and play” applications, thanks to the installation AUTO SET wizard, and for high-performance applications, with control and protection during the motor startup and operation.

EFFICIENCY

The two-phase control during the start and stop of the motor allows a reduction of the heat dissipation. After the start-up is completed, the soft starter closes the internal bypass contacts and reduces energy consumption.

SAFETY

ADXL built-in functions allow to protect the connected motor and the starter; it's capable of monitoring the motor thermal status, to manage the thermal protection, and its internal temperature, in order to protect the thyristors from overtemperature. Furthermore, a motor overtemperature protection can be enabled through an external PTC temperature sensor.

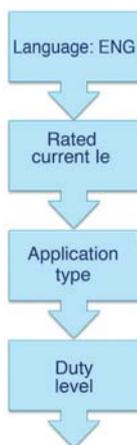
AUTO SET

Upon startup, the soft starter launches a user wizard to simplify the setup. The user can set the device through 4 simple parameters:

- **language:** it is possible to choose the text view by selecting the preferred language. The available languages are: English, Italian, French, Spanish, Portuguese, German;
- **motor current size:** the motor nominal current (can be set between 50 and 100% of the starter size);
- **application type:** it includes predefined setups for the most common applications: centrifugal pump, fire pump, conveyor belt, fan, mixer and general purpose. By selecting one type, the soft starter automatically updates the parameter programming to adapt to the requested application.
- **soft starter duty level:** the same application, based on the load connected to the motor, can be more or less heavy-duty. ADXL is capable of automatically adapting to standard or heavy-duty startups by adjusting the related parameters based on the user selection.

Expert users can customize the settings through the complete parameter menu.

ADXL:
from start-up
to operation
in 4 steps



EASY SETUP

The ADXL series soft starters are equipped with NFC technology to simplify the parameter setting procedure. Using a compatible smartphone or tablet, the user, even with the soft starter turned off, can download, save and edit the parameter menu using the LOVATO **NFC** configurator app. The device front includes an optical port compatible with the CX01 dongles, to connect via USB to the PC through the **Xpress** software, and the CX02 dongles, for Wi-Fi connection to the PC or the **Säm1** app.

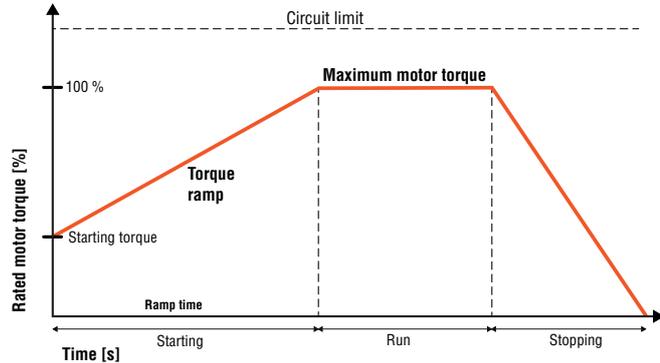






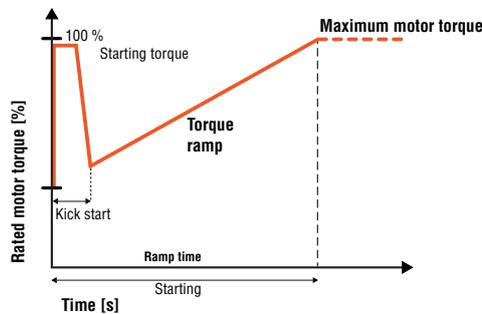
TORQUE CONTROL

The new two-phase control range includes the torque control. This motor starter solution allows to perform gradual accelerations and decelerations, with consequent significant reduction of mechanical faults and wear of the transmission devices.



KICK START

This function allows to start the motor when the initial torque is not sufficient to overcome friction forces; it transmits a high torque during the very first moments of the startup.



FIRE PUMP PRESET SETUP

While choosing the application in the AUTO SET wizard, it is possible to select the fire pump function. This parameter setting is optimized to start fire pumps overriding all alarms and protections. In this situation, the main priority is the pump start-up, without considering the possible consequences for the pump starter and motor.

INPUTS, OUTPUTS, LIMITS AND REMOTE VARIABLES

The input and output functions are preset with the most common settings; the user can easily edit the preset configuration to adapt the soft starter to the application needs. All inputs and outputs can be edited. There are three types of programmable internal variables:

- limit thresholds;
- remote variables;
- user alarms.

MAINTENANCE COUNTERS

ADXLs have two counters dedicated to count the number of start-ups and the motor operation hours. It is possible to set a threshold for the operation hours; when this threshold is exceeded, a dedicated alarm is triggered.

COOLING FAN

The fan is supplied as an accessory for sizes from 18 to 115A, while it is built-in for all larger sizes. In order to increase its life span, the fan is activated only when necessary. Furthermore, the ADXL is capable of checking the fan conditions; any blocks or faults are signalled through two specific alarms.

DIN MOUNT GUIDE

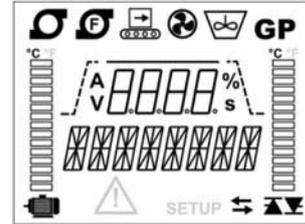
For sizes from 18 to 115A, the EXP8003 accessory is available to mount the soft starter on a 35mm DIN rail.



USER INTERFACE

A backlit icon display shows the data to the user in a clear and immediate way.

- Alarm texts available in 6 languages (ENG-ITA-FR-ES-POR-DE)
- 6 icons indicate the default setup in use: centrifugal pump, fire pump, conveyor belt, fan, mixer and general purpose;
- Two graphic bars show the motor and thyristors temperature;
- Two alphanumeric displays allow to view texts and measures;
- A status bar shows the starter, start, bypass, stop status.



PASSWORD

Access to the soft starter parameters can be protected by user customizable passwords. There are two access levels, user and advanced. Furthermore, it's possible to block the serial communication using the remote control password.

RS485 COMMUNICATION AND REMOTE KEYPAD

All ADXL series soft starters are equipped with a slot to house the EXC1042 MiniCard, an expansion dedicated to the RS485, Modbus protocol. RS485 communication can be used to connect the EXCRDU1 remote keypad, to view the measures or to perform the setup through the touch screen installed on the front panel, command the start and stop of the motor.



MONITORING AND REMOTE CONTROL

Through the optional EXC1042 communication module and compatibility with the supervision and energy management software **Synergy**, setup and remote control software **Xpress**, it's possible to constantly monitor all the measures available on the Modbus, the soft starter status, see live trends and edit the setup parameters.



ADXC... type



ADXC 012...
ADXC 032...



ADXC 037...
ADXC 045...

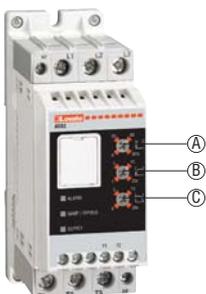
Current control

ADXC... gradually increases the current limit at 75% ramp-up time if the motor speed has yet to reach rated value, to avoid locked rotor state before time elapses.

Typical settings

The following settings are standard ones for the different applications; they are for indication and reference purposes only. After the installation, it is recommended to always parameterise the soft starter with the motor connected to find the best settings and then test it. Initial voltage adjustment is the first operation followed by the ramp-up time setting and the ramp-down time is last, if any is required.

ADXC... adjustments



Order code	IEC rated starter current	Rated motor power $\leq 40^{\circ}\text{C}$ IEC UL/CSA		Qty per pkg	Wt
	[A]	[kW]	[HP]	n°	[kg]

With built-in bypass relay. Three-phase 400VAC motor control. Supply: power circuit 220...400VAC (L1-L2-L3 inputs); start command 110...400VAC (A1-A2 terminals).

ADXC 012 400	12	5.5	5	1	0.500
ADXC 016 400	16	7.5	7.5	1	0.500
ADXC 025 400	25	11	10	1	0.500
ADXC 032 400	32	15	15	1	0.500
ADXC 037 400	37	18.5	20	1	0.700
ADXC 045 400	45	22	25	1	0.700

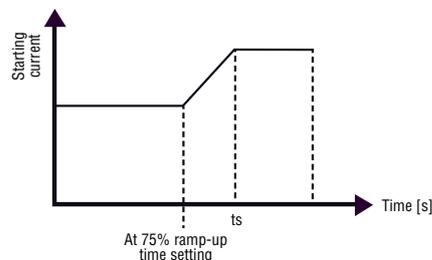
With built-in bypass relay. Three-phase 400VAC motor control. Supply: power circuit 220...400VAC (L1-L2-L3 inputs); start command 24VAC/DC (A1-A2 terminals).

