- 6A to 1200A soft starter ratings
- Standard and severe duty types
- Internal bypass contactor up to 320A rating
- Versions with advanced functions for the control of the motor
- Startup with torque control, voltage ramp with current limit
- Protection functions for the motor and the soft starter
- Clock calendar
- Digital control and adjustment
- NFC connectivity for a simple, fast and intuitive programming with smartphone and App
- RS232 and RS485 for monitoring and remote control

NFC

Page 5-6

NFC

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Page 5-10

ADXN…
• Two phase control
• IEC rated soft starter current Ie 6...45A
• Rated operational voltage 208...600VAC
• Version with auxiliary supply voltage 24VAC/DC or 100...240VAC
• IEC rated motor power 2.2...22kW (400VAC)
• Built-in bypass relay
• Basic version with parameter setting with potentiometers on front
• Version with NFC connectivity for the programming of parameters with smartphone and APP
• Advanced version with potentiometers and NFC connectivity, optical port, electronic current thermal protection and optional RS485 module, Modbus-RTU protocol
• Integrated protections for the motor and soft starter
• LED for the signalling of the status of the soft starter
• Compact housing, 45mm width
• Screw fixing or 35mm DIN rail mounting.

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
• NFC connectivity for the programming of parameters with smartphone and APP
• Modbus-RTU and Modbus-ASCII communication protocols with optional RS485 card
• Backlit LCD icon display
• Integrated protections for the motor and soft starter
• LED for the signalling of the status of the soft starter.

51ADX…
• Three phase control
• Reduced voltage starter with torque control
• Built-in bypass contactor up to 245A
• For severe duty, IEC starting current 5•Ie
• Rated operational voltage 208...500VAC (51ADX...B) 208...415VAC (51ADX...)
• IEC rated starter current Ie 17...1200A
• IEC rated motor power 7.5...710kW (400VAC)
• Maximum starting current limitation
• PC remote control supervision with built-in RS232 port
• Modbus-RTU and property ASCII communication protocols
• Backlit LCD icon display.

Guide for selecting

	ADXN	ADXL	51ADX
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	● (ADXNP)	●	●
Dynamic braking	—	—	●
Kick Start function	—	●	●
Motor overload electronic protection	● (ADXNP)	●	●
Motor protection PTC input	—	●	●
Protection against phase loss	●	●	●
Protection against phase inversion	●	●	●
Protection against locked rotor	● (ADXNP)	●	●
Protection against thyristor overtemperature	●	●	●
Protection against low load	● (ADXNP)	●	●
Programmable alarm functions	● (ADXNF, ADXNP)	●	●
Digital inputs	● (start)	●	●
Analog inputs	—	—	●
Digital outputs	●	●	●
Analog output	—	—	●
Monitoring communication	○ (ADXNP, RS485)	○ (RS485)	● (RS232)
Optical port for programming	● (ADXNP)	●	—
Event log	—	●	●
Motor hour counter	—	●	●
Startup counter	—	●	●
Clock calendar	—	—	●
Remote external keypad	—	○	○

● Standard
○ Optional
— Not available

Lovato electric

ADXN SERIES: SIMPLE, COMPACT AND FUNCTIONAL

The soft starters ADXN series are the ideal solution for those who need a **simple, compact and fast to configure** product for the gradual control of the starting and stopping of the motors.
Their **versatility** makes them suitable for several applications such as the control of pumps, fans, conveyor belts, compressors and they are available with **rated currents from 6 to 45A**.

● VERSIONS
The soft starters ADXN series are available in three versions.

Basic version (ADXNB)

Ideal solution for those who need a soft starter with basic functions and extremely simple to configure, with the only purpose to control the gradual starting and the stopping of the motor. The configuration requires the settings of only 3 parameters (starting voltage, acceleration ramp and deceleration ramp) adjusted with 3 **potentiometers** present on the front of the soft starter.

NFC version (ADXNF)

NFC

Version provided with **NFC** (Near Field Communication) connectivity for the programming via smartphone and LOVATO NFC App. The default settings make it ready to use for the control of scroll compressors, typically used in conditioning systems, refrigerators and heating pumps without need for any programming. Thanks to the NFC antenna integrated on front it is however possible to modify the parameters of the soft starter via smartphone for the control of loads different from compressors, like pumps, fans, conveyors, etc, solution which makes ADXNF extremely flexible for any kind of application.
The setting of parameters in digital format guarantees accuracy and repeatability, with possibility to set the programming on the smartphone to be immediately transferred on others ADXNF. It is also possible to configure a password for the lock of the settings to protect the soft starter against tampering of the parameters by unauthorized personnel.

Advanced version (ADXNP)

NFC

CX01

CX02

CX04

Version which provides the **electronic thermal overload protection** of the motor, obtained thanks to the presence of integrated current transformers, which allow the protection of the motor against overload and the management of starting ramps with current limiting, which are automatically adapted to follow the load variations. The soft starter ADXNP can also be equipped with an **optional RS485 communication module (CX04)** in order to be integrated in a remote control and supervision system. It is provided with both **potentiometers** on front for the setting of the basic parameters (starting voltage, acceleration ramp and deceleration ramp) and **NFC connectivity** for the programming of the advanced parameters through the LOVATO NFC App, such as the rated motor current, the tripping thermal class, protection thresholds, password, communication parameters, the function of the relay outputs and alarm properties. The **frontal optical port** allows the programming, data download and diagnostic from PC and App with the optional USB (CX01) and Wi-Fi (CX02) devices.

● COMPACT DIMENSIONS
The soft starters ADXN series are characterized by two phase control and are realized in an extremely compact enclosure **only 45mm wide** for the entire range up to 45A (divided in 2 mechanical sizes that differ in height and depth).

6...18A   25...45A

45mm   45mm

● SIMPLICITY
They are extremely **simple and quick to configure**. The control of the motor requires only the setting of **few and intuitive parameters**, such as the ramp times and the starting voltage, which can be configured according to the version with potentiometers on front or via smartphone with NFC technology and LOVATO NFC App, available for free for iOS and Android smart devices.

● WIDE OPERATIONAL VOLTAGE RANGE
They are characterized by a wide rated line voltage range, which extends **from 208 to 600VAC**; this makes them suitable for every market, including the North American one, without needs to manage different codes according to the supply voltage available in the system.

● AUXILIARY POWER SUPPLY
All the three versions of ADXN are available with 2 auxiliary power supply voltages: **24VAC/DC**, typical voltage value available in the automation control panels, or **100-240VAC**, typical voltage available for example in the panels for pumps control.

● INTEGRATED PROTECTION FUNCTIONS
They integrate several functions for the protection of the motor and the soft starter, such as:
– soft starter thermal protection made by a built-in temperature probe installed on the heatsink
– controls on the line voltage: voltage and frequency out of limits, phase loss, wrong phase sequence
– electronic thermal protection of the motor (ADXNP version only).
The protection thresholds and tripping delays are configurable on the versions provided with NFC connectivity (ADXNF and ADXNP) and can be individually enabled or disabled.

5

● **NFC CONNECTIVITY AND PROTECTION OF THE SETTINGS**
The ADXNF and ADXNP versions are provided with NFC connectivity integrated on the front, technologically advanced solution which allows the modification of the parameters in a f**ast, simple and intuitive** way directly from the smartphone with **LOVATO NFC App.** Thanks to the NFC it is possible to set the parameters in digital format in a clear and precise way using the user-friendly **graphical interface** of the App.
It is also possible to save the programming on the smartphone to be **copied** on other soft starters of the same model extremely fast, **even with the device powered off**, solution ideal for those who make programming in series of several devices. In addition to the fast speed, accuracy and simplicity of configuration, the versions provided with NFC connectivity allow to satisfy **safety** requirements thanks to the possibility to set via smartphone a **password** to protect the parameters against tampering by unauthorized personnel.
The LOVATO NFC App is available for **Android and iOS** smart devices and it is freely downloadable from Google Play Store and App Store.

NFC

● **ELECTRONIC MOTOR THERMAL OVERLOAD PROTECTION (ADXNP version only)**
The advanced version ADXNP integrates current transformers for the measure of the current flowing in the motor phases. With this information the soft starter can thermally protect the motor commanding it to stop when the current exceeds the rated value for an extended time, without the necessity to install an external thermal overload relay, resulting in cost, space, wiring and installation time savings. The thermal protection is electronic type and it is possible to set a double protection class: one for the starting and one for the running, at choice between class 10, 15, 20 and 25 according to the duty level of the application. The rated motor current, the thermal protection classes and their alarm properties are configurable via smartphone with LOVATO NFC App or LOVATO Sam1 App.

● **OPTICAL PORT FOR COMMUNICATION (ADXNP version only)**
The advanced version ADXNP is provided with optical port on front for the connection of the optional USB (CX01) or Wi-Fi (CX02) devices, by which the soft starter can be connected to a PC with software **Xpress**, smartphone and tablet with LOVATO Sam1 App to carry out operations of programming, diagnostic and data download in simple and safe way, by operating directly from the front of the soft starter without the need to disconnect the electrical panel power supply.

Xpress

Sam1

CX01   CX02

● **RS485 COMMUNICATION PORT (ADXNP version only)**
The advanced version ADXNP can be equipped with the optional RS485 communication module CX04. With this module the soft starter is provided with a **serial RS485 communication port with Modbus-RTU** protocol to be integrated in supervision and monitoring system or to communicate with a Modbus master like a PLC or HMI. The module is provided with terminals for the 24VAC/DC auxiliary power supply and it connects in simple and fast way to the optical port of the soft starter with screw fixing. The communication between the soft starter and the RS485 module is done through the optical interface, which ensures electrical safety and comfort of operate directly from the front. It is compatible with **Synergy** supervision and energy management software.

● **BUILT-IN BYPASS**
All the versions integrate a **bypass** relay which automatically deactivates the thyristors circuit once the acceleration ramp is completed and the motor reaches its run condition, allowing the reduction of the heat and the power dissipation, which consequently results in **energy saving**. The presence of the bypass also increases the reliability of the soft starter, by protecting the internal thyristors against unpredictable phenomena on the network during the motor running, such as short circuits, overcurrents or overvoltages.

