

Altivar Soft Starter ATS130

User Manual

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Safety Information

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Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

 **DANGER**

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

 **WARNING**

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

 **CAUTION**

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Qualification of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

Intended Use

This product is intended for industrial use according to this manual.

The product may only be used in compliance with all applicable safety standard and local regulations and directives, the specified requirements and the technical data. The product must be installed outside the hazardous ATEX zone. Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented. Since the product is used as a component in an entire system, you must ensure the safety of persons by means of the design of this entire system (for example, machine design). Any use other than the use explicitly permitted is prohibited and can result in hazards.

Product related information

Read and understand these instructions before performing any procedure with this soft starter.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Only appropriately trained persons who are familiar with and fully understand the contents of the present manual and all other pertinent product documentation and who have received all necessary training to recognize and avoid hazards involved are authorized to work on and with this equipment.
- Installation, adjustment, repair and maintenance must be performed by qualified personnel.
- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Only use properly rated, electrically insulated tools and measuring equipment.
- Do not touch unshielded components or terminals with voltage present.
- Prior to performing any type of work on the equipment, block the motor shaft to prevent rotation.
- Insulate both ends of unused conductors of the motor cable.

Failure to follow these instructions will result in death or serious injury.

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Before performing work on the equipment:

- Use all required personal protective equipment (PPE).
- Disconnect all power, including external control power that may be present. Take into account that the circuit breaker or main switch does not de-energize all circuits.
- Place a "Do Not Turn On" label on all power switches related to the equipment.
- Lock all power switches in the open position.
- Verify the absence of voltage using a properly rated voltage sensing device.

Before applying voltage to the equipment:

- Verify that the work has been completed and that the entire installation cannot cause hazards.
- If the mains input terminals and the motor output terminals have been grounded and short-circuited, remove the ground and the short circuits on the mains input terminals and the motor output terminals.
- Verify proper grounding of all equipment.
- Verify that all protective equipment such as covers, doors, grids is installed and/or closed.

Failure to follow these instructions will result in death or serious injury.

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Never operate energized switch with door open.
- Turn off switch before removing or installing fuses or making load side connections.
- Do not use renewable link fuses in fused switches.

Failure to follow these instructions will result in death or serious injury.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

⚡⚠ DANGER

ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION

Do not use damaged products or accessories.

Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

This equipment has been designed to operate outside of any hazardous location. Only install this equipment in zones known to be free of a hazardous atmosphere.

⚠ DANGER

POTENTIAL FOR EXPLOSION

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

Product may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.

⚠ WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Carefully install the wiring in accordance with the EMC requirements.
- Do not operate the product with unknown or unsuitable settings or data.
- Perform a comprehensive commissioning test.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines (1).
- Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) For USA: Additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and to NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems.

This product meets the EMC requirements according to the standard IEC 60947-4-2. This device has been designed for environment A. Use of this product in a domestic environment (B environment) may cause unwanted radio interference.

⚠⚠ WARNING

RADIO INTERFERENCE

- In a domestic environment (B environment), this product may cause radio interference in which case supplementary mitigation measures may be required.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

DESTRUCTION DUE TO INCORRECT MAINS VOLTAGE

Before switching on and configuring the product, verify that it is approved for the mains voltage.

Failure to follow these instructions can result in equipment damage.

About the Book

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Document scope

The purpose of this document is:

- to give mechanical and electrical information related to the Altivar Soft Starter ATS130.
- to show how to install, wire and set this soft starter.

Validity note

Original instructions and information given in the present document have been written in English (before optional translation).

NOTE: The products listed in the document are not all available at the time of publication of this document online. The data, illustrations and product specifications listed in the guide will be completed and updated as the product availabilities evolve. Updates to the guide will be available for download once products are released onto the market.

This documentation is valid only for ATS130.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

The technical characteristics of the devices described in the present document also appear online. To access the information online:

Step	Action
1	Go to the Schneider Electric home page www.se.com .
2	In the Search box type the reference of the product or the name of a product range. • Do not include blank spaces in the reference or product range. • To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the Product Datasheets search results and click on the reference that interests you. If you entered the name of a product range, go to the Product Ranges search results and click on the product range that interests you.
4	If more than one reference appears in the Products search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click Download XXX product datasheet .