ADXC 012 400 24	12	5.5	5	1	0.500
ADXC 016 400 24	16	7.5	7.5	1	0.500
ADXC 025 400 24	25	11	10	1	0.500
ADXC 032 400 24	32	15	15	1	0.500
ADXC 037 400 24	37	18.5	20	1	0.700
ADXC 045 400 24	45	22	25	1	0.700

With built-in bypass relay. Three-phase 600VAC motor control. Supply: power circuit 220...600VAC (L1-L2-L3 inputs), auxiliary supply 100...240VAC (terminals A1-A2); start command: 100...240VAC (ST terminals). With 2 relay outputs.

ADXC 012 600 R2	12	9	10	1	0.500
ADXC 016 600 R2	16	11	15	1	0.500
ADXC 025 600 R2	25	20	20	1	0.500
ADXC 032 600 R2	32	22	30	1	0.500
ADXC 037 600 R2	37	30	30	1	0.700
ADXC 045 600 R2	45	37	40	1	0.700

For operating temperature higher than 40°C, derate starter power; see page 5-16.



Type of application	Initial voltage	Accel. time	Decel. time
	[%]	[s]	[s]
Hydraulic lift	40	2	0
Piston compressor	40	3	0
Screw compressor	50	10	0
Scroll compressor (with revolving spiral)	40	1	0
Low inertia fan	40	10	0
High inertia fan	40	15-20	0
Pump	40	10	10
Centrifugal blower	40	5	0
Conveyor	50	10	5

- (A) Initial voltage: 0-85% of the motor control power.
- (B) Ramp up time: 1-20 seconds. Initial to maximum load voltage time.
- (C) Ramp down time: 0-20 seconds. Maximum to no load voltage time.

General characteristics

ADXC... is a compact type of soft starter, 45mm wide and easy to use, for three phase squirrel-cage induction motors; soft starts and soft stops rated motor load currents up to 45A.

It is based on a current limiting starting methodology to limit the maximum starting current. ADXC... reduces the mechanical stress on motor shafts, gearboxes and drive belts.

Ramp up, ramp down and initial voltage time settings can be independently adjusted by built-in potentiometers.

Main features are:

- For three phase induction motors up to 22kW / 25HP at 400VAC and 37kW / 40HP at 600VAC
- Maximum input voltage: 400VAC 50/60Hz for ADXC... 400...; 600VAC 50/60Hz for ADXC... 600...
- Built-in bypass relay
- Wrong phase sequence and over temperature protection
- Alarm for wrong phase sequence; line voltage and/or frequency out of limits (over and undervoltage); overcurrent, over temperature, irregular ramp up and current flow during bypass; motor voltage unbalance
- Simple setup and installation
- 2 relay outputs for alarms (NC) and bypass closing (NO) for ADXC... 600 R2
- 35mm DIN rail mounting (IEC/EN 60715)
- Ideal for hydraulic lifts, conveyor belts, compressors, pumps, hoisting devices, blowers, fans, mixers.

Operational characteristics

- Two phase control
- Input voltage L1-L2-L3:
 - 220...400VAC -15%...+10% for ADXC... 400 and ADXC... 400 24
 - 220...600VAC -15%...+10% for ADXC... 600 R2
- Frequency range: 50/60Hz $\pm 10\%$ self-configurable
- Self powered for ADXC... 400... types
- Separate single phase auxiliary power supply A1-A2: 100...240VAC -15%...+10% for ADXC... 600 R2
- Start command:
 - A1-A2 24VAC/DC -15%...+10% (ADXC... 400 24)
 - A1-A2 110...400VAC -15%...+10% (ADXC... 400)
 - ST 100...240VAC -15%...+10% (ADXC... 600 R2)
- Ramp up time: 1-20 seconds
- Ramp down time: 0-20 seconds
- Initial voltage: 0-85%
- 3 indication LEDs "alarm" (red - alarm conditions with diverse number of flashes), "ramp/bypass" (yellow - flashing in ramp phase / constantly on with bypass relay connected) and "supply" (green - constantly on with power supply flow)
- Degree of protection: IEC IP20.

Certifications and compliance

Certifications obtained: UL Listed for USA and Canada (cULus - File E223223) under Solid State Motor Controllers as reduced voltage starters; EAC, RCM. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-2, UL 508, CSA C22.2 n°14.

ADXL... types



ADXL 0018 600 ... ADXL 0060 600



new



ADXL 0075 600 ... ADXL 0115 600

new



ADXL 0135 600 ... ADXL 0162 600

new



ADXL 0195 600 ... ADXL 0320 600

Order code	IEC rated starter current Ie	Rated motor power ≤40°C IEC (400V)	Qty per pkg	Wt
	[A]	[kW] [HP]	n°	[kg]

For standard and heavy-duty applications.
With built-in bypass relay.
Auxiliary supply: 100...240VAC.
Rated operational voltage 208...600VAC

ADXL 0018 600	18	7.5	10	1	2.100
ADXL 0030 600	30	15	15	1	2.100
ADXL 0045 600	45	22	25	1	2.100
ADXL 0060 600	60	30	30	1	2.100
ADXL 0075 600	75	37	40	1	2.900
ADXL 0085 600	85	45	50	1	2.900
ADXL 0115 600	115	55	60	1	2.900
ADXL 0135 600	135	75	75	1	7.800
ADXL 0162 600	162	90	75	1	7.800
ADXL 0195 600	195	110	100	1	13.900
ADXL 0250 600	250	132	150	1	13.900
ADXL 0320 600	320	160	200	1	13.900

IEC ratings ≤40°C (50Hz)

Order code	Starter current Ie	Motor power ①		
		230V	400V	500V
	[A]	[kW]	[kW]	[kW]
ADXL 0018 600	18	4	7.5	11
ADXL 0030 600	30	7.5	15	18.5
ADXL 0045 600	45	11	22	30
ADXL 0060 600	60	15	30	37
ADXL 0075 600	75	22	37	45
ADXL 0085 600	85	22	45	55
ADXL 0115 600	115	37	55	75
ADXL 0135 600	135	37	75	90
ADXL 0162 600	162	45	90	110
ADXL 0195 600	195	55	110	132
ADXL 0250 600	250	75	132	160
ADXL 0320 600	320	90	160	200

UL ratings ≤40°C (60Hz)

Order code	Starter current FLA	Motor power ②				
		208V	220-240V	380-415V	440-480V	550-600V
	[A]	[HP]	[HP]	[HP]	[HP]	[HP]
ADXL 0018 600	18	5	5	10	10	15
ADXL 0030 600	28	10	10	15	20	25
ADXL 0045 600	44	10	15	25	30	40
ADXL 0060 600	60	20	20	30	40	50
ADXL 0075 600	75	25	25	40	50	60
ADXL 0085 600	83	25	30	50	60	75
ADXL 0115 600	114	40	40	60	75	100
ADXL 0135 600③	130	40	50	75	100	125
ADXL 0162 600③	156	50	60	75	125	150
ADXL 0195 600③	192	60	75	100	150	200
ADXL 0250 600③	248	75	100	150	200	250
ADXL 0320 600③	320	100	125	200	250	300

① Preferred rated values according to IEC 60072-1.
② Horsepower and currents values according to UL 508 (60Hz).
③ Terminal lug kits and shrouds are required for UL. See page 5-7.

General characteristics

The new series of ADXL soft starters allow control of the start and stop of three-phase asynchronous motors on two-phases with built-in bypass. ADXLs are equipped with a backlit display with icons and NFC technology, for a simple configuration, possible also from smartphones and tablets. ADXLs are ideal for simple "plug and play" applications, thanks to the installation wizard, and for high-performance applications, with control and protection during the motor start-up and operation.

The ADXLs include protection features for the starter and motor, and it's possible to enable specific alarms to signal maintenance needs, such as the number of startups performed or the operation hours of the motor.

It has the following main features:

- Backlit LCD display
- Texts available in 6 languages (ENG-ITA-FR-ES-POR-DE)
- IEC rated starter current Ie from 18 to 320A
- rated motor current selectable from 50 to 100% of rated starter current
- rated motor power 7.5...160kW (400VAC) and 15...300HP (600VAC)
- Voltage ramp startup
- Torque control
- Kick start
- Limited maximum starting current
- Free wheel or controlled stop
- Built-in bypass relay
- Optical port for programming data download and diagnostics through the software Xpress and APP Sam1
- NFC technology for parameter programming through the APP NFC
- Optional RS485 communication
- Modbus-ASCII, Modbus-RTU and Modbus-TCP communication protocols
- Supervision and energy management software Synergy.

Operational characteristics

- Two phase control
- Input voltage: 208...600VAC ±10%
- Network frequency 50 or 60Hz ±10% self-configurable
- 100...240VAC auxiliary power supply
- Signalling LED: power supply, startup or bypass phase, alarm
- Three programmable outputs: 1 changeover contact 2 normally open contacts
- 2 programmable digital inputs
- 1 programmable digital input, that can be used as PTC
- Protection rating: IP00
- Number of starts per hour: see page 5-18.