● **2 RELAY OUTPUTS INTEGRATED**
The soft starters ADXN have 2 built-in relay outputs with normally open contact, which can be used for signaling functions or for the command of external devices. The function of the outputs is fixed on the basic versions ADXNB, while it is programmable via NFC technology on the versions ADXNF and ADXNP at choice between line contactor control (Run), TOR (Top Of Ramp), alarm and maximum torque.

● **PASSWORD**
The access to the parameters of the soft starters ADXNF and ADXNP can be locked with a password configurable with the LOVATO NFC App to protect the settings against tampering by unauthorized personnel.

● **FRONTAL LEDS**
All the three versions have 3 LEDs on the front for the signalling of the presence of auxiliary power supply, run status and alarm. In case of active alarm the alarm LED is flashing and the type of alarm in progress can be identified by the number of flashes.

POWER
RUN
ALARM
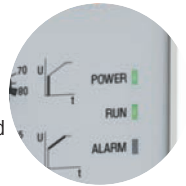
● **MOUNTING**
The soft starters ADXN can be fixed with screws on the rear panel or on 35mm DIN rail (IEC/EN/BS 60715). For the screw fixing there are 4 holes on the base of the soft starter enclosure, while for the DIN rail fixing there is a rubber pad insert which prevents the soft starter from sliding on the DIN rail.
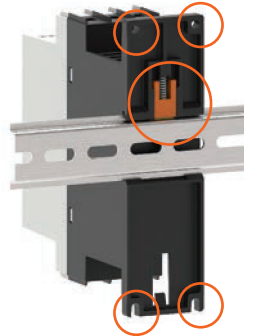
● **FAN**
It is possible to install on the soft starter ADXN up to 30A an optional fan **40x40mm** (already built-in on the sizes 38A and 45A) to improve the heating dissipation performances and increase the number of operations per hour. The fan is supplied directly by the soft starter through a pre-wired cable which is completely hidden inside the soft starter enclosure. The presence of the fan doesn't affect the dimensions of the soft starter ensuring the maintenance of compact dimensions.

● **RIGID CONNCECTION FOR THE DIRECT MOUNTING TO A MOTOR PROTECTION CIRCUIT BREAKER (MPCB)**
The rigid connection SM1X3150R allows the direct mounting of the soft starter ADXN to a motor protection circuit breaker type SM1R (rotary knob type) up to size 38A, allowing the realization of compact starters and reducing the installation time. SM1X3150R includes an accessory for the support of the weight of the soft starter when hooked to the MPCB, to be fixed with screws to the panel. This support can be used with high or low DIN rail and it can be mounted even with soft starter already installed without need to modify the drillings.

ADXL SERIES
SIMPLE, EFFICIENT AND SAFE MOTOR CONTROL

SIMPLE
The 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.
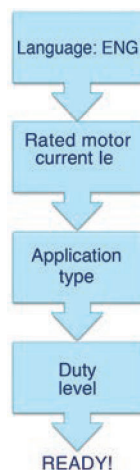
AUTO SET
Upon startup, the soft starter launches a user wizard to simplify the setup. The user can set the device through 4 simple parameters:
– **language:** it is possible to choose the text view by selecting the preferred language. The available languages are: English, Italian, French, Spanish, Portuguese, German;
– **motor current size:** the motor nominal current (can be set between 50% and 100% of the rated soft starter current);
– **application type:** it includes predefined setups for the most common applications: centrifugal pump, fire fighting 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.

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 App. The device front includes an optical port compatible with the CX01 device, to connect it via USB to the PC with Xpress software, and the CX02 device, for Wi-Fi connection to the PC with Xpress software or to smartphone and tablet with LOVATO Sam1 App.

ADXL:
## from start-up
to operation
in 4 steps

LOVATO NFC App and LOVATO Sam1 App freely downloadable from Google Play Store and App Store.

CX01

CX02

Sam1

NFC

TORQUE CONTROL

The ADXL soft starters integrate 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.
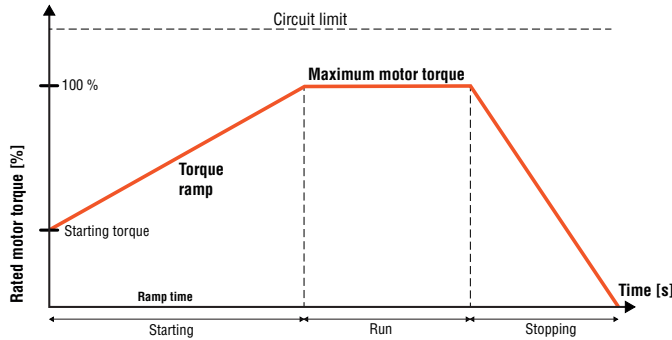
KICK START

This function allows to start the motor when the initial torque is not sufficient to overcome friction forces typical of high inertia loads, by providing a high torque during the very first moments of the startup.
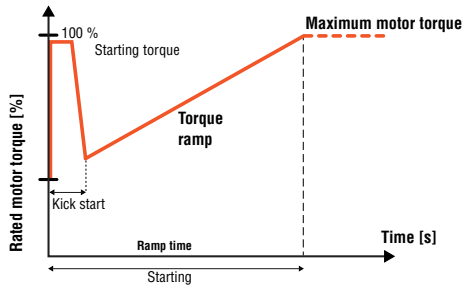
FIRE FIGHTING PUMP PRESET SETUP

While choosing the application in the AUTO SET wizard, is possible to select the fire fighting pump application. This parameter setting is optimized to start fire fighting 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 fighting pump, conveyor belt, fan, mixer and general purpose
• Two graphic bars show the motor and thyristors thermal status
• Two alphanumeric displays allow to view texts and measures
• A status bar shows the soft starter status: start, bypass, run, stop.
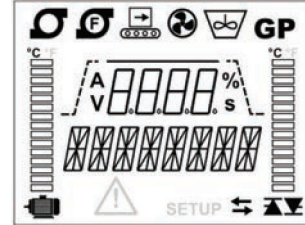
PASSWORD

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 port, Modbus protocol. RS485 communication can be used to connect the soft starter to a supervision software (e.g. Synergy) or for the connection to the EXCRDU1 remote display unit, to view the measures or to perform the setup through the touch screen installed on the front panel and command the start and stop of the motor.

MONITORING AND REMOTE CONTROL

Through the optional EXC1042 communication card 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 soft starter, the soft starter status, see live trends and edit the setup parameters.
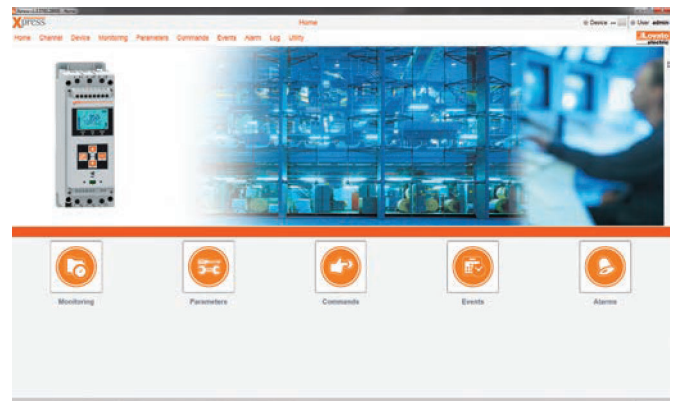
Basic version ADXNB... type

ADXNB…

new

Order code	IEC rated starter current Ie	Rated motor power ≤40°C			Qty per pkg	Wt
		400V	400-480V	550-600V		
	[A]	[kW]	[HP]	[HP]	n°	[kg]

Parameters setting with potentiometers.
Built-in bypass relay and 2 relay outputs.
Rated operational voltage 208...600VAC
Auxiliary supply Us 100...240VAC.

ADXNB006	6	2.2	3	5	1	0.450
ADXNB012	12	5.5	7.5	10	1	0.450
ADXNB018	18	7.5	10	15	1	0.450
ADXNB025	25	11	15	20	1	0.630
ADXNB030	30	15	20	25	1	0.630
ADXNB038	38	18.5	25	30	1	0.660
ADXNB045	45	22	30	40	1	0.660

Auxiliary supply Us 24VAC/DC.

ADXNB00624	6	2.2	3	5	1	0.450
ADXNB01224	12	5.5	7.5	10	1	0.450
ADXNB01824	18	7.5	10	15	1	0.450
ADXNB02524	25	11	15	20	1	0.630
ADXNB03024	30	15	20	25	1	0.630
ADXNB03824	38	18.5	25	30	1	0.660
ADXNB04524	45	22	30	40	1	0.660

NFC version ADXNF... type

ADXNF…

NFC

new

Order code	IEC rated starter current Ie	Rated motor power ≤40°C			Qty per pkg	Wt
		400V	400-480V	550-600V		
	[A]	[kW]	[HP]	[HP]	n°	[kg]

NFC connectivity for parameters setting with smartphone and App.
Built-in bypass relay and 2 relay outputs.
Rated operational voltage 208…600VAC
Auxiliary supply Us 100...240VAC.

ADXNF006	6	2.2	3	5	1	0.450
ADXNF012	12	5.5	7.5	10	1	0.450
ADXNF018	18	7.5	10	15	1	0.450
ADXNF025	25	11	15	20	1	0.640
ADXNF030	30	15	20	25	1	0.640
ADXNF038	38	18.5	25	30	1	0.670
ADXNF045	45	22	30	40	1	0.670

Auxiliary supply Us 24VAC/DC.

ADXNF00624	6	2.2	3	5	1	0.450
ADXNF01224	12	5.5	7.5	10	1	0.450
ADXNF01824	18	7.5	10	15	1	0.450
ADXNF02524	25	11	15	20	1	0.640
ADXNF03024	30	15	20	25	1	0.640
ADXNF03824	38	18.5	25	30	1	0.670
ADXNF04524	45	22	30	40	1	0.670

General characteristics
ADXN... is a soft starter with two phase control for the gradual control of the start and stop of asynchronous motors. Its main strengths are the simplicity of configuration, thanks to a short set of parameters which allows the programming simple and fast, and the compactness, thanks to the enclosure only 45mm wide which makes it suitable for the installation in panels with limited spaces.
It can be used for several applications such as the control of pumps, fans, compressors, conveyor belts and mixers.
It is available with rated current from 6 to 45A, suitable for the installation in systems with rated line voltage from 208 to 600VAC 50/60Hz.
The series consists of 3 versions which differs in the type of programming mode (settings with potentiometers on front or via smartphone with NFC technology and App) and integrated functions.
Every version is available in double variant with auxiliary supply voltage 24VAC/DC or 100...240VAC to suit every need based on the voltage present in the plant.