Related Documents

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.se.com. The Internet site provides the information you need for products and solutions:

- The whole catalog for detailed characteristics and selection guides
- The CAD files to help design your installation, available in over 20 different file formats
- A large quantity of White Papers, Environment documents, Application solutions, Specifications... to gain a better understanding of our electrical systems and equipment or automation
- And finally all the User Guides related to your soft starter, listed below:

Title of documentation	Reference number
Catalog: Altivar Soft Starter ATS130	DIA2ED2230101EN (English)
ATS130 Getting Started	PKR10051 (English)
ATS130 SCCR Annex	PKR10052 (English)
Video: How to start a motor with an ATS130	FAQ000245067 (English)
ATS130 User Manual	PKR10053 (English), PKR10201 (French), PKR10203 (Spanish), PKR10204 (Italian), PKR10205 (German), PKR10202 (Chinese), PKR10206 (Portuguese), PKR10207 (Turkish)
ATS130 Instruction Sheet Fan VW3G951305	PKR10054 (English)
ATS130 TeSys Deca circuit breaker Fixing Kit Instruction Sheet	PKR10055 (English)

You can download there technical publications and other technical information from our website at www.se.com/en/download.

Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of soft starters this includes, but is not limited to, terms such as **error**, **error message**, **failure**, **fault**, **fault reset**, **protection**, **safe state**, **safety function**, **warning**, **warning message**, and so on.

Among others, these standards include:

- ISO 13849-1 & 2 Safety of machinery - safety related parts of control systems
- IEC 60204-1: Safety of machinery - Electrical equipment of machines – Part 1: General requirements
- IEC 60947–1 Low–Voltage Switchgear and Control Gear – General rules
- IEC 60947–4-2 Semiconductor Motor controllers, Starters and Soft Starters

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100.

Contact us

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Technical data for designer

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Major characteristics

Electrical Data

Utilization Category		AC-53a
Ue Power supply voltage	Range	200...480 Vac
	Tolerance (%)	-15...+10%
Power supply frequency	Range	50...60 Hz
	Tolerance (%)	-5...+5%
Ie Rated operational current		38...105 A
Us control supply voltage	Range	24 Vdc
	Tolerance (%)	-10...+10%
Overload Current Profile	X% of Ie	300
	Duration (s)	5 s

Application Data

Application	Normal duty
Torque Control	No
Voltage Control	Yes
Soft Stopping	Yes by voltage ramp down.
Braking	No
Connection Inside the Delta	No
Bypass	Internal Bypass

Environment Data

NOTE: The soft starter is designed to be used in a controlled indoor environment.

Degree of protection following IEC 60529	IP20
Insulation Class following IEC 61439-1	Class II
Vibration resistance following IEC 60068-2-6	• 3 mm peak to peak at 2 to 9 Hz • 10 m/s² (1g) at 9 to 200 Hz
Shock resistance following IEC 60068-2-27	100 m/s ² (10 g) during 11 ms
Maximum ambient pollution degree following IEC 60664-1	Level 2
Maximum relative humidity following IEC 60068-2-3	5...95% without condensation or dripping water
Ambient/Surrounding temperature around the unit	-10...40 °C (14...104 °F): No derating
	up to 60 °C (up to 140 °F): Derate current I_e by: • 1.5% each additional °C (1.8 °F) for ATS130N2D38LT...ATS130N2D73LT • 2% each additional °C (1.8 °F) for ATS130N2D80LT...ATS130N2C11LT
Maximum operating altitude	• 0...1000 m (0...3300 ft): No derating
	• 1000...4000 m (3300...13100 ft): Derate current I_e by 1% each additional 100 m (328 ft)
Supply source overvoltage category required according to altitude following IEC60947-1	System earthing arrangement :
	NOTE: The supply source overvoltage category could be reduced by using an appropriate system such as an insulation transformer.
	TT or TN: OVC III
	IT or Corner-Grounded: • OVC III : Up to 2000 m (6600 ft) • OVC II : From 2000 m to 4000 m (6600 ft to 13100 ft)