Displayed measures:

Maximum current, L1 current, L2 current, L3 current, %-torque, average line voltage, total active power, total PF, motor thermal status, starter temperature.

Protections

- Motor: separate starting and running overload class settings thermal protection, PTC protection, locked rotor, current asymmetry, startup too long, minimum torque
- Power supply: no power supply, phase loss, wrong phase sequence and out-of-range frequency
- Starter: overtemperature, overcurrent, SCR fault, bypass relay fault, temperature sensor fault and fan fault.

Certifications and compliance

Certificates: cULus; EAC, RCM.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-2, UL508, CSA C22.2 n° 14.

ADX... type



51 ADX 0017B...51 ADX 0045B



51 ADX 0060B...51 ADX 0085B



51 ADX 0110B...51 ADX 0125B

Order code	IEC rated starter current Ie	IEC rated motor power $\leq 40^{\circ}\text{C}$ (380/415V)		Qty per pkg	Wt [kg]
	[A]	[kW]	[Hp]		

For standard duty (starting current $5 \cdot I_e$).
With built-in bypass contactor.
Auxiliary supply: starter Us 208...240VAC; start command 24VDC.

Rated operational voltage 208...500VAC.

51 ADX 0017B	17	7.5	7.5	1	8.970
51 ADX 0030B	30	15	15	1	9.240
51 ADX 0045B	45	22	25	1	9.240
51 ADX 0060B	60	30	30	1	14.200
51 ADX 0075B	75	37	40	1	14.400
51 ADX 0085B	85	45	50	1	14.400
51 ADX 0110B	110	55	60	1	17.700
51 ADX 0125B	125	55	60	1	17.700
51 ADX 0142B	142	75	75	1	28.000
51 ADX 0190B	190	90	100	1	37.300
51 ADX 0245B	245	132	150	1	39.300

For severe duty (starting current $5 \cdot I_e$).
Predisposed for external bypass contactor.
Auxiliary supply: starter Us 208...240VAC; start command 24VDC.

Rated operational voltage 208...415VAC.

51 ADX 0310	310	160	150	1	48.900
51 ADX 0365	365	200	200	1	49.300
51 ADX 0470	470	250	250	1	95.000
51 ADX 0568	568	315	350	1	95.000
51 ADX 0640	640	355	400	1	106.000
51 ADX 0820	820	400	500	1	164.000
51 ADX 1200	1200	710	900	1	234.000

General characteristics

ADX... is a three-phase control soft starter used to start and gradually stop three-phase asynchronous squirrel-cage motors. The startup can be performed through a voltage ramp with torque control and limitation of the maximum startup current. The integrated bypass contactor (only for ADX...B types) drastically limits dissipation, as a result, equipment for electric panel cooling ventilation can be eliminated and the enclosure size can be reduced as well. It's equipped with RS232 and RS485 interfaces.

CONTROL

During starting: Torque control acceleration, current limit control and booster.

During stopping: Torque control deceleration, dynamic braking and free-wheel.

In emergency conditions: Starting without protection direct-on-line starting using integrated bypass contactor.

Remote control: PC supervision by connection with RS232/RS485 converter, modem or GSM modem. Automatic call function (Autocall) in case of alarm conditions by sending a message to a cellular phone (SMS-Short Message Service) and/or to a mailbox.

Proprietary ASCII and Modbus-RTU communication protocols.

KEYPAD OPERATIONS

- Backlit LCD 2-line 16-character display
- Multilanguage capability (Italian, English, French, Spanish)
- Basic, advanced and function programming menus
- Keypad stop and start
- Motor and mains parameter readings:
 - line voltage values (L-L)
 - phase current
 - active and apparent power values per phase
 - power factor per phase
 - energy
- Time sequential events log
- Clock calendar with backup battery.

PARTICULAR FUNCTIONS

Digital inputs and programmable relay outputs. Analog input (0...10V, 0...20mA or 4...20mA) for ramp acceleration and/or deceleration, motor start and stop control thresholds, programmable relay enable and disable control thresholds.

Analog output (0...10V, 0...20mA or 4...20mA) for current, torque, motor thermal status and power factor readings.

Input programming for second motor.

PROTECTION

- Motor: Dual thermal protection class (one during starting phase and the other during running) or by PTC sensor, locked rotor, current asymmetry, minimum torque and starting time too long
- Auxiliary voltage: Voltage value too low
- Power voltage: Phase failure, phase sequence and frequency out of limits
- Control inputs and analog output: Static 24VDC short-circuit protection with automatic resetting.
- Starter: Overcurrent, high temperature, SCR and bypass contactor malfunction.

Operational characteristics

- Input voltage:
 - 208...500VAC $\pm 10\%$ (ADX...B)
 - 208...415VAC $\pm 10\%$ (ADX...)
- Mains frequency: 50/60Hz $\pm 5\%$
- Auxiliary supply voltage: 208...240VAC $\pm 10\%$
- Auxiliary consumption: 20VA
- Rated starter current Ie:
 - 17A...245A (ADX...B)
 - 310A...1200A (ADX...)
- Motor current: 0.5...1 Ie
- Overload current:
 - 105% Ie for ADX...B
 - 115% Ie for ADX...

Certifications and compliance

Certifications obtained: EAC for all; CCC for ADX 0110B and ADX 0125B types only.

Compliant with standard: IEC/EN 60947-1, IEC/EN 60947-4-2.

① 208-600VAC $\pm 10\%$ on request.

② Voltages on request: higher than 415V to 690V maximum.

Accessories for ADXL... types



CX 01



CX 02



EXC RDU1



EXP80 03



EXA 01



EXA01



EXA02



EXA03



EXA04

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX 01	USB connection dongle PC ↔ ADXL with optical connector for programming, data download, diagnostics and firmware update	1	0.090
CX 02	Wi-Fi connection dongle PC ↔ ADXL for data download, programming, diagnostics and cloning	1	0.090
EXC RDU1	Remote keypad, LCD display with touchscreen, IP65 protection and NEMA 4X, 3m cable included	1	0.360
EXC 1042	RS485 communication board	1	0.020
EXC CON 01	RS485/Ethernet converter, 12...48VDC, including DIN mounting guide kit	1	0.400
EXC M3G 01	RS485 gateway/3G modem, 9.5...27VAC/9.5...35VDC, including antenna and programming cable	1	0.340
EXP80 03	35mm DIN rail mounting accessory for ADXL 0018 600...ADXL 0115 600	1	0.200
EXP80 04	Fan for ADXL 0018 600...ADXL 0115 600 (codes ADXL 0075 600...ADXL 0115 600 max. of two EXP80 04 fans)	1	0,040
EXA 01	Kit of 3 UL terminal lugs for ADXL 0135 600, ADXL 0162 600, and ADXL 0195 600	1	0.141
EXA 02	Kit of 3 terminals protection covers for ADXL 0135 600, ADXL 0162 600 and ADXL 0195 600	1	0.125
EXA 03	Kit of 3 UL terminal lugs for ADXL 0250 600 and ADXL 0320 600	1	0.314
EXA 04	Kit of 3 terminals protection covers for ADXL 0250 600 and ADXL 0320 600	1	0.154

General characteristics

Communication devices to connect LOVATO Electric products to:

- Personal computer (PC)
- Smartphones
- Tablets.

CX 01

This USB/optical dongle, complete with cable, allows the frontal connection of products compatible with PCs without having to disconnect the power supply from the electric panel.

The PC identifies the connection as a standard USB.

CX 02

Via Wi-Fi connection, compatible LOVATO Electric products can be viewed on PCs, smartphones and tablets with no need for cabling.

For dimensions, wiring diagrams and technical characteristics, consult the manuals available online in the Download section of the following website: www.LovatoElectric.com

EXC RDU1

Through the EXC RDU1 remote keypad, it is possible to command and monitor up to 32 starters at choice between soft starters ADXL series or variable speed drives VLB3 series, even in mixed configuration.

For ADXL series is possible to setting the parameters, command the start and stop of the motor, read the measures, signaling alarms and motor status.

- 100...240VAC / 110...250VDC power supply
- 128x112 pixel touchscreen LCD display
- Built-in buzzer
- Opto-isolated RS485 communication port, Modbus RTU protocol
- 96x96mm flush mount and ANSI 4"
- Compatible with ADXL... equipped with communication card RS485, cod. EXC 1042
- 3m cable included
- Degree of protection IP65 and NEMA 4X.

EXC M3G 01

For details please see section 30.

Certifications and compliance

Certification obtained: EAC (except EXA...), cULus for EXA..., EXC RDU1, EXP80 03, EXP80 04.
Compliant with standard: IEC 61000-6-1.