BASIC VERSION ADXNB
The soft starter ADXNB is the ideal solution for those who need a soft starter with basic functions and extremely simple to configure. The configuration requires the settings of only 3 parameters adjusted with potentiometers present on the front of the soft starter.
The general characteristics are the following:
– Built-in bypass relay
– Programming with potentiometers on front: starting voltage, acceleration ramp and deceleration ramp
– Voltage ramp startup
– Free wheel or controlled stop
– Integrated overtemperature protection
– 2 built-in relay outputs with normally open NO contact, with function line contactor control (Run) and TOR (Top Of Ramp)
– Suitable for the control of pumps, fans, blowers, conveyor belts, compressors and general purpose applications.

NFC VERSION ADXNF
The soft starter ADXNF is a version provided with NFC connectivity for the programming via smartphone and LOVATO NFC App. The default settings make it ready to use for the control of scroll compressors, typically used in air conditioning systems, refrigerators and heating pumps but the parameters can be modified via smartphone and LOVATO NFC App for the control of every kind of application, like pumps, fans, conveyor belts, etc.
It is also possible to configure a password for the lock of the settings.
The general characteristics are the following:
– Built-in bypass relay
– Programming with smartphone with NFC technology and LOVATO NFC App, available for Android and iOS smart devices, freely downloadable from Google Play Store and App Store.
– Default settings with pre-configured parameters for the control of scroll compressors
– Voltage ramp startup
– Free wheel or controlled stop
– Integrated overtemperature protection
– 2 built-in relay outputs with normally open NO contact with programmable function line contactor control (Run), TOR-Top Of Ramp and alarm
– Suitable for the control of scroll compressors (air conditioning systems, refrigerators and heating pumps), pumps, fans, blowers, conveyor belts, compressors and general purpose applications with parameters settings via NFC connectivity and LOVATO NFC App.

Operational characteristics ADXN…
See page 5-7.

Certifications and compliance

5

INDEX

Soft starter
Two phase control - ultra compact.
Accessories

Lovato electric

Advanced version ADXNP… type

ADXNP…

new

Order code	IEC rated starter current Ie	Rated motor power ≤40°C			Qty per pkg	Wt
		400V	400-480V	550-600V		
	[A]	[kW]	[HP]	[HP]	n°	[kg]

Setting of basic parameters with potentiometers and advanced parameters with NFC connectivity and App. Integrated motor electronic thermal protection. Built-in bypass relay and 2 relay outputs. Built-in optical port on front. Optional RS485 Modbus-RTU module. Rated operational voltage 208...600VAC Auxiliary supply Us 100...240VAC.

Order code	IEC	400V	400-480V	550-600V	Qty	Wt
ADXNP006	6	2.2	3	5	1	0.470
ADXNP012	12	5.5	7.5	10	1	0.470
ADXNP018	18	7.5	10	15	1	0.470
ADXNP025	25	11	15	20	1	0.660
ADXNP030	30	15	20	25	1	0.660
ADXNP038	38	18.5	25	30	1	0.690
ADXNP045	45	22	30	40	1	0.690

Auxiliary supply Us 24VAC/DC.

Order code	IEC	400V	400-480V	550-600V	Qty	Wt
ADXNP00624	6	2.2	3	5	1	0.470
ADXNP01224	12	5.5	7.5	10	1	0.470
ADXNP01824	18	7.5	10	15	1	0.470
ADXNP02524	25	11	15	20	1	0.660
ADXNP03024	30	15	20	25	1	0.660
ADXNP03824	38	18.5	25	30	1	0.690
ADXNP04524	45	22	30	40	1	0.690

Accessories for ADXN… type

SM1X3150R

new

EXP8007

Order code	Description	Qty per pkg	Wt
		n°	[kg]

Accessories for soft starters ADXN... type

Order code	Description	Qty	Wt
SM1X3150R	Rigid connection for soft starters type ADXN from 6 to 38 A for the direct mounting to a motor protection circuit breaker type SM1R❶	1	0.040
EXP8007	Fan for soft starters type ADXN from 6 to 30 A for the increasing of number of operations per hour (ADXN size 38 and 45A already have a built-in fan as standard)	1	0.030

❶ For details about motor protection circuit breakers type SM1R refer to the chapter 1.

Communication devices for ADXNP… type

CX01

CX02

new

CX04

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX01	USB connection device PC ↔ ADXNP with optical connector for programming, data download, diagnostics and firmware update	1	0.090
CX02	Wi-Fi connection device PC/smartphone ↔ ADXNP for data download, programming and diagnostics	1	0.090
CX04	RS485 communication module for ADXNP, Modbus-RTU protocol. Auxiliary supply 24VAC/DC.	1	0.180

ADVANCED VERSION ADXNP
The soft starter ADXNP provides the motor electronic current thermal protection, obtained thanks to the presence of integrated current transformers, which allow the motor protection against overload and the management of starting ramps with current limiting, which are automatically adapted to follow the load variations. It is provided with both potentiometers on front for the setting of the basic parameters and NFC connectivity and optical port for the programming of the advanced parameters through the LOVATO **NFC** App.
ADXNP can also be equipped with an optional RS485 communication module in order to be integrated in a supervision network.
The general characteristics are the following:
– Built-in bypass relay
– Integrated electronic thermal protection of the motor, with double class (starting and running) configurable
– Programming of basic parameters with potentiometers on front (which can be disabled via NFC if preferable): starting voltage, acceleration ramp and deceleration ramp
– Programming of advanced parameters (rated motor current, starting current limit, tripping thermal class, protection thresholds, communication parameters, password, relay outputs function and alarm properties) with smartphone with NFC technology and LOVATO **NFC** App, available for Android and iOS smart devices, freely downloadable from Google Play Store and App Store
– Voltage ramp startup with current limiting
– Free wheel or controlled stop
– Integrated overtemperature protection
– 2 built-in relay outputs with normally open NO contact with programmable function line contactor control (Run), TOR (Top Of Ramp), alarm and maximum torque
– Optical port on front for the connection of USB (CX01) or Wi-Fi (CX02) devices for programming, data download and diagnostic from PC with **Xpress** software or smart devices with LOVATO **Sam1** App, freely downloadable from Google Play Store and App Store
– Optional RS485 module (CX04), Modbus-RTU protocol
– Suitable for the control of pumps, fans, blowers, conveyor belts, compressors mixers and general purpose applications.

Operational characteristics ADXN…
– Two phase control
– Input voltage: 208...600VAC ±10%
– Network frequency: 50 or 60Hz ±5% self-configurable
– Auxiliary power supply Us: 24VAC/DC (ADXN...24), 100...240VAC (ADXN...) -15%/+10%
– Rated starter current Ie: 6...45A
– 3 indicator LEDs: presence of auxiliary power supply, ramp in progress / TOR, alarm
– 1 digital input for start command
– 2 relay outputs with normally open contact, programmable on ADXNF and ADXNP, fixed function on ADXNB
– Operating temperature: -20...+60°C (above 40°C with derating of the starter current)
– Storage temperature: -30...+80°C
– Screw fixing or 35mm DIN rail mounting (IEC/EN/BS 60715)
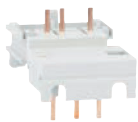– Protection degree: IP20.

Certifications and compliance
Certifications (pending): cULus, EAC, RCM.
Compliant with standards: IEC/EN/BS 60947-1, IEC/EN/BS 60947-4-2, UL 60947-4-2, CSA C22.2 n° 60947-4-2.

Certifications and compliance for accessories
Certifications (pending): cULus (only for SM1X3150R and CX04), EAC.
Compliant with standards: CX01: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3; CX02: IEC/EN/BS 60950-1, EN 62311, EN301 489-1 V2.2.0, EN 301 489-17 V3.2.0, EN300 328 V2.1.1. SM1X3150R: IIEC/EN/BS 60947-1, UL 60947-4-2, CSA C22.2 n° 60947-4-2; CX04: IEC/EN/BS 61010-1, UL 61010-1, CSA C22.2 n° 61010-1.

5

ADXL... types

ADXL0018600…ADXL0060600

ADXL0135600…ADXL0162600

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

For standard and heavy-duty applications (starting current selectable from 3.5•Ie to 5.5•Ie).
With built-in bypass relay.
Rated operational voltage 208...600VAC.
Auxiliary supply Us 100...240VAC.

Order code	IEC rated starter current Ie	Rated motor power ≤40°C IEC (400V)		Qty per pkg	Wt
ADXL0018600	18	7.5	10	1	2.100
ADXL0030600	30	15	15	1	2.100
ADXL0045600	45	22	25	1	2.100
ADXL0060600	60	30	30	1	2.100
ADXL0075600	75	37	40	1	2.900
ADXL0085600	85	45	50	1	2.900
ADXL0115600	115	55	60	1	2.900
ADXL0135600	135	75	75	1	7.800
ADXL0162600	162	90	75	1	7.800
ADXL0195600	195	110	100	1	13.900
ADXL0250600	250	132	150	1	13.900
ADXL0320600	320	160	200	1	13.900

IEC ratings ≤40°C (50Hz)

Order code	Rated starter current Ie	Rated motor power ❶		
		230V	400V	500V
	[A]	[kW]	[kW]	[kW]
ADXL0018600	18	4	7.5	11
ADXL0030600	30	7.5	15	18.5
ADXL0045600	45	11	22	30
ADXL0060600	60	15	30	37
ADXL0075600	75	22	37	45
ADXL0085600	85	22	45	55
ADXL0115600	115	37	55	75
ADXL0135600	135	37	75	90
ADXL0162600	162	45	90	110
ADXL0195600	195	55	110	132
ADXL0250600	250	75	132	160
ADXL0320600	320	90	160	200

UL ratings ≤40°C (60Hz)

Order code	Rated starter current FLA	Rated motor power ❷				
		208V	220-240V	380-415V	440-480V	550-600V
	[A]	[HP]	[HP]	[HP]	[HP]	[HP]
ADXL0018600	18	5	5	10	10	15
ADXL0030600	28	10	10	15	20	25
ADXL0045600	44	10	15	25	30	40
ADXL0060600	60	20	20	30	40	50
ADXL0075600	75	25	25	40	50	60
ADXL0085600	83	25	30	50	60	75
ADXL0115600	114	40	40	60	75	100
ADXL0135600❸	130	40	50	75	100	125
ADXL0162600❸	156	50	60	75	125	150
ADXL0195600❸	192	60	75	100	150	200
ADXL0250600❸	248	75	100	150	200	250
ADXL0320600❸	320	100	125	200	250	300

❶ Preferred rated values according to IEC/EN/BS 60072-1.
❷ Horsepower and current values according to UL508 (60Hz).
❸ Terminal lug kits and shrouds are required for UL. See page 5-9.