Weights and dimensions

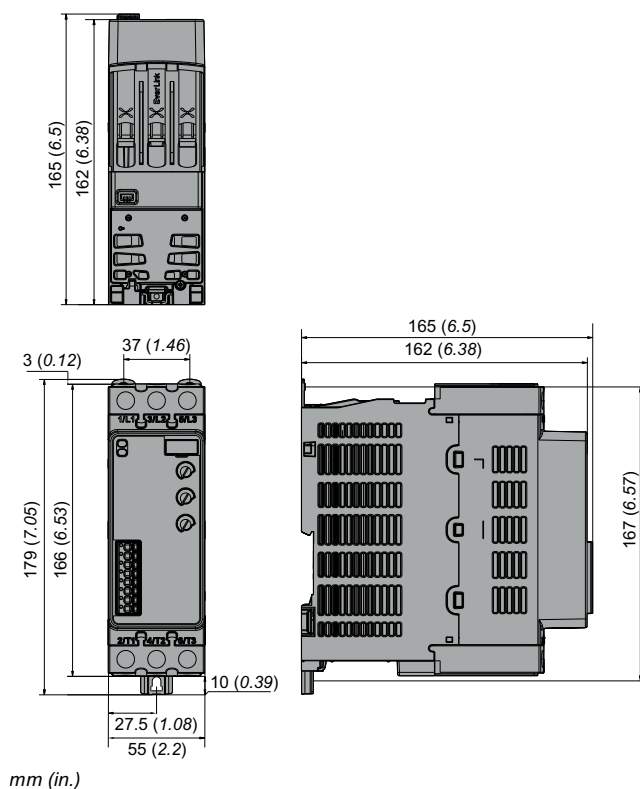
Altivar Soft Starter ATS130 CAD files can be downloaded from www.se.com.

Weights

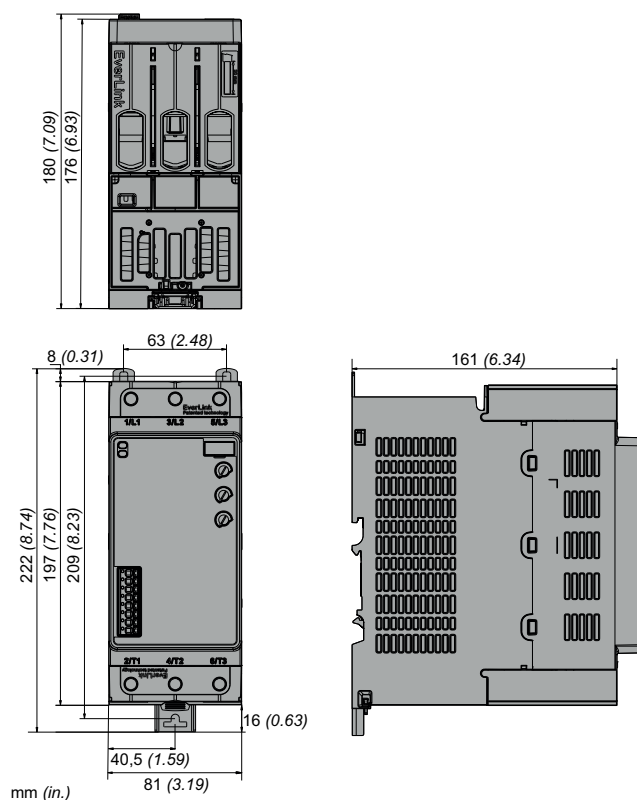
Soft Starter Catalog Number	Weight
ATS130N2D38LT...ATS130N2D73LT	1,3 kg
ATS130N2D80LT and ATS130N2C11LT	2,3 kg