**Remote keypad
for 51 ADX... types**



51 ADX TAST



51C4

Order code	Description	Qty per pkg	Wt
		n°	[kg]
51 ADX TAST	Remote keypad 96x96mm, 2x16 backlit LCD, 208-240VAC supply c/w 3m/10ft long connecting cable	1	0.350
31 PA 96X96	Protective cover (IP54) for remote keypad ADX TAST	1	0.076
51 C2	PC ↔ ADX connecting cable, 1.8m/6ft long	1	0.062
51 C4	PC ↔ RS232/RS485 converter drive connecting cable, 1.8m/6ft long	1	0.147
51 C6	ADX ↔ RS232/RS485 converter drive connecting cable, 1.8m/6ft long	1	0.102
51 C8	ADX ↔ remote keypad connecting cable, 3m/10ft long	1	0.080

ADX TAST remote keypad

The flush-mount ADX TAST remote keypad is identical to the one on board the soft starter except for the start and stop controls of the motor, which are permanently disabled. With this keypad, starter setup can be conducted, motor readings and operating data displayed and data and parameter transfer (ADX ↔ remote keypad) made as well.

A backup copy of the starter data and parameter setup is obtainable with the transfer functions.

It is supplied standard with a 3m long cable and suitable connectors to complete the link to the ADX RS485 port.

Advantages

- Flush mount
- Messages in selectable language
- Readings display
- Parameter setup
- Two-way data and parameter transfer.

Operational characteristics

- Auxiliary supply voltage: 208...240VAC ±10%
- Power consumption: 6.9VA
- Dissipation: 3.2W
- Mains frequency: 50/60Hz
- RS485 port: RJ4/4 connector
- Supply: Removable 3-pole 2.5 mm² terminal block.
- Display: 2 line, 16 character backlit LCD
- LED indication (3): POWER, RUN and FAULT
- Keys (6) ENTER/START, RESET/STOP, ←PREVIOUS, NEXT→, ▼ and ▲
- Ambient conditions:
 - Operating temperature: -10...+60°C
 - Storage temperature: -20...+70°C
- Flush mount enclosure
- Degree of protection on front: IP41; IP54 with protective cover (code 31 PA 96x96).

Certifications and compliance

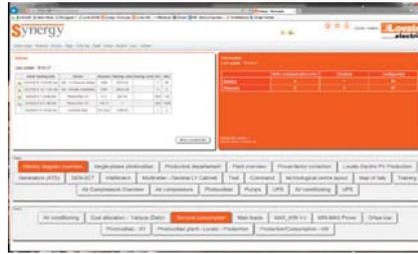
Certifications obtained: EAC.
Compliant to standards: IEC/EN 61000-6-1.

For ADXL...

Xpress configuration and remote control software



Synergy supervision and energy management software



Sami APP



NFC APP



Xpress

By using the **Xpress** software, the quick setup of the soft starter can be carried out via PC, avoiding possible parameter programming errors.

The parameter programming of ADXL... soft starters can also be PC saved and quickly uploaded into another device requiring the same programming.

It allows the following operations:

- Graphical and numerical display of measurements
- Soft starter status monitoring
- Access all setup parameters
- Saving / loading parameters
- Highlighting of changed values
- Resetting to default values
- Send commands
- See live trends
- Reading of events list.

Synergy

Synergy software allows to remotely control and monitor the soft starters. The software structure and applications are based on MS SQL relational databases and the data can be consulted via the most common browsers. It is an extremely versatile system that can be accessed via intranet network, VPN or internet by several users/units at the same time.

For details, consult section 29 or our Technical support office; see contact details on inside front cover.

Sami APP for smartphones and tablets

The application **Sami** allows the user to set the soft starter, view the alarms, send commands, read the measures, download the events and submit the data collected via e-mail. The connection is made by Wi-Fi with a smartphone or tablet using the CX 02 device. It is iOS and Android compatible.

For details, consult section 29 or our Technical support office; see contact details on inside front cover.

NFC APP for smartphones and tablets

The ADXL soft starters are equipped with built-in NFC technology. Using the LOVATO App **NFC** it is possible to program the parameters and save them on smartphones and tablets. Available only for Android devices.

For details, consult section 29 or our Technical support office; see contact details on inside front cover.

For ADX...



51 ADX SW

Order code	Description	Qty per pkg	Wt
		n°	[kg]
51 ADX SW	PC-ADX remote control software with proprietary ASCII and Modbus-RTU protocols and a set of connecting cables 51 C2, 51 C3, 51 C5, 51 C7 for communications via RS232 port, analog or GSM modem	1	0.550

The remote control software consents to the PC supervision of all ADX soft starter functions, including: parameter setup, real-time readout display, graphics of monitored parameter data during operation and starter events log display, each with time and date entry.

The PC-ADX connection is made by cable via the RS232 port, RS232/RS485 converter, analog or GSM modem.

The RS232 port is not suitable for permanent connections.

The connection via modem permits the ADX starter to advise alarm conditions, that is an automatic link to the remote PC. GSM modem represents the ultimate solution for unmanned applications or where there are no telephone lines.

Interesting communication features are available with this type of modem, such as:

- SMS (Short Message Service): At alarm conditions, the ADX can send its ID and alarm code, with time and date entry. The advantage is the possibility of reaching service people, without delay, wherever they are located.
- Email (via Internet): a message with the same structure as mentioned above can be transmitted to a specified mailbox. The advantages of this type of message with respect to the SMS are that any communication, received through Internet mail server, is permanent and a vast number of these can be received and reviewed at any time.

General characteristics

- Display of all the monitored data by the ADX starter
- Virtual ADX keypad with access to all functions
- Parameter adjustment, only accessible with password, saving on disc and subsequent reloading on ADX starter
- Display of starter events log showing time and date entry
- Graphic display of monitored data during operation
- Connection through RS232/RS485 converter or modem
- GSM-modem management with SMS or e-mail transmission
- AUTOCALL function for automatic PC call
- Program configuration in 4 languages (Italian, English, Spanish and French)
- Easy installation and setup.

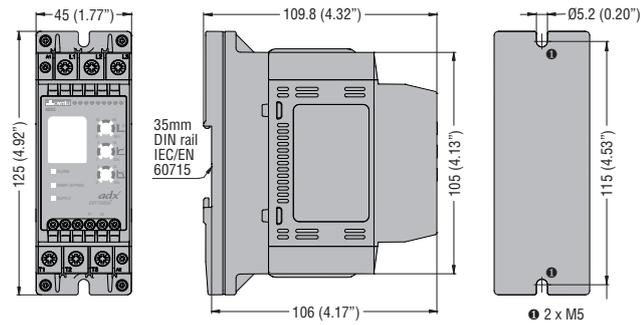
Advantages

- GSM network management for inaccessible applications where there are no telephone lines
- Call management during alarm conditions for SMS or email transmission
- No limit for remote control distance
- Possibility of remote motor starting
- Reduction of service time
- Reduction of maintenance and downtime.

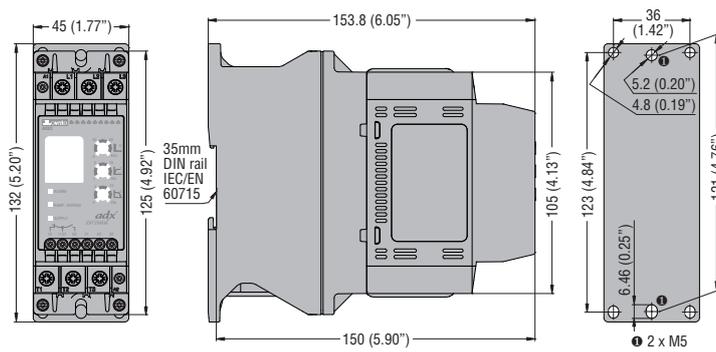
5 Soft starters

Dimensions [mm (in)]

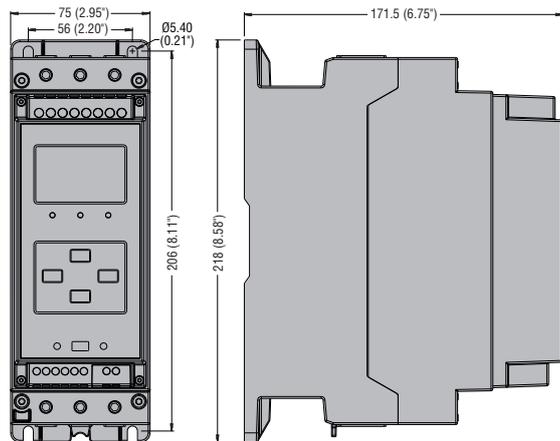
SOFT STARTER ADXC 012...ADXC 032...