General characteristics

The ADXL soft starter with two phase control and built-in bypass relay allows the control of the start and stop of three-phase asynchronous motors. ADXL is equipped with a backlit display with icons and NFC technology, for a simple, intuitive and fast configuration, with smartphones and tablets.
ADXL is 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 ADXL includes 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 Ie
– Rated motor power 7.5...160kW (400VAC) and 15...300HP (600VAC)
– Voltage or torque ramp startup
– Torque control
– Kick start
– Limited maximum starting current
– Free wheel or controlled stop
– 4 configurable sets of motor parameters
– Built-in bypass relay
– Optical port for programming, data download and diagnostics through the software Xpress and LOVATO Sam1 App, freely downloadable from Google Play Store and App Store
– NFC technology for parameter programming through the LOVATO NFC App, freely downloadable from Google Play Store and App Store
– Optional RS485 communication card
– Modbus-RTU and Modbus-ASCII 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
– Auxiliary power supply: 100...240VAC
– 3 indicator LEDs: power supply, startup or bypass, alarm
– 3 programmable digital inputs, one of which configurable as digital or PTC input
– 3 programmable relay outputs: 1 with changeover contact and two with normally open contact
– Operating temperature: -20...+60°C (above 40°C with derating of the starter current by 0.5%/°C)
– Storage temperature: -30...+80°C
– Screw fixing or 35mm DIN rail mounting for ADXL0018600...ADXL0115600 with optional accessory EXP8003
– Protection degree: IP00
– Number of starts per hour: see page 5-20.

Displayed measures:
Maximum current, L1 current, L2 current, L3 current, torque, voltage, total active power, total PF, motor thermal status, soft starter temperature, energy, motor hour counter, number of starts.

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

Accessories for ADXL... types

CX01

CX02

EXCRDU1

EXC1042

EXCCON01

EXCM4G01

EXP8003

EXP8004

EXA01

EXA02

EXA03

EXA04

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX01	USB connection device PC ↔ ADXL with optical connector for programming, data download, diagnostics and firmware update	1	0.090
CX02	Wi-Fi connection device PC/smartphone ↔ ADXL for data download,programming, diagnostics and cloning	1	0.090
EXCRDU1	Remote keypad, LCD display with touchscreen, IP65 protection and NEMA 4X, 3m RS485 cable included supply 100...240VAC / 110...250VDC	1	0.360
EXC1042	RS485 communication card, Modbus-RTU protocol	1	0.020
EXCCON01	RS485/Ethernet converter, 12…48VDC, including DIN mounting guide kit	1	0.400
EXCM4G01	4G Gateway with RS485 and Ethernet port, Modbus RTU/TCP protocol	1	0.300
EXP8003	35mm DIN rail mounting accessory for ADXL0018600... ADXL0115600	1	0.200
EXP8004	Fan for ADXL0018600... ADXL0115600 (codes ADXL0075600...ADXL0115600 max of two EXP8004 fans)	1	0,040
EXA01	Kit of 3 UL terminal lugs for ADXL0135600, ADXL0162600, and ADXL0195600	1	0.141
EXA02	Kit of 3 terminals protection covers for ADXL0135600, ADXL0162600 and ADXL0195600	1	0.125
EXA03	Kit of 3 UL terminal lugs for ADXL0250600 and ADXL0320600	1	0.314
EXA04	Kit of 3 terminals protection covers for ADXL0250600 and ADXL0320600	1	0.154

General characteristics
Communication devices to connect LOVATO Electric products to:
– PC
– Smartphones
– Tablets.

CX01
This USB/optical device, complete with cable, allows the frontal connection of products compatible with PC with **X**press software without having to disconnect the power supply from the electric panel.
The PC identifies the connection as a standard USB.

CX02
Via Wi-Fi connection, compatible LOVATO Electric products can be viewed on PCs, smartphones and tablets with no need for cabling. Compatible with **X**press software and LOVATO **sam1** App.

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

EXCRDU1
Through the EXCRDU1 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 set the parameters, command the start and stop of the motor, read the measures, signalling alarms and motor status.
– 100...240VAC / 110...250VDC power supply
– 128x112 pixel touchscreen LCD display
– Opto-isolated RS485 communication port, Modbus RTU protocol
– 96x96mm flush mount and ANSI 4"
– Compatible with ADXL equipped with communication card RS485, cod. EXC1042
– 3m/10ft long cable included
– Degree of protection IP65 and NEMA 4X.

EXCM4G01
For details please see section 31.

Certifications and compliance
Certifications obtained: cULus for EXA..., EXCRDU1, EXP8003 and EXP8004, EAC (except EXA...).
Compliant with standard:
CX01 and EXCRDU1: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3;
CX02: IEC/EN/BS 60950-1, EN 62311, EN 301 489-1 V2.2.0, EN 301 489-17 V3.2.0, EN 300 328 V2.1.1.
EXC1042: IEC/EN/BS 60947-1, IEC/EN/BS 60947-4-2;
EXCM4G01: IEC/EN/BS 60950-1.

51ADX… type

51ADX0017B…51ADX0045B

51ADX0060B…51ADX0085B

51ADX0110B…51ADX0125B

Order code	IEC rated starter current Ie	IEC rated motor power ≤40°C		Qty per pkg	Wt
		400V	380-415V		
	[A]	[kW]	[HP]	n°	[kg]

For standard duty (starting current 5•Ie).
With built-in bypass contactor.
Rated operational voltage 208...500VAC.
Auxiliary supply Us 208...240VAC.

51ADX0017B	17	7.5	7.5	1	8.970
51ADX0030B	30	15	15	1	9.240
51ADX0045B	45	22	25	1	9.240
51ADX0060B	60	30	30	1	14.200
51ADX0075B	75	37	40	1	14.400
51ADX0085B	85	45	50	1	14.400
51ADX0110B	110	55	60	1	17.700
51ADX0125B	125	55	60	1	17.700
51ADX0142B	142	75	75	1	28.000
51ADX0190B	190	90	100	1	37.300
51ADX0245B	245	132	150	1	39.300

For severe duty (starting current 5•Ie).
Predisposed for external bypass contactor.
Rated operational voltage 208...415VAC.
Auxiliary supply Us 208...240VAC.

51ADX0310	310	160	150	1	48.900
51ADX0365	365	200	200	1	49.300
51ADX0470	470	250	250	1	95.000
51ADX0568	568	315	350	1	95.000
51ADX0640	640	355	400	1	106.000
51ADX0820	820	400	500	1	164.000
51ADX1200	1200	710	900	1	234.000

General characteristics
51ADX 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 51ADX...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, analog modem or GSM modem.
– Automatic call function (Autocall) in case of alarm conditions with sending of SMS or e-mail.
– Proprietary ASCII and Modbus-RTU communication protocols.

FRONTAL KEYPAD FUNCTIONS
– Backlit LCD 2-line 16-character display
– 4 languages (Italian, English, French, Spanish)
– Basic, advanced and function programming menus
– Start and stop commands from keypad
– Measures readings:
  • line voltages (L-L)
  • phase currents
  • active and apparent power values per phase
  • power factor per phase
  • energy
– 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 starting.

PROTECTIONS
– 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: auxiliary 24VDC short-circuit protection with automatic resetting.
– Starter: overcurrent, high temperature, SCR and bypass contactor malfunction.

Operational characteristics
– Input voltage:
  • 208...500VAC ±10% (51ADX...B)
  • 208...415VAC ±10% (51ADX...)
– Network frequency: 50/60Hz ±5%
– Auxiliary supply voltage: 208...240VAC ±10%
– Auxiliary consumption: 20VA
– Rated starter current Ie:
  • 17A...245A (51ADX...B)
  • 310A...1200A (51ADX...)
– Motor current: 0.5...1 Ie
– Overload current:
  • 105% Ie for 51ADX...B
  • 115% Ie for 51ADX...
– Operating temperature: -10...+55°C (above 45°C with derating of the starter current by 1.5%/°C)
– Storage temperature: -30...+70°C.

Certifications and compliance
Certifications obtained: EAC.
Compliant with standard: IEC/EN/BS 60947-1, IEC/EN/BS 60947-4-2.

5-10

Dimensions
page 5-16

Wiring diagrams
page 5-17

Technical characteristics
page 5-21

Accessories for 51ADX... types

51ADXTAST

51C4

Order code	Description	Qty per pkg	Wt
		n°	[kg]
51ADXTAST	Remote keypad 96x96mm, 2x16 backlit LCD, 208...240VAC supply, provided with 51C8 3m/10ft long connecting cable	1	0.350
31PA96X96	Protective cover (IP54) for remote keypad 51ADXTAST	1	0.076
51C2	PC (RS232) ↔ 51ADX connecting cable, 1.8m/6ft long	1	0.062
51C4	PC (RS232) ↔ RS232/RS485 converter drive connecting cable, 1.8m/6ft long	1	0.147
51C6	51ADX ↔ RS232/RS485 converter drive connecting cable, 1.8m/6ft long	1	0.102
51C8	51ADX ↔ 51ADXTAST remote keypad connecting cable, 3m/10ft long	1	0.080

51ADXTAST remote keypad
The flush-mount 51ADXTAST remote keypad is identical to the one integrated on the front of the soft starter except for the start and stop commands of the motor which are permanently disabled.
With this keypad it is possible to configure the setup of the soft starter, read measures and operating data and transfer the parameters from 51ADX to the keypad and vice versa.
A backup copy of the soft starter data and parameter setup is obtainable with the transfer functions.
It is possible to adjust the display contrast and the backlight and select the communication baud rate.
The 51C8 cable 3m/10ft long provided with the keypad is used to connect the 51ADXTAST keypad to the RS485 port of the 51ADX soft starter.
For longer distances the keypad can be connected to the RS232 port of the 51ADX soft starter with RS232/RS485 converter.