Dimensions: Soft starter

ATS130N2D38LT...ATS130N2D73LT

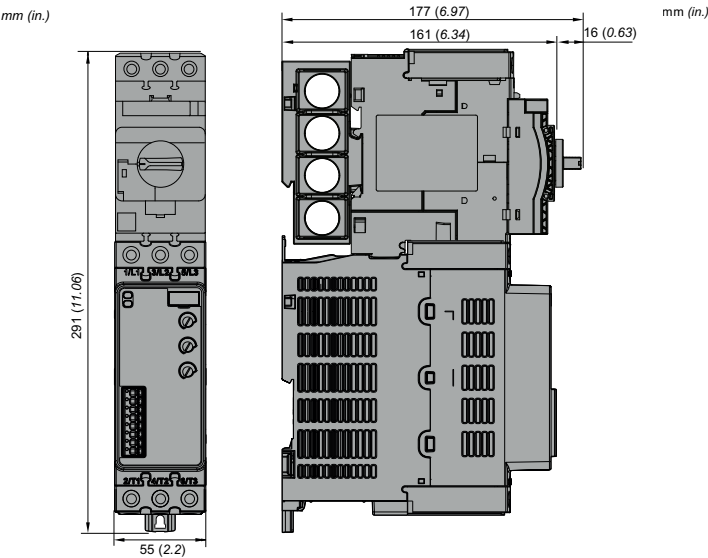


ATS130N2D80LT and ATS130N2C11LT

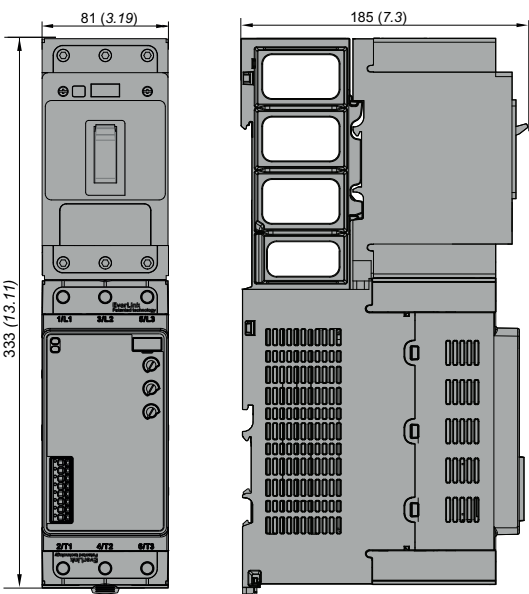


Dimensions: Soft Motor Starter

ATS130N2D38LT...ATS130N2D65LT



ATS130N2D80LT and ATS130N2C11LT



Electrical characteristics of the power section

About this Chapter

This chapter provides electrical data for the motor power for 3-Phases installation with a voltage tolerance of (-15...+10%) for ATS130 connection in-line.

Motor Power Supply (50 Hz) in kW

Soft Starter Catalog Number	Nominal Power in kW			Rated operational current I _e (A)
	230 Vac	400 Vac	440 Vac	
ATS130N2D38LT	11	18.5	22	38
ATS130N2D45LT	11	22	22	45
ATS130N2D65LT	18.5	30	37	65
ATS130N2D73LT	22	37	45	73
ATS130N2D80LT	22	45	45	80
ATS130N2C11LT	30	55	55	105

NOTE:

- For fuse and circuit-breaker ratings refer to the information provided in the catalog or to the chapter IEC Short-Circuit Current Ratings (SCCR) and Branch Circuit Protection, page 35 for IEC compliance .
- For thermal information, refer to Power dissipation and Cooling, page 19.

Motor Power Supply (60 Hz) in HP

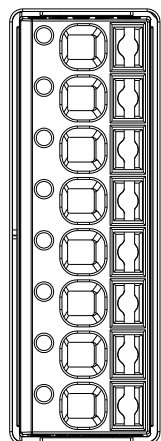
Soft Starter Catalog Number	Nominal Power in HP				Rated operational current I _e (A)
	200 Vac	208 Vac	230 Vac	460 Vac	
ATS130N2D38LT	10	10	10	25	38
ATS130N2D45LT	10	10	15	30	45
ATS130N2D65LT	20	20	20	40	65
ATS130N2D73LT	20	20	25	50	73
ATS130N2D80LT	25	25	30	60	80
ATS130N2C11LT	30	30	40	75	105

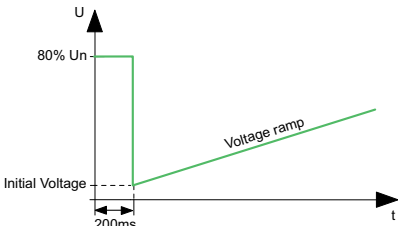
NOTE:

- For fuse and circuit-breaker ratings refer to the information provided in the chapter UL Short-Circuit Current Ratings (SCCR) and Branch Circuit Protection, page 38 for UL/ CSA compliance.
- For thermal information, refer to Power dissipation and Cooling, page 19.