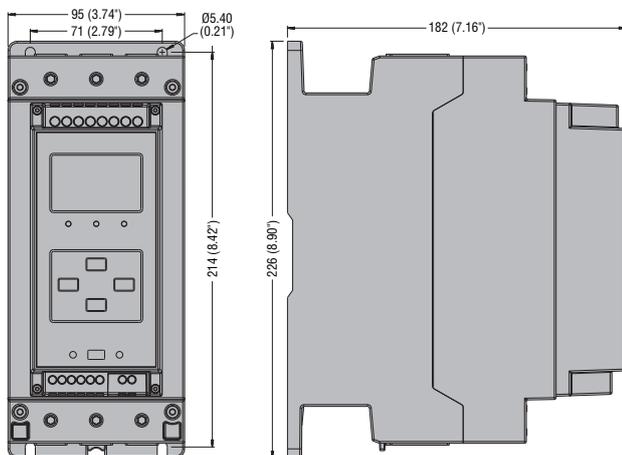
ADXC 037...ADXC 045...



ADXL 0018 600...ADXL 0060 600



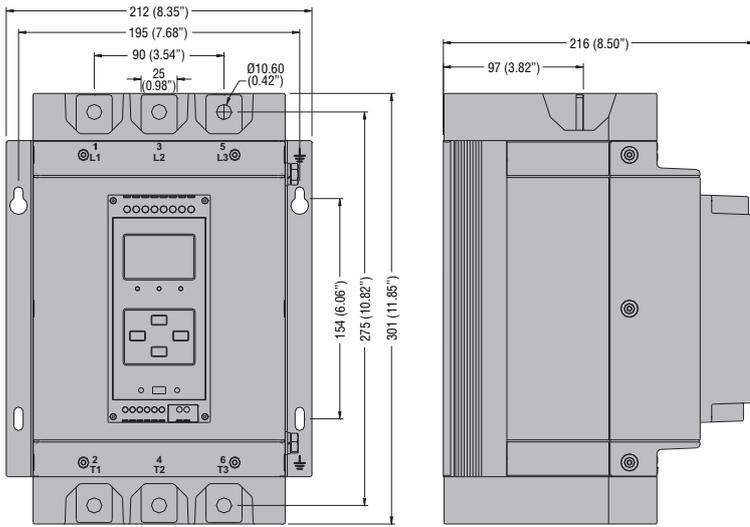
ADXL 0075 600...ADXL 0115 600



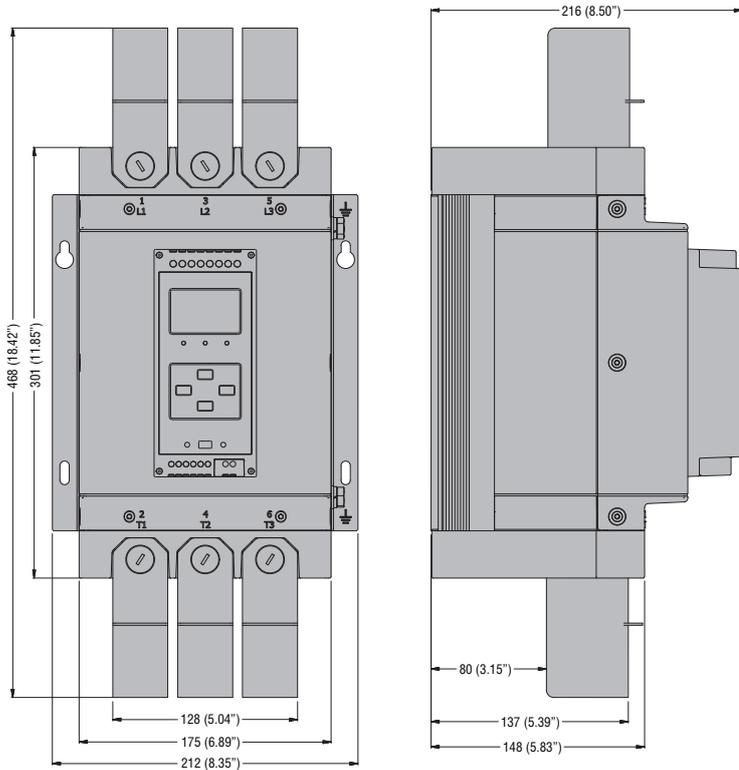
5 Soft starters

Dimensions [mm (in)]

ADXL 0135 600 - ADXL 0162 600



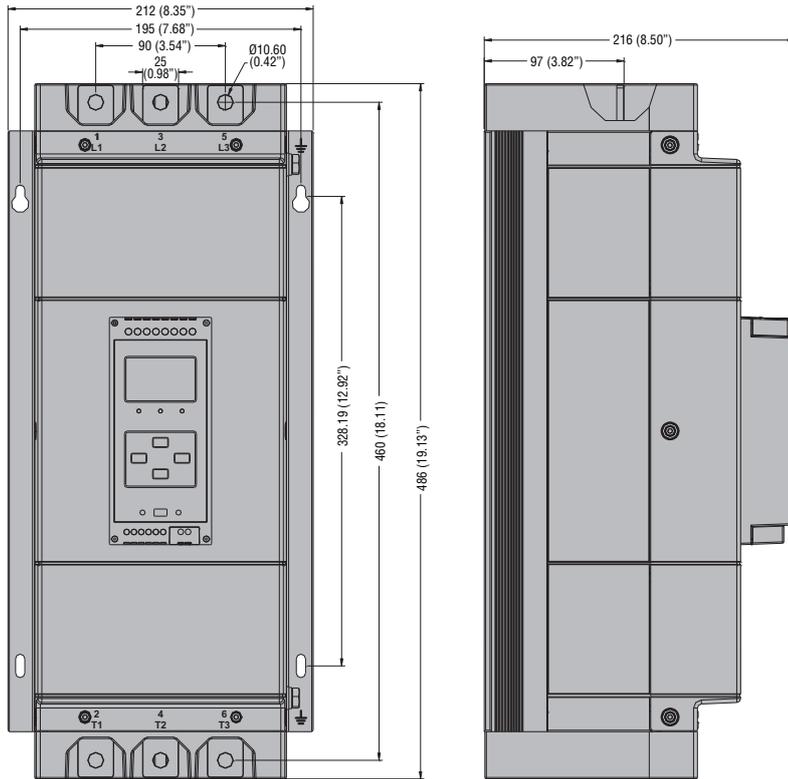
ADXL 0135 600 - ADXL 0162 600 complete with terminal lugs for UL code EXA 01 and terminals protection code EXA 02.



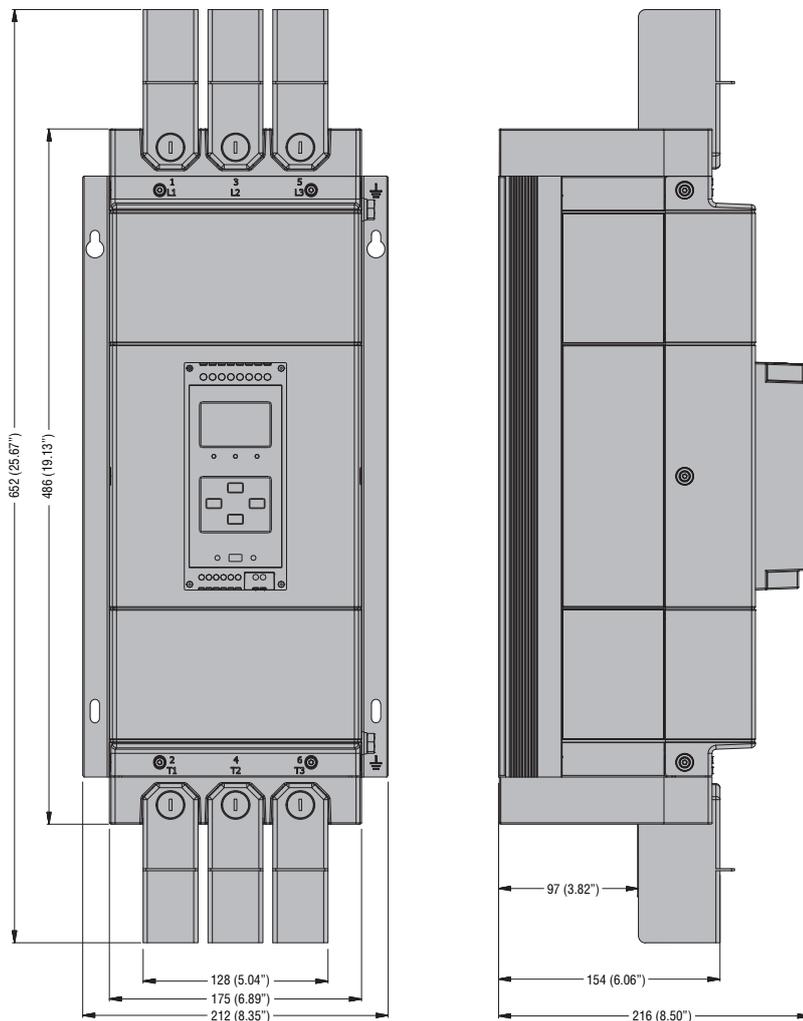
5 Soft starters

Dimensions [mm (in)]

ADXL 0195 600...ADXL 0320 600



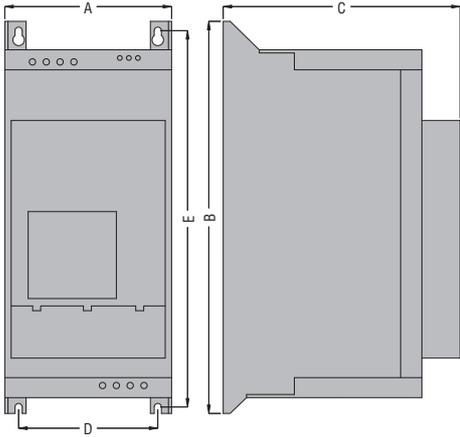
ADXL 0195 600 complete with terminal lugs for UL code EXA 01 and terminals protection code EXA 02.
 ADXL 0250 600 - ADXL 0320 600 complete with terminal lugs for UL code EXA 03 and terminals protection code EXA 04.