Operational characteristics
– Auxiliary supply voltage: 208...240VAC ±10% 50/60Hz
– Power consumption: 6.9VA
– Dissipation: 3.2W
– RS485 port: RJ4/4 connector
– Supply: Removable 3-pole 2.5 mm^2 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 31PA96x96).

Certifications and compliance for 51ADXTAST
Certifications obtained: EAC.
Compliant to standards: IEC/EN/BS 60947-1, IEC/EN/BS 60947-4-2.

Remote control software 51ADXSW
The soft starters 51ADX... can be connected to a PC for the control and supervision with the software 51ADXSW:
– Parameters setup, with possibility to save the settings on the PC and subsequently reload them on the soft starter
– Display of all the measures of the soft starter (current, torque, etc.) in real time
– Access to all the functions of the frontal panel with a virtual keypad with possibility to operate on the pushbuttons
– Graphic trends of monitored parameter data during operation
– Display of soft starter events log showing time and date entry.
The connection between 51ADX and PC is made by the supplied 51C2 cable via the RS232 port, RS232/RS485 converter, analog or GSM modem.
GSM modem represents the ultimate solution for unmanned applications or where there are no telephone lines, with possibility to send messages via SMS and email in case of alarm.
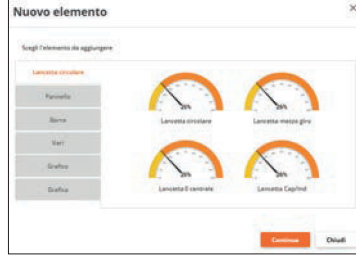The software is available in 4 languages (Italian, English, Spanish and French) and it is freely downloadable from the Download section of the website www.LovatoElectric.com.

For ADXNP… and ADXL…

Xpress configuration and remote control software

Synergy supervision and energy management software

LOVATO **S**am**1** APP

For ADXNF… , ADXNP… and ADXL…

LOVATO **N**FC APP

Xpress
By using the **X**press software, the quick setup of the soft starter can be carried out via PC, avoiding possible parameter programming errors.
The parameter programming of ADXNP... and ADXL... soft starters can also be PC saved and quickly uploaded other devices of the same model 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.
Xpress software is freely downloadable from the website www.LovatoElectric.com, section Energy Management.

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 30 or our Technical support office; see contact details on inside front cover.

Sam**1** APP for smartphones and tablets
The application **S**am**1** 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 CX02 device.
The App is compatible with Android and iOS smart devices and it is freely downloadable from Google Play Store and App Store.

For details, consult section 30 or our Technical support office; see contact details on inside front cover.

NFC APP for smartphones and tablets
The soft starters ADXNF..., ADXNP... and ADXL... are equipped with built-in NFC technology. Using the LOVATO **N**FC App it is possible to program the parameters and save them on smartphones and tablets.
The App is compatible with Android and iOS smart devices and it is freely downloadable from Google Play Store and App Store.
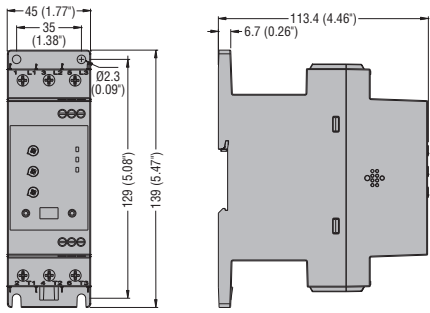
For details, consult section 30 or our Technical support office; see contact details on inside front cover.
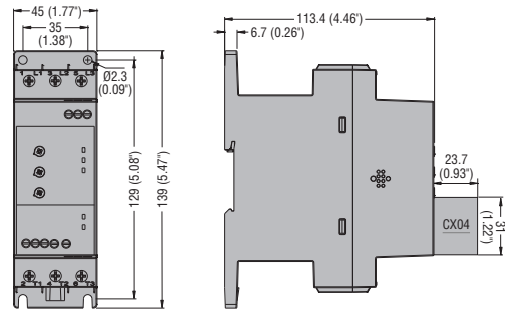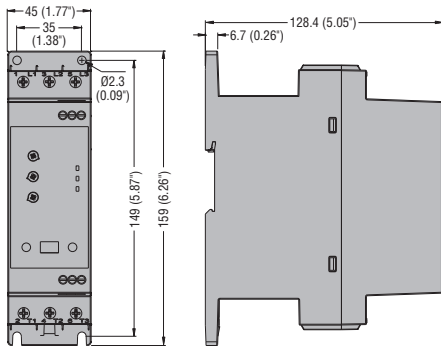
SOFT STARTER
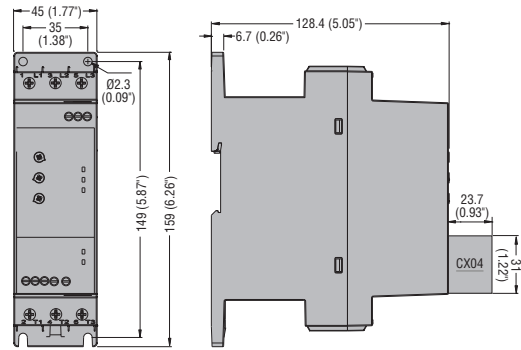**ADXN...006... - ADXN...018...**

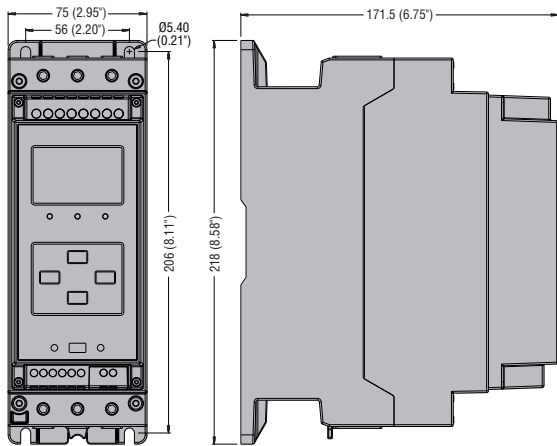**ADXNP006... - ADXNP018...** with CX04 RS485 communication module.

ADXN...025... - ADXN...045...

ADXNP025... - ADXNP045... with CX04 RS485 communication module.