Electrical characteristics of the control section

This chapter provides electrical data for the control section:



Terminal Identifier	Description	I/O type	Electrical characteristics
DQ1	Digital output 1 The transistor is completely saturate when ramp is completed.	Output	1 open collector output Power output +24 Vdc $\pm$ 10% (max 30 V) Max. current 200 mA output with an external source
BOOST	Digital Input Use the Boost to overcome any mechanical friction at start. 	Input	Power supply +24 Vdc (max 30 V) state 1: $U > 13\text{ V} - I > 0,5\text{ mA}$ state 0: $U < 5\text{ V} - I < 0,2\text{ mA}$ 10 k Ω impedance Boost Time: 200ms
P24	Power supply	Input	Power supply +24 Vdc $\pm$ 10% Maximum current: 1.5 A
DI2	Digital Input 2 To manage <i>RUN</i> command	Input	Power supply +24 Vdc (max 30 V) state 1: $U > 13\text{ V} - I > 0,5\text{ mA}$ state 0: $U < 5\text{ V} - I < 0,2\text{ mA}$ 10 k Ω impedance
DI1	Digital Input 1 To manage <i>STOP</i> command		
0V	Common	Input	0 V
R1C — R1A	NO contact relay R1 NOTE: Soft Starter Running State Relay	Output	Maximum switching capacity on resistive load is 400 000 cycles at: • 1A/250Vac • 1A/30Vdc Minimum switching capacity on resistive load at: • 2.5mA / 24Vdc Maximum switching capacity on inductive load is 100 000 cycles at: • 1A/250Vac (at $\cos \varphi = 0.4$) • 1A/30Vdc (at $\cos \varphi = 0.4$)

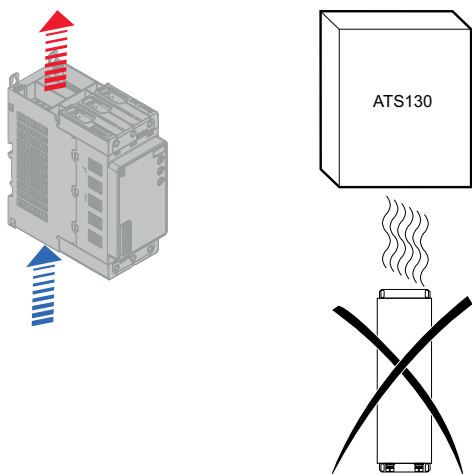
Note: Digital inputs compatible with level 1 PLC, EN/IEC 61131-2.

Note: About application diagrams and chronographs (BOOST, etc...), see Application diagrams, page 28.

Power dissipation and cooling

NOTE: Data below are provided without the optional fan VW3G941305.

Soft Starter Catalog Number	Power dissipated by the control part at Ready State	Power dissipated by the power part		Minimum air flow rate required when using a cabinet	
	(W)	At Nominal load (W)	At 300% I _e (W)	m ³ /hour	ft ³ /min
ATS130N2D38LT	< 3	7	220	9	5.3
ATS130N2D45LT	< 3	9	264	9	5.3
ATS130N2D65LT	< 3	16	397	9	5.3
ATS130N2D73LT	< 3	20	454	9	5.3
ATS130N2D80LT	< 3	16	512	9	5.3
ATS130N2C11LT	< 3	27	703	9	5.3



Respect the minimum clearances so that the cooling air can circulate from the bottom to the top of the soft starter. Refer to the chapter *Mounting Conditions*, page 21.

Do not install the soft starter above heating elements.

Mounting conditions & starting capabilities

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Mounting conditions

Introduction

⚠⚠ DANGER

HAZARD OF FIRE OR ELECTRIC SHOCK

The open type product does not provide comprehensive mitigation for fire hazards and protection against direct contact to hazardous live parts.

- Install the product inside a supplementary enclosure which provides appropriate protection against spread of fire and electric shock.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

RISK OF FIRE

The device is suitable for mounting on non-combustible surfaces only.

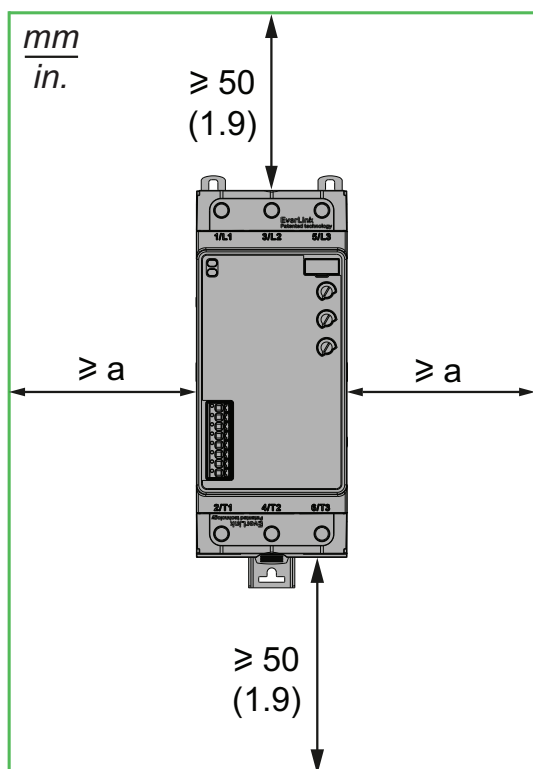
Failure to follow these instructions will result in death or serious injury.