5 Soft starters

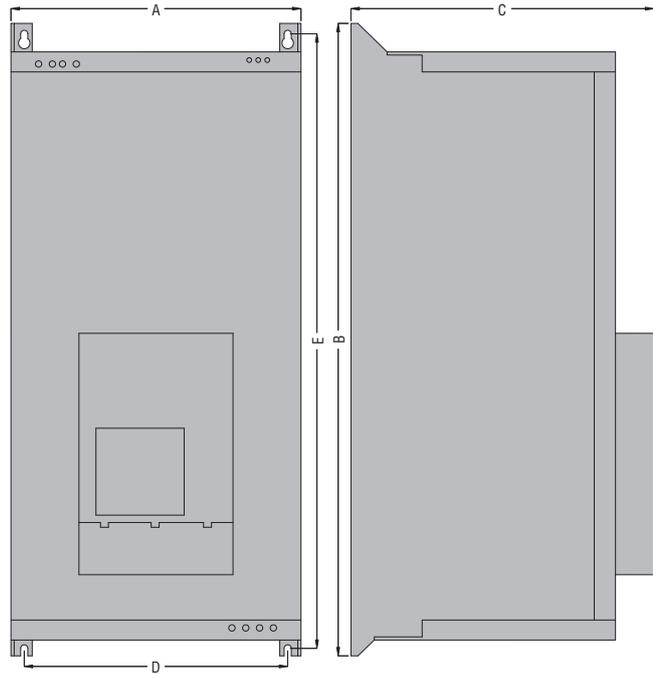
Dimensions [mm (in)]

ADX 0017 B...ADX 0125 B



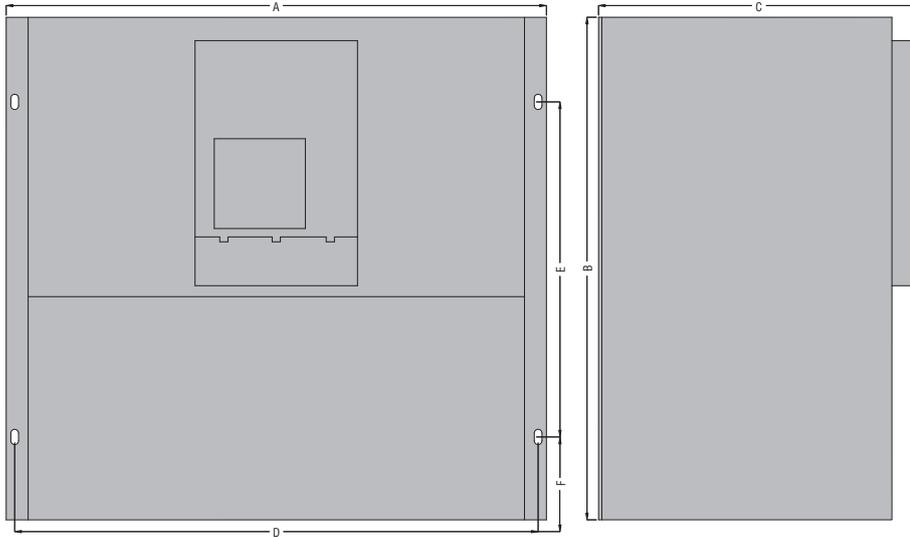
TYPE	A	B	C	D	E
ADX 0017B	157 (6.18")	372 (14.64")	223 (8.78")	131 (5.16")	357 (14.05")
ADX 0030B	157 (6.18")	372 (14.64")	223 (8.78")	131 (5.16")	357 (14.05")
ADX 0045B	157 (6.18")	372 (14.64")	223 (8.78")	131 (5.16")	357 (14.05")
ADX 0060B	157 (6.18")	534 (21.02")	250 (9.84")	132 (5.20")	517 (20.35")
ADX 0075B	157 (6.18")	534 (21.02")	250 (9.84")	132 (5.20")	517 (20.35")
ADX 0085B	157 (6.18")	534 (21.02")	250 (9.84")	132 (5.20")	517 (20.35")
ADX 0110B	157 (6.18")	584 (22.99")	250 (9.84")	132 (5.20")	567 (22.32")
ADX 0125B	157 (6.18")	584 (22.99")	250 (9.84")	132 (5.20")	567 (22.32")

ADX 0142 B...ADX 0245 B



TYPE	A	B	C	D	E
ADX 0142B	273 (10.75")	600 (23.62")	285 (11.22")	230 (9.05")	560 (25.20")
ADX 0190B	273 (10.75")	680 (26.77")	310 (12.20")	230 (9.05")	640 (25.20")
ADX 0245B	273 (10.75")	680 (26.77")	310 (12.20")	230 (9.05")	640 (25.20")

ADX 0310...ADX 1200



TYPE	A	B	C	D	E	F
ADX 0310	640 (25.20")	600 (23.62")	380 (14.96")	620 (24.41")	400 (15.75")	100 (3.94")
ADX 0365	640 (25.20")	600 (23.62")	380 (14.96")	620 (24.41")	400 (15.75")	100 (3.94")
ADX 0470	790 (31.10")	650 (25.59")	430 (16.93")	770 (30.31")	450 (17.72")	100 (3.94")
ADX 0568	790 (31.10")	650 (25.59")	430 (16.93")	770 (30.31")	450 (17.72")	100 (3.94")
ADX 0640	790 (31.10")	650 (25.59")	430 (16.93")	770 (30.31")	450 (17.72")	100 (3.94")
ADX 0820	910 (35.83")	950 (37.40")	442 (17.40")	830 (32.68")	920 (36.22")	ⓘ
ADX 1200	910 (35.83")	950 (37.40")	442 (17.40")	830 (32.68")	920 (36.22")	ⓘ

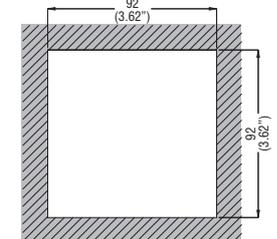
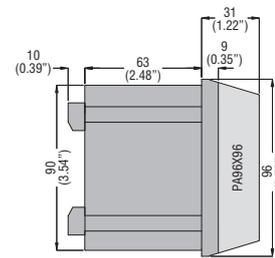
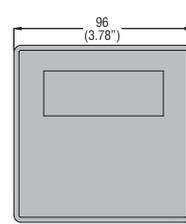
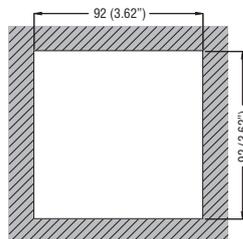
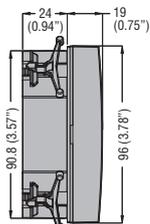
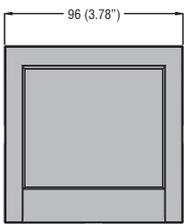
ⓘ Consult Technical support; see contact details on inside front cover.