ADXL0018600...ADXL0060600

ADXL0075600...ADXL0115600
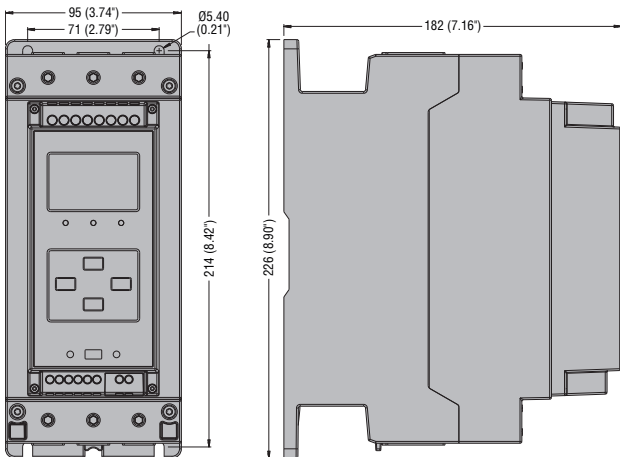
ADXL0135600 - ADXL0162600
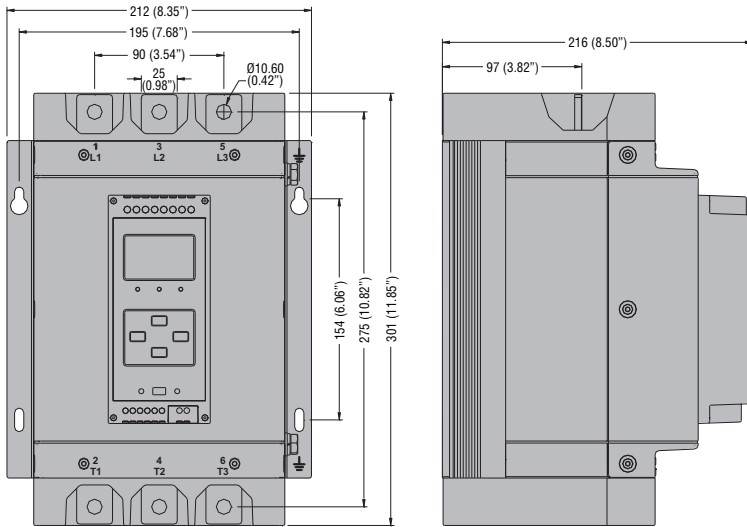
ADXL0135600 - ADXL0162600 complete with terminal lugs for UL code EXA01 and terminals protection code EXA02.
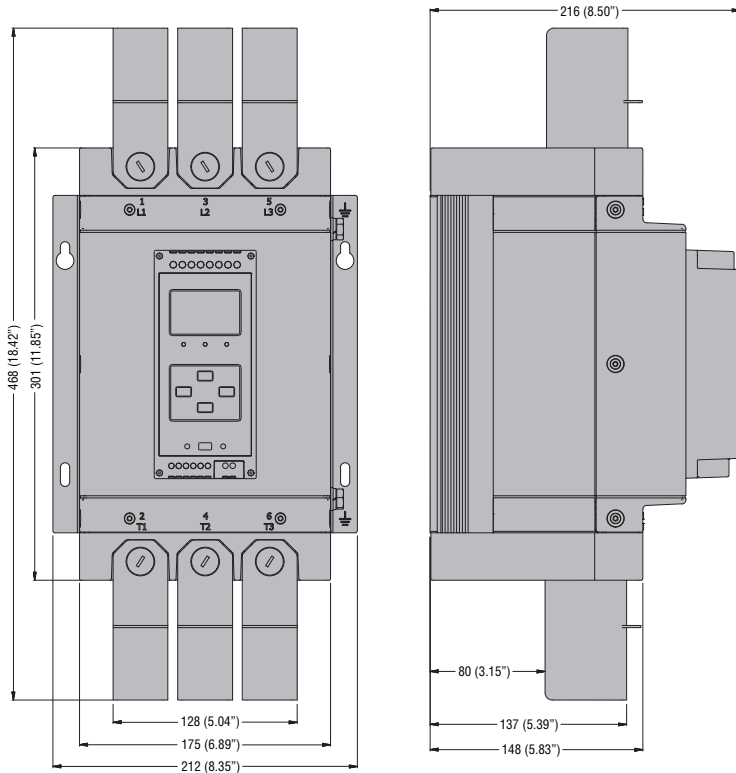
ADXL0195600...ADXL0320600
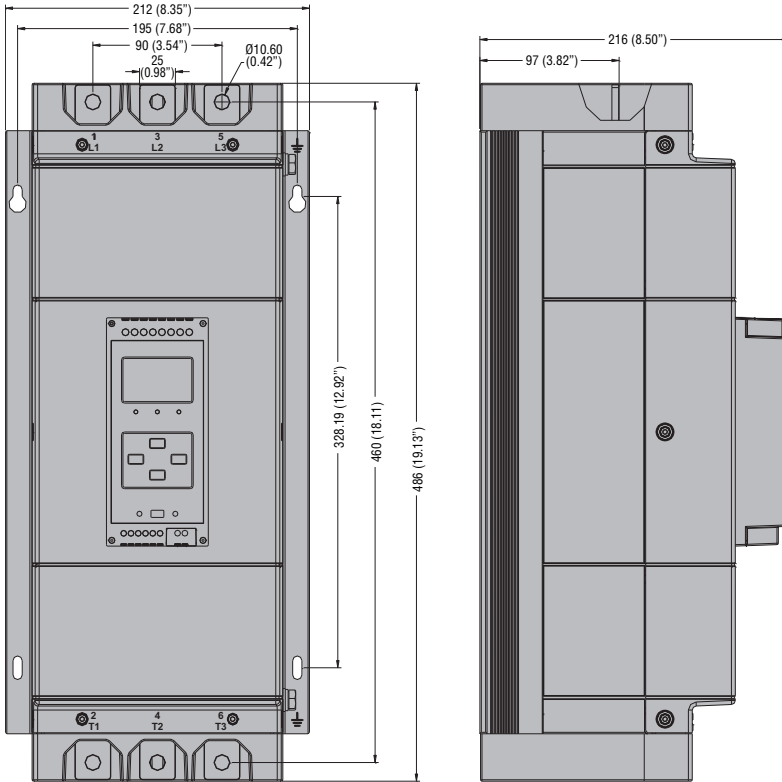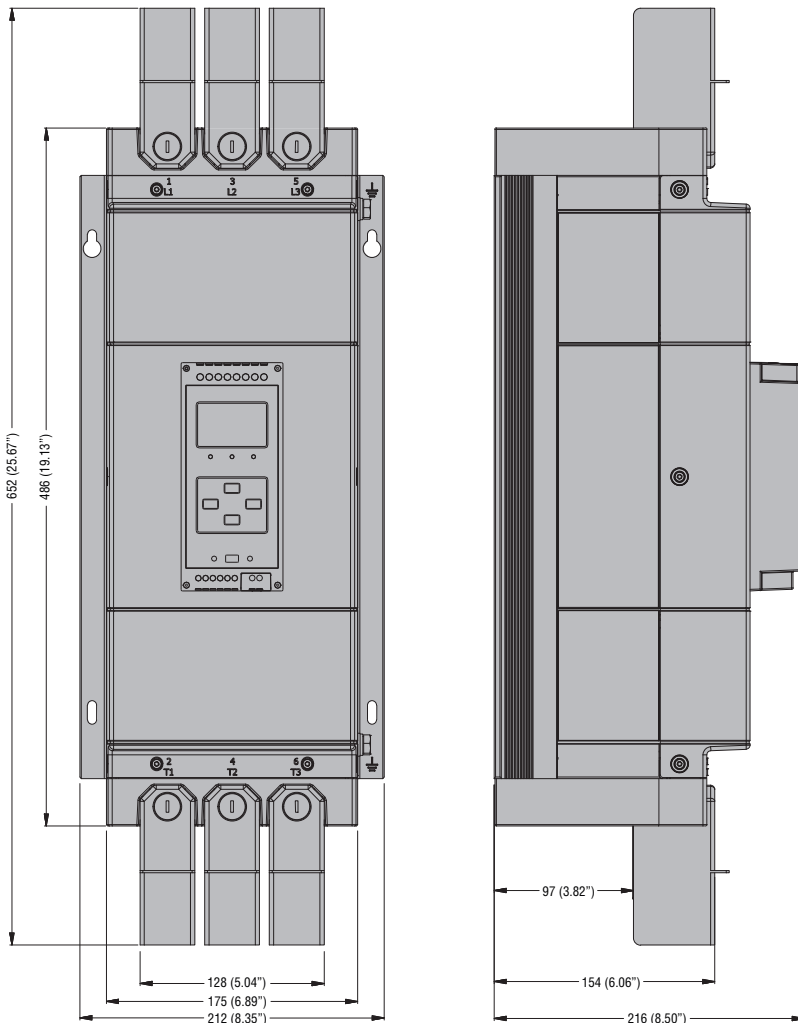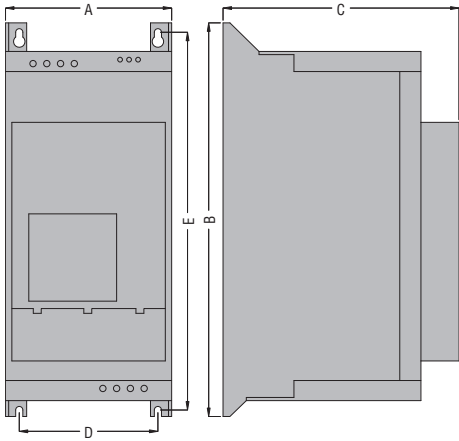

ADXL0195600 complete with terminal lugs for UL code EXA01 and terminals protection code EXA02.
ADXL0250600 - ADXL0320600 complete with terminal lugs for UL code EXA03 and terminals protection code EXA04.

51ADX0017B…51ADX0125B
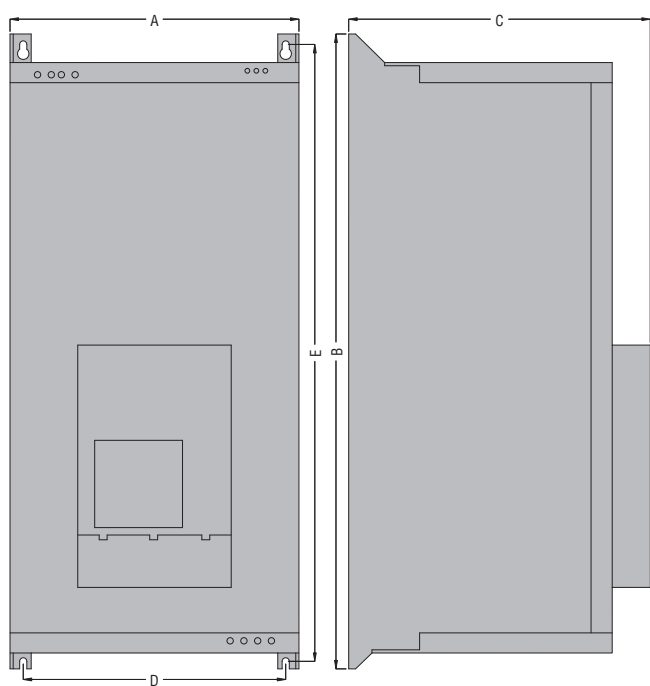
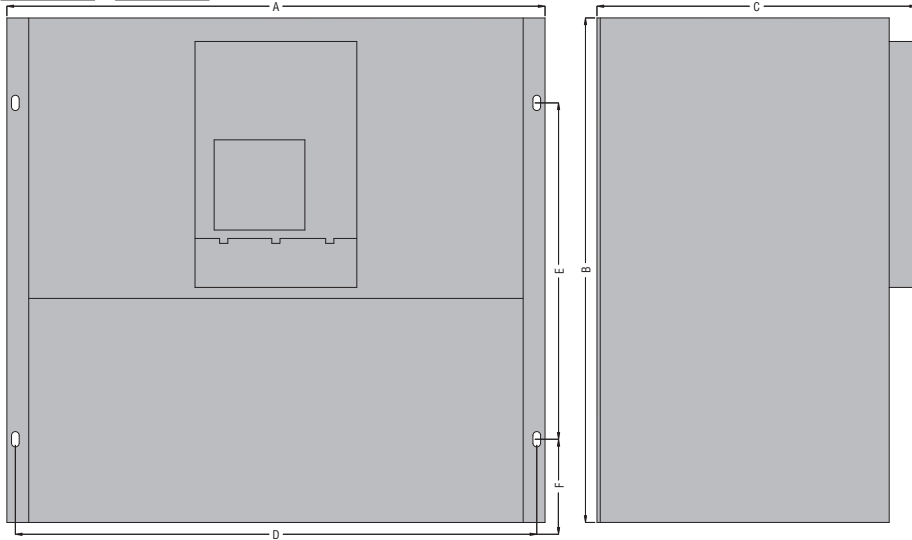| TYPE	A	B	C	D	E
51ADX0017B	157 (6.18")	372 (14.64")	223 (8.78")	131 (5.16")	357 (14.05")
51ADX0030B	157 (6.18")	372 (14.64")	223 (8.78")	131 (5.16")	357 (14.05")
51ADX0045B	157 (6.18")	372 (14.64")	223 (8.78")	131 (5.16")	357 (14.05")
51ADX0060B	157 (6.18")	534 (21.02")	250 (9.84")	132 (5.20")	517 (20.35")
51ADX0075B	157 (6.18")	534 (21.02")	250 (9.84")	132 (5.20")	517 (20.35")
51ADX0085B	157 (6.18")	534 (21.02")	250 (9.84")	132 (5.20")	517 (20.35")
51ADX0110B	157 (6.18")	584 (22.99")	250 (9.84")	132 (5.20")	567 (22.32")
51ADX0125B	157 (6.18")	584 (22.99")	250 (9.84")	132 (5.20")	567 (22.32")