Three mounting possibilities are available :

- Standalone
- Side by side
- Standalone with the motor circuit breaker on top

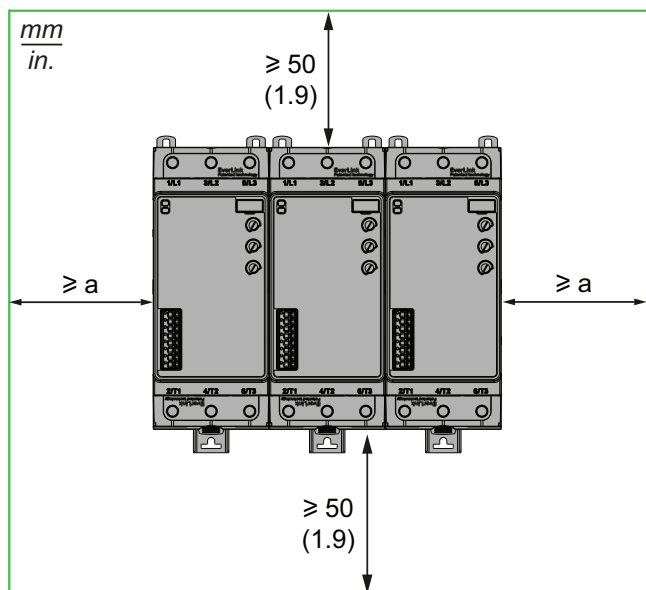
Mounting possibilities

ATS130 Standalone:



Soft starter Catalog Number	(a)
ATS130N2D38LT... ATS130N2D73LT	15 mm (0,59 in)
ATS130N2D80LT and ATS130N2C11LT	20 mm (0,79 in)

ATS130 Side by side:



Starting capabilities

Introduction

Start-up performance depends on the installation conditions to ensure correct cooling of the product and therefore continuity of service.

From an application standpoint, the overload is defined depending on service duty of the motor S1 (continuous operations) or S4 (intermittent operation) by the following attributes:

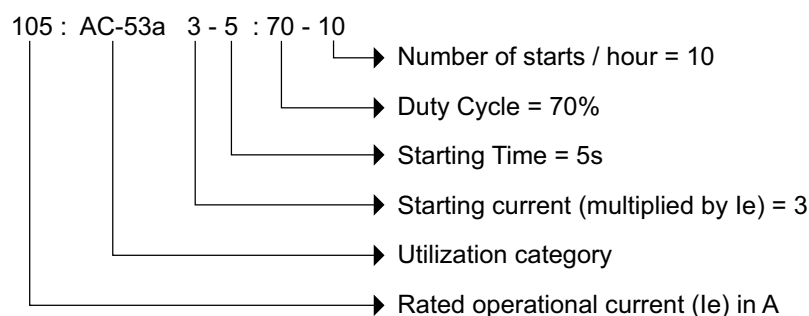
- The service factor
- The value of the overcurrent
- The duration of the overcurrent

Altivar Soft Starter ATS130 has the following overload capabilities for a standalone mounting (vertical with clearances) in Normal Duty:

Service type	Overload (starting)		Service cycle	
	Overcurrent	Duration	Nb starts/ h	Duty Cycle
S1 (continuous operation)	3 x I _e	5 s	Continuous operation after starting	
S4 (intermittent operation)			According to current ratings	70%