REMOTE KEYPAD EXC RDU1

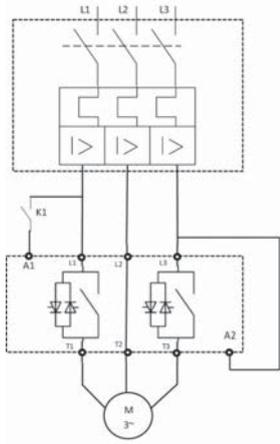
Cutout

ADX TAST

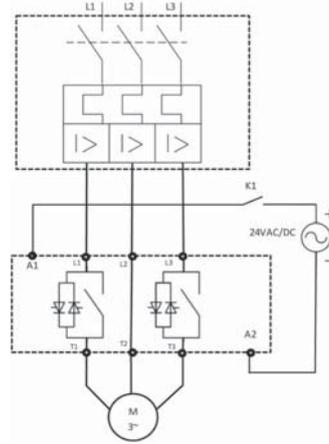
Cutout



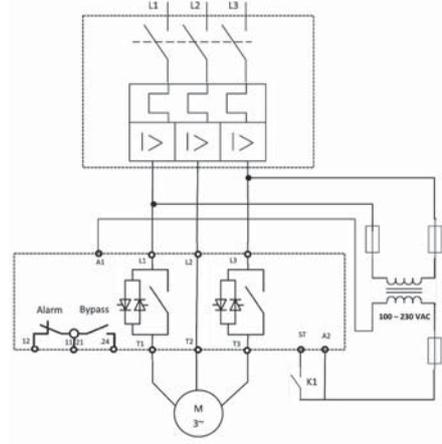
ADXC...400



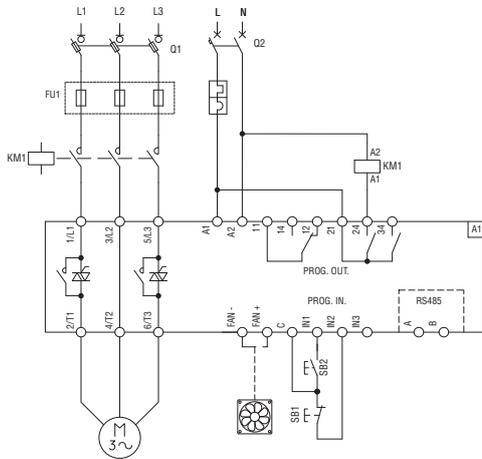
ADXC...400 24



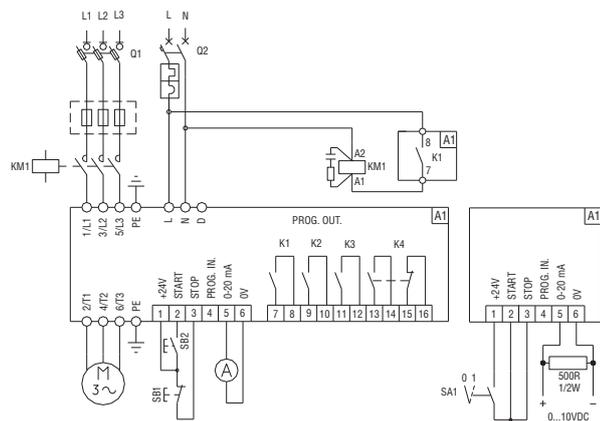
ADXC...600 R2



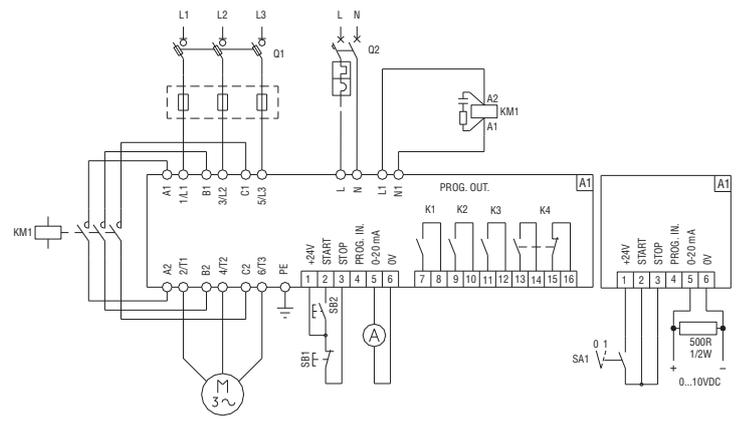
ADXL...



ADX...B



ADX...



5 Soft starters

Technical characteristics ADXC... types



TYPE	ADXC012	ADXC016	ADXC025	ADXC032	ADXC037	ADXC045
With built-in bypass relay						
Motor	Asynchronous three phase					
Type						
Power (40°C)	at 220...240VAC 3kW / 3HP	4kW / 5HP	5.5kW / 7.5HP	9kW / 10HP	9kW / 10HP	11kW / 15HP
	at 380...415VAC 5.5kW / 5HP	7.5kW / 7.5HP	11kW / 10HP	15kW / 15HP	18.5kW / 20HP	22kW / 25HP
	① at 440...480VAC 5.5kW / 7.5HP	9kW / 10HP	11kW / 15HP	18.5kW / 20HP	22kW / 25HP	22kW / 30HP
	① at 550...600VAC 9kW / 10HP	11kW / 15HP	20kW / 20HP	22kW / 30HP	30kW / 30HP	37kW / 40HP
Supply voltage	Input voltage U _e (L1-L2-L3) 220...400VAC -15...+10% (ADXC...400...); 220...600VAC -15...+10% (ADXC...600R2)					
	Start command U _c A1-A2: 24VAC/DC -15...+10% (ADXC...40024); A1-A2: 110...400VAC -15...+10% (ADXC...400); ST: 100...240VAC -15...+10% (ADXC...600R2)					
	Auxiliary power U _s A1-A2: 100...240VAC -15...+10% for ADXC...600R2 (Self powered for ADXC...400... from L1-L2-L3)					
	Frequency 50/60Hz ±10% self-configurable					
Undervoltage recovery	174VAC (ADXC...)					
Overvoltage recovery	466VAC (ADXC...400...); 700VAC (ADXC...600R2)					
Control input current	0.4...1mA (ADXC...40024); 0.5...5mA (ADXC...400); 0.4...3mA (ADXC...600R2)					
Number of controlled phases	2					
Starting / stopping method	Current limitation					
Number of starts/hour at 40°C	20 (Overload cycle: AC53B: 3-5: 175)		10 (Overload cycle: AC53B: 4-6: 354)		10 (Overload cycle: AC53B: 3.5-5: 355)	
Minimum load current	1A	1A	5A	5A	5A	5A
Rated current I _n (according to IEC test results)	at 40°C IEC	12A	16A	25A	32A	45A
	at 50°C IEC	11A	15A	23A	28A	40A
	at 60°C IEC	10A	13.5A	21A	24A	34A
FLA current (based on UL test results)	at 40°C UL	12A	17A	25A	32A	45A
	at 50°C UL	11A	15A	23A	28A	40A
	at 60°C UL	10A	14A	21A	24.3A	31A
Motor protection	Wrong phase sequence					
Cooling system	Natural					
Status indication LEDs	1 red ALARM; 1 yellow RAMP/BYPASS; 1 green SUPPLY					
STARTUP SETTINGS						
Acceleration ramp	1...20 seconds					
Deceleration ramp	0...20 seconds					
Startup voltage	0...85%					
RELAY OUTPUTS (ADXC...600R2 only)						
NC alarm contact (11, 12) / NO bypass contact (21, 24)	3A 250VAC / 3A 30VDC					
INPUT POWER CIRCUIT CONNECTIONS (L1, L2, L3, T1, T2, T3)						
Number and type of terminals	6 fixed M4 screw					
Conductor cross section (min...max)	2.5...10mm ² (AWG 2x10...2x14)					
Tightening torque / Tool	2.5Nm (22lbin) / Pozidriv 2					
Cable stripping length	8mm/0.31"					
AUXILIARY SUPPLY CONNECTIONS (A1, A2)						
Number and type of terminals	9 fixed M3 screw					
Conductor cross section (min...max)	0.5...1.5mm ² (AWG 10...18)					
Tightening torque / Tool	0.65Nm (5.3lbin) / Pozidriv 0					
Cable stripping length	6mm/0.24"					
AUXILIARY CONNECTIONS (11, 12, 21, 24, ST, F1, F2)						
Type of terminals	M3 screw					
Conductor cross section (min...max)	0.05...1.5mm ² (with cable terminal) (AWG 14...12)					
Tightening torque / Tool	0,45Nm (4lbin) / Pozidriv 0					
Cable stripping length	6mm/0.24"					
INSULATION						
IEC rated insulation voltage U _i	630VAC (ADXC...400...); 690VAC (ADXC...600R2)					
AMBIENT CONDITIONS						
Operating temperature	-20°C...+40°C with no derating; >40°C...+60°C with derating (see IEC/UL rated current values given above)					
Storage temperature	-40°C...+80°C					
Relative humidity	<95% non condensing at 40°C					
Maximum pollution degree	2					
Installation category	III					
Maximum altitude	1000m					
HOUSING						
Mounting	Screw fixing on mounting plate or on 35mm DIN rail (IEC/EN 60715)					
IEC degree of protection	IP20					

① For ADXC...600R2 types.