51ADX0142B…51ADX0245B

TYPE	A	B	C	D	E
51ADX0142B	273 (10.75")	600 (23.62")	285 (11.22")	230 (9.05")	560 (25.20")
51ADX0190B	273 (10.75")	680 (26.77")	310 (12.20")	230 (9.05")	640 (25.20")
51ADX0245B	273 (10.75")	680 (26.77")	310 (12.20")	230 (9.05")	640 (25.20")

51ADX0310…51ADX1200

TYPE	A	B	C	D	E	F
51ADX0310	640 (25.20")	600 (23.62")	380 (14.96")	620 (24.41")	400 (15.75")	100 (3.94")
51ADX0365	640 (25.20")	600 (23.62")	380 (14.96")	620 (24.41")	400 (15.75")	100 (3.94")
51ADX0470	790 (31.10")	650 (25.59")	430 (16.93")	770 (30.31")	450 (17.72")	100 (3.94")
51ADX0568	790 (31.10")	650 (25.59")	430 (16.93")	770 (30.31")	450 (17.72")	100 (3.94")
51ADX0640	790 (31.10")	650 (25.59")	430 (16.93")	770 (30.31")	450 (17.72")	100 (3.94")
51ADX0820	910 (35.83")	950 (37.40")	442 (17.40")	830 (32.68")	920 (36.22")	❶
51ADX1200	910 (35.83")	950 (37.40")	442 (17.40")	830 (32.68")	920 (36.22")	❶

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

ACCESSORIES
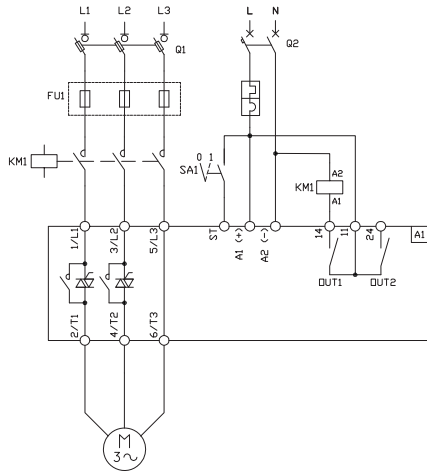**EXCRDU1**   Cutout

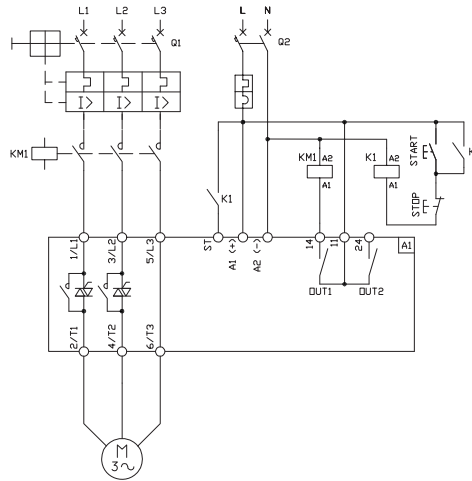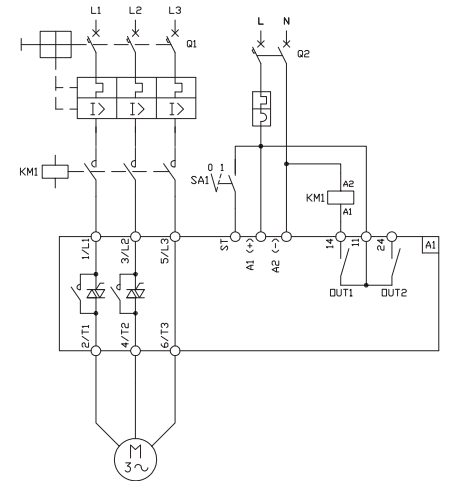**51ADXTAST**   Cutout
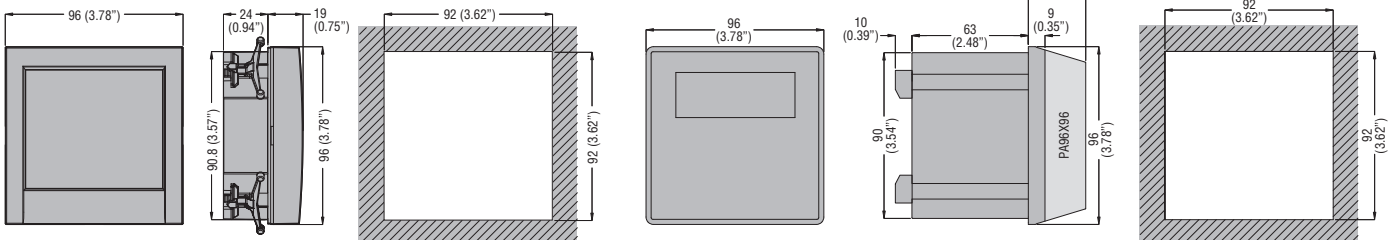
ADXN…
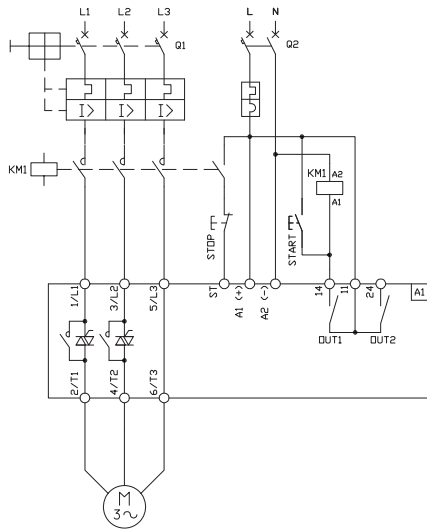Switch disconnector + fuses + contactor, control by switch (type 0-1)

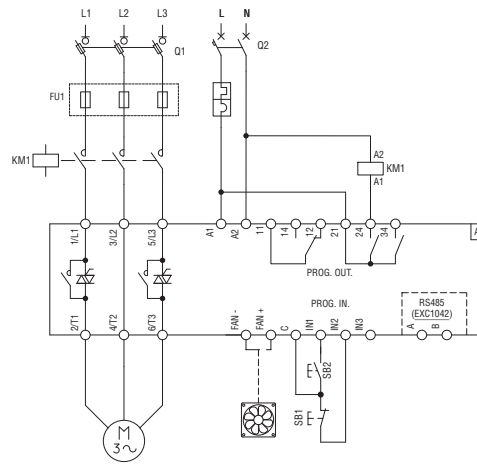Switch disconnector + fuses + contactor + thermal overload relay, control by switch (type 0-1)

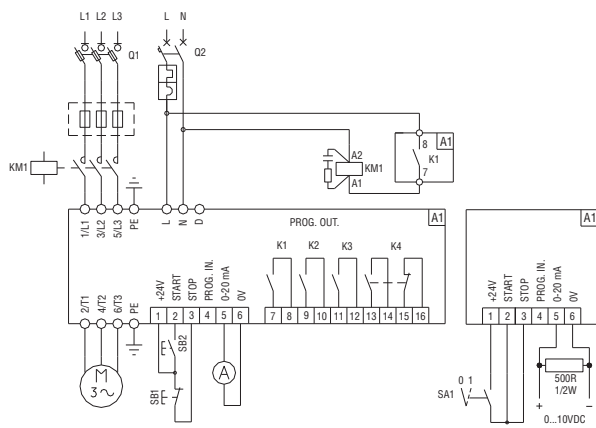MPCB + contactor, control by switch (type 0-1)
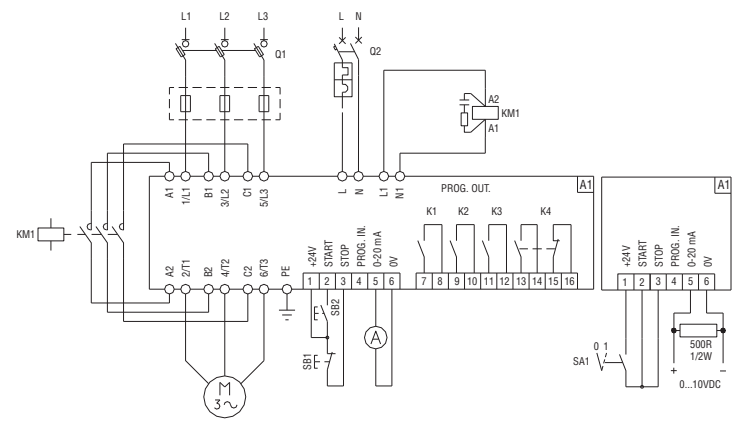