5 Soft starters

Technical characteristics ADXL... types

TYPE (with 2 controlled phases)		ADXL...600
Motor	Type	Asynchronous three phase squirrel cage
	Power	7.5...160kW (400VAC) 15...300HP (550...600VAC)
	Rated current	18...320A
Supply voltage	Power circuit	208...600VAC ±10%
	Auxiliary power Us	100...240VAC±10%
	Frequency	50 or 60Hz ±5% self-configurable
Cooling system	natural	ADXL 0018 600...ADXL 0115 600
	forced	ADXL 0135 600...ADXL 0320 600 Optional for ADXL 0018 600...ADXL 0115 600
PROTECTIONS		
Auxiliary supply	Voltage too low	
Power supply	Lack of line voltage, lack of phase, out-of-range frequency, minimum and maximum voltage and phase sequence	
Motor	Overload at starting (trip class 2, 10A, 10, 15, 20, 25, 30, 35 and 40), overload during running (trip class 2, 10A, 10, 15, 20, 25 and 30), locked rotor, current asymmetry, minimum torque and maximum starting time	
Starter	Overcurrent and high temperature	
STARTUP AND STOP SETTINGS		
Startup	Torque ramp with current limit, Voltage ramp with current limit, Constant torque with current limit	
Stop	Torque ramp, voltage ramp, free-wheel stop	
Braking	—	
DISPLAY AND PROGRAMMING		
	Using the built-in keyboard and display, PC with CX01 and CX02, App NFC Configurator, App SAM1 with CX02 and remote keyboard with EXC1042	
Display	Backlit icon LCD display	
Measure view	Maximum current, L1 current, L2 current, L3 current, torque, line voltage, total PF, thermal status motor, starter temperature, active power, motor counter, startup counter	
Other views	Operational status, events, alarms, measures	
LED	Red "ALARM", green "POWER" and green "RUN"	
DIGITAL INPUTS		
Number of inputs	3	
Input type	2 input with dry contact - 1 input with dry contact or PTC	
Input function	OFF, motor startup, motor stop, free-range stop, motor preheating, local control, alarm disabling, thermal status reset, keyboard lock, motor selection, user alarm, command	
RELAY OUTPUTS		
Number of outputs	3	
Output arrangement	- 2 NA: 3A 250V~ AC1 - 3A 30V= AC1 - 1 changeover: NO contact 5A 250V~ AC1 - 5A 30V= ; NC contact 3A 250V~ AC1 - 3A 30V=	
Output functions	OFF, motor powered, ramp completed, global alarm, limits, remote variable, alarm	
COMMUNICATION INTERFACES		
	NFC, front optical port, optional RS485 (EXC1042)	
VARIOUS FUNCTIONS		
Clock	—	
Event memory	60	
Operational data memory	Startup counter, motor operation counter and maintenance counter	
AMBIENT CONDITIONS		
Operating temperature	-20...+40°C (up to 60°C with derating of starter current of 0.5%/°C)	
Storage temperature	-30°...+80°C	
Maximum altitude	1000m (higher up with derating of starter current of 0.5%/100mt)	
Pollution degree	2	
Operating position	Vertical ±15°	
HOUSING		
Mounting	Screw-mount on panel or 35mm DIN rail (IEC/EN 60715) with EXP8003 accessory for ADXL 0018 600...ADXL 0115 600	
IEC degree of protection	IP00	

5 Soft starters

Technical characteristics ADXL... types



NUMBER OF STARTS PER HOUR

The following data are based on an ambient temperature of 40°C, starting current of 4*Ie and ramp time 6 seconds.

WITHOUT FAN																					
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
16A	ADXL0018600										ADXL0030600										
30A	ADXL0030600							ADXL0045600				ADXL0060600									
37A	ADXL045600						ADXL0060600				ADXL0075600										
45A	ADXL0045600					ADXL0060600		ADXL0075600				ADXL0085600									
60A	ADXL0060600			ADXL0075600			ADXL0085600		ADXL0115600												
66A	ADXL0075600					ADXL0085600		ADXL0115600													
75A	ADXL0075600			ADXL0085600			ADXL0115600														
85A	ADXL0085600			ADXL0115600																	
97A	ADXL0115600																				
115A	ADXL0115600																				
135A	ADXL0135600...ADXL0320600 have two integrated fans as standard																				
162A																					
195A																					
250A																					
320A																					

WITH FAN																									
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100					
16A	ADXL0018600										ADXL0030600														
30A	ADXL0030600							ADXL0045600				ADXL0060600													
37A	ADXL0045600											ADXL0060600				ADXL0075600									
45A	ADXL0045600											ADXL0060600				ADXL0075600						ADXL0085600			
60A	ADXL0060600							ADXL0075600				ADXL0085600				ADXL0115600									
66A	ADXL0075600											ADXL0085600				ADXL0115600									
75A	ADXL0075600											ADXL0085600				ADXL0115600				ADXL0135600					
85A	ADXL0085600											ADXL0115600				ADXL0135600				ADXL0162600					
97A	ADXL0115600							ADXL0135600				ADXL0162600				ADXL0195600									
115A	ADXL0115600							ADXL0135600				ADXL0162600				ADXL0195600									
135A	ADXL0135600											ADXL0162600				ADXL0195600				ADXL0250600					
162A	ADXL0162600							ADXL0195600				ADXL0250600				ADXL0320600									
195A	ADXL0195600							ADXL0320600																	
250A	ADXL0250600						ADXL0320600																		
320A	ADXL0320600																								

5 Soft starters

Technical characteristics ADX... types

TYPE (with 3 controlled phases)	ADX...B (with integrated bypass contactor)	ADX... (prearranged for external bypass contactor)
Motor	Asynchronous three phase squirrel cage	
Type		
Power at 400VAC	7.5...132kW	160...710kW
Rated current	17...245A	310...1200A
Supply voltage	208...500VAC ±10% standard (208...600VAC ±10% on demand)	
Power circuit	208...415VAC ±10% standard (other voltages up to 690VAC maximum demand)	
Auxiliary power Us	208...240VAC ±10%	
Frequency	50 or 60Hz ±5% self-configurable	
Cooling system		
Natural	ADX0017...45B	—
Forced	ADX0060...245B	All types
PROTECTION		
Auxiliary supply	Voltage too low	
Power supply	Phase failure, frequency out of limits, minimum and maximum, voltage and phase sequence, 24VDC static short circuit	
Motor	Overload at starting (trip class 2, 10A, 10, 15, 20, 25, 30, 35, and 40), overload during running (trip class 2, 10A, 10, 15, 20, 25 and 30), locked rotor, current asymmetry, minimum torque and maximum starting time	
Starter	Overcurrent and high temperature	
Analog inputs and outputs	Protection against 24VDC short-circuit	
STARTUP AND STOP SETTINGS		
Startup	Torque ramp with maximum current control	
Stop	Torque control free-range or deceleration	
Braking	DC dynamic with external relay	
DISPLAY AND PROGRAMMING		
	By incorporated or remote keypad or PC	
Display	Backlit LCD 2x16 character	
Selectable languages	Italian, English, French, Spanish	
Measure view	Voltage, current, torque, power (kVA, kW), PF, thermal status of motor and starter, energy consumption	
Other views	Operating status, events, alarms, event log, data	
LED	"POWER", "RUN" and "FAULT"	
DIGITAL AND ANALOGUE INPUTS		
Number of inputs	4	
Input type	24VDC (no need for external feeder)	
Fixed functions	2 for starting and stopping/reset	
Multifunction input (digital)	Free-wheel stopping, external alarm, motor preheat, on board control, alarm inhibition, thermal protection, manual reset, cascade starting and keypad lock	
Multifunction input (analog)	Motor protection via PTC probes, acceleration and/or deceleration ramp via analog input, analog input thresholds for motor starting and stopping, analog input thresholds for programmable relay enable and disable, PT100 input thresholds for motor starting and stopping and PT100 input thresholds for programmable relay enable and disable	
RELAY OUTPUTS		
Number of outputs	4	
Output arrangement	1 NO+NC: 5A 250V~ AC1 General alarm / 3 NO: 5A 250V~ AC1 Programmable	
Output functions	Motor in running mode, started motor, braking, current threshold triggering, maintenance schedule, cascaded startup, PROG-IN thresholds, alarm	
ANALOG OUTPUT		
Format configuration	0...20mA, 4...20mA or 0...10V	
Associated source	Current, torque, motor thermal status, power factor and active power	
COMMUNICATIONS INTERFACE		
RS232	Setup and remote control	
RS485	Used for remote keypad only	
VARIOUS FUNCTIONS		
Clock	Calendar-clock with back-up battery	
Event memory	20 sequential storing of alarms/events with date and hour	
Operational data memory	Energy consumption counter, startup counter, motor operation counter and maintenance counter	
AMBIENT CONDITIONS		
Operating temperature	-10...+45°C (up to +55°C, with derating of the starter current of 1.5%/°C)	
Storage temperature	-30...+70°C	
Maximum pollution degree	3	
Maximum altitude	1000m (higher up with derating of the starter current of 0.5%/100mt)	
Operating position	Vertical ±15°	
HOUSING		
Mounting	Screw-mount on panel	
IEC degree of protection	IP00	

IEC IP20 for ADX0017B...ADX0125B types only.