MPCB + contactor, control by pushbuttons

ADXL…

51ADX…B

51ADX…

5

INDEX

Soft starters
Technical characteristics
ADXN... types

Lovato
electric

TYPE (with 2 controlled phases)		ADXNB…	ADXNF…	ADXNP…
Motor	Type	Asynchronous three phase		
	Power	1.1...11kW (230VAC), 2.2...22kW (400VAC), 3...30kW (500VAC) 1.5...15HP (220-240VAC), 3...30HP (440-480VAC), 5...40HP (550-600VAC)		
	Rated current	6...45A		
Supply voltage	Line voltage	208...600VAC ±10%		
	Auxiliary supply voltage Us	100...240VAC for ADXN..., 24VAC/DC for ADXN...24 -15%/+10%		
	Frequency	50 or 60Hz ±5% self-configurable		
Bypass relay		Integrated		
Cooling system	Natural	ADXN...006... - ADXN...030...		
	Forced	ADXN...038... - ADXN...045..., optional for ADXN...006... - ADXN...030...		
Number of starts per hour		❶		
PROTECTIONS				
Line voltage		Lack of line voltage, phase loss, frequency out of limits, wrong phase sequence		
Motor		–	–	Electronic current thermal protection (overload), locked rotor, current asymmetry, load too low, starting too long
Soft starter		Overtemperature	Overtemperature	Overcurrent and overtemperature
STARTUP AND STOP SETTINGS				
Startup		Voltage ramp	Voltage ramp	Voltage ramp with current limit
Stop		Voltage ramp or free-wheel stop		
Braking		–		
PROGRAMMING INTERFACES				
Potentiometers		Settings: starting voltage, acceleration ramp time, deceleration ramp time	–	Settings: starting voltage, acceleration ramp time, deceleration ramp time. Note. The potentiometers can be disabled via NFC.
NFC connectivity		–	Settings: starting voltage, acceleration ramp time, deceleration ramp time, protection thresholds, password, relay outputs function and alarm properties	Settings: rated motor current, starting current limit, thermal protection class, protection thresholds, communication parameters, password, relay outputs function and alarm properties
Optical port		–	–	Connection with USB device CX01 for the connection to a PC with Xpress software. Connection to Wi-Fi device CX02 for the connection to a PC with Xpress software or Android and iOS smartphone and tablet with LOVATO SAM1 App. Connection of the RS485 communication module CX04, Modbus-RTU protocol.
LEDs		3: POWER (presence of auxiliary power supply), RUN (run/Top Of Ramp), ALARM (alarm, with identification of the type of active alarm with number of flashes of the LED)		
DIGITAL INPUT ST (start)				
Input type		Volt-free contact		
Input function		Motor start		
RELAY OUTPUTS				
Number of outputs		2		
Outputs arrangement		2 NO contacts with the same common, 5A 250VAC AC1 – 5A 30VDC		
Outputs functions		Line contactor (run), TOR (Top Of Ramp)	Programmable: Line contactor (run), TOR (Top Of Ramp), alarm	Programmable: Line contactor (run), TOR (Top Of Ramp), alarm, max torque
COMMUNICATION				
RS485 port		–	–	Optional, with communication module CX04 (RS485, Modbus-RTU protocol)
AMBIENT CONDITIONS				
Operating temperature		-20...+60°C (above 40°C with derating of the starter current❶)		
Storage temperature		-30...+80°C		
Relative humidity		<80%		
Maximum altitude		1000m without derating of the starter current		
Pollution degree		2		
Overvoltage category		III		
Operating position		Vertical		
HOUSING				
Mounting		Screw fixing or mounting on 35mm DIN rail (IEC/EN/BS 60715)		
IEC degree of protection		IP20		

❶ Consult Technical support for information; see contact details on inside front cover.

TYPE (with 2 controlled phases)		**ADXL…600**
Motor	Type	Asynchronous three phase
	Power	7.5...160kW (400VAC) 15...300HP (550...600VAC)
	Rated current	18...320A (the value can be set between the 50% and 100% of the rated soft starter current Ie)
Supply voltage	Line voltage	208...600VAC ±10%
	Auxiliary supply voltage Us	100...240VAC±10%
	Frequency	50 or 60Hz ±5% self-configurable
Cooling system	Natural	ADXL0018600...ADXL0115600
	Forced	ADXL0135600...ADXL0320600 Optional for ADXL0018600...ADXL0115600
Number of starts per hour		See table at page 5-20
PROTECTIONS		
Auxiliary supply		Voltage too low
Line voltage		Lack of line voltage, phase loss, frequency out of limits, 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 starting too long
Soft starter		Overcurrent and overtemperature
STARTUP AND STOP SETTINGS		
Startup		Torque ramp with current limit, voltage ramp with current limit
Stop		Torque ramp, voltage ramp or free-wheel stop
Braking		—
DISPLAY AND PROGRAMMING		
		Using the built-in keyboard and display, PC with CX01 and CX02 with software Xpress, smartphone or tablet with LOVATO NFC App or LOVATO SAM1 App with CX02 and remote display unit EXCRDU1 with EXC1042
Display		Backlit icon LCD display
Measure view		Maximum current, L1 current, L2 current, L3 current, torque, line voltage, total PF, motor thermal status, starter temperature, active power, active energy, motor hour counter, startup counter
Other views		Operational status, events, alarms, measures
LEDs		3: POWER (presence of auxiliary power supply), RUN (run/bypass), ALARM (alarm)
DIGITAL INPUTS		
Number of inputs		3
Input type		2 digital inputs with volt-free contact, 1 input configurable as digital input with volt-free contact or PTC input
Inputs function		OFF, motor start, motor stop, free-wheel stop, motor preheating, local control, alarm inhibition, thermal status reset, keyboard lock, motor selection, user alarm, command, alarm reset
RELAY OUTPUTS		
Number of outputs		3
Output arrangement		- 2 NO: 3A 250VAC AC1 - 3A 30VDC - 1 changeover: NO contact 5A 250VAC AC1 - 5A 30VDC; NC contact 3A 250VAC AC1 - 3A 30VDC
Outputs function		OFF, line contactor, run (ramp completed), global alarm, limits, remote variable, alarm
COMMUNICATION INTERFACES		
		NFC, front optical port, optional RS485 (EXC1042)
VARIOUS FUNCTIONS		
Calendar clock		—
Event memory		60
Operational data memory		Energy meter, startup counter, motor hour meter and maintenance hour counter
AMBIENT CONDITIONS		
Operating temperature		-20...+60°C (above 40°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/BS 60715) with EXP8003 accessory for ADXL0018600...ADXL0115600
IEC degree of protection		IP00

NUMBER OF STARTS PER HOUR ADXN... TYPES
The following data are based on an ambient temperature of 40°C, starting current of 4*In and ramp time 6 seconds. In=Rated motor current.

In	NUMBER OF STARTS PER HOUR WITHOUT FAN																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
3A	ADXN006																			
6A	ADXN006											ADXN012								
9A	ADXN012								ADXN018											
12A	ADXN012 - ADXN018																			
18A	ADXN018			ADXN025			ADXN030													
25A	ADXN025			ADXN030																
30A	ADXN030																			
38A	ADXN038… and ADXN045… have built-in fan																			
45A																				

In	NUMBER OF STARTS PER HOUR WITH FAN																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
3A	ADXN006																			
6A	ADXN006																		ADXN012	
9A	ADXN012																		ADXN018	
12A	ADXN012												ADXN018						ADXN025	
18A	ADXN018											ADXN025			ADXN030					
25A	ADXN025												ADXN030							
30A	ADXN030											ADXN038			ADXN045					
38A	ADXN038						ADXN045													
45A	ADXN045																			

NUMBER OF STARTS PER HOUR ADXL... TYPES
The following data are based on an ambient temperature of 40°C, starting current of 4*In and ramp time 6 seconds. In=Rated motor current.

In	NUMBER OF STARTS PER HOUR 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																				

In	NUMBER OF STARTS PER HOUR 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						ADXL01355600			ADXL0162600			ADXL0195600							
135A	ADXL0135600						ADXL0162600				ADXL0195600			ADXL0250600						
162A	ADXL0162600					ADXL0195600			ADXL0250600				ADXL0320600							
195A	ADXL0195600						ADXL0250600					ADXL0320600								
250A	ADXL0250600				ADXL0320600															
320A	ADXL0320600																			

TYPE (with 3 controlled phases)		51ADX…B (with integrated bypass contactor)	51ADX… (predisposed for external bypass contactor)
Motor	Type	Asynchronous three phase	
	Power	7.5...132kW (400VAC)	160...710kW (400VAC)
	Rated current	17...245A	310...1200A
Supply voltage	Line voltage	208...500VAC ±10%	208...415VAC ±10%
	Auxiliary supply voltage Us	208...240VAC ±10%	208...240VAC ±10%
	Frequency	50 or 60Hz ±5% self-configurable	
Cooling system	Natural	51ADX0017...45B	—
	Forced	51ADX0060...245B	All types
PROTECTION			
Auxiliary supply		Voltage too low	
Line voltage		Phase loss, frequency out of limits, 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	
Soft starter		Overcurrent and overtemperature	
Inputs and outputs		Protection against auxiliary 24VDC short-circuit	
STARTUP AND STOP SETTINGS			
Startup		Torque ramp with maximum current control	
Stop		Free-wheel or deceleration ramp with torque control	
Braking		DC dynamic with external contactor	
DISPLAY AND PROGRAMMING			
		Integrated keypad on front, remote keypad 51ADXTAST or PC with software 51ADXSW	
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	
LEDs		"POWER", "RUN" and "FAULT"	
DIGITAL AND ANALOGUE INPUTS			
Number of inputs		3 (2 digital + 1 digital/analog)	
Input type		Volt-free contact (24VDC command provided by the soft starter)	
Inputs with fixed functions		2 inputs for starting and stopping/reset	
Multifunction input PROG.IN configured as digital input		Free-wheel stop, external alarm, motor preheat, local control, alarm inhibition, thermal protection, manual reset, cascade starting and keypad lock	
Multifunction input PROG.IN configured as analog input		Motor protection via PTC probe, 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		1NO+1NC (global alarm) and 3 NO programmable: 5A 250VAC AC1	
Outputs function		Motor running, motor started, braking, current threshold triggering, maintenance schedule, cascaded startup, PROG-IN thresholds, alarm	
ANALOG OUTPUT			
Type		0...20mA, 4...20mA or 0...10V (with external 500Ω resistor)	
Associated measure		Current, torque, motor thermal status, power factor and active power	
COMMUNICATION INTERFACES			
RS232		Setup and remote control	
RS485		Dedicated only for the connection of 51ADXTAST remote keypad	
VARIOUS FUNCTIONS			
Calendar clock		Calendar clock with backup battery	
Event memory		20 sequential storing of alarms/events with date and time	
Operational data memory		Energy meter, startup counter, motor hour meter and maintenance hour counter	
AMBIENT CONDITIONS			
Operating temperature		-10...+55°C (above 45°C, with derating of the starter current of 1.5%/°C)	
Storage temperature		-30°...+70°C	
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		IP00❶	

❶ IEC IP20 for 51ADX0017B...51ADX0125B types only.