Environmental Conditions & Utilization Category

- **Ambient/Surrounding temperature:**
 - Ambient/Surrounding air temperature without derating: -10°C (14°F) to 40°C (104°F).
 - If the ambient/surrounding temperature exceeds 40°C (104°F) up to 60°C (140°F), I_e shall be derated by:
 - **1.5% per °C** for ATS130N2D38LT...ATS130N2D73LT.
 - **2% per °C** for ATS130N2D80LT and ATS130N2C11LT.
 - Then check the motor current in steady state will not exceed I_e.
- **Altitude:**
 - If the altitude exceeds **1000 m (3280 ft) up to 4000 m (13120 ft)**, I_e shall be **derated by 1% per 100 m (328 ft)**.
 - Then check the motor current in steady state will not exceed the calculated one.
- **The utilization category is AC-53a defined by IEC/EN 60947-4-2 :**



Determine the maximum starting capabilities per hour

The following tables show data without optional fan to determine the maximum starting capabilities per hour:

ATS130 Standalone mounting:



Soft Starter Catalog Number	Rated operational current I_e (A)	Starting current (% of I_e)	Duty Cycle (%)
ATS130N2D38LT	38	300%	70%
ATS130N2D45LT	45		
ATS130N2D65LT	65		
ATS130N2D73LT	73		
ATS130N2D80LT	80		
ATS130N2C11LT	105		

Soft Starter Catalog Number	Starting duration (s)	Number of starts (per hour)	Operation capabilities index	Starting capabilities index
ATS130N2D38LT	5	50	112	30
ATS130N2D45LT		35	104	30
ATS130N2D65LT		13	92	26
ATS130N2D73LT		10	90	26
ATS130N2D80LT		25	99	45
ATS130N2C11LT		10	90	37

ATS130 Side by Side mounting:



Soft Starter Catalog Number	Rated operational current I_e (A)	Starting current (% of I_e)	Duty Cycle (%)
ATS130N2D38LT	38	300%	70%
ATS130N2D45LT	45		
ATS130N2D65LT	65		
ATS130N2D73LT	73		
ATS130N2D80LT	80		
ATS130N2C11LT	105		

Soft Starter Catalog Number	Starting duration (s)	Number of starts (per hour)	Operation capabilities index	Starting capabilities index
ATS130N2D38LT	5	32	103	24
ATS130N2D45LT		24	98	25
ATS130N2D65LT		10	90	23
ATS130N2D73LT		7	88	22
ATS130N2D80LT		15	93	35
ATS130N2C11LT		6	88	29

ATS130 Soft Motor Starter (ATS130 + TeSys Deca circuit breaker):

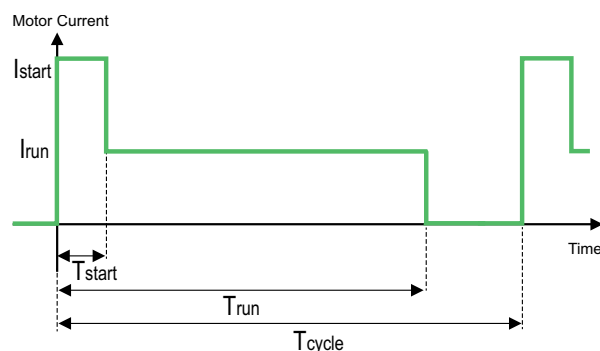
Soft Starter Catalog Number	Rated operational current I_e (A)	Starting current (% of I_e)	Duty Cycle (%)
ATS130N2D38LT	38	300%	70%
ATS130N2D45LT	45		70%
ATS130N2D65LT	65		70%
ATS130N2D80LT	80		50%
ATS130N2C11LT	105		70%

Soft Starter Catalog Number	Starting duration (s)	Number of starts (per hour)	Operation capabilities index	Starting capabilities index
ATS130N2D38LT	5	50	112	30
ATS130N2D45LT		35	104	30
ATS130N2D65LT		7	88	19
ATS130N2D80LT		25	88	45
ATS130N2C11LT		10	90	37

Increase performances using the optional fan

An optional fan (VW3G941305) can be used **to double** the number of starts.

Checking the suitability of the cycle



It is necessary to verify that ATS130 matches the machine requirement for starting capabilities, operation capabilities on the complete cycle as well as environment conditions such as ambient/surrounding temperature and altitude:

Calculation of the starting requirement of the machine

If starting current, or starting time or number of starts per hour required by the application exceeds the values mentioned in the [Selection Tables, page 24](#), the starting capabilities should be checked by calculating the starting requirements of the machines as follows:

1. Calculation of the starting requirement of the machine:

$$\text{Starting requirement of the machine} = \sqrt{\frac{(I_{\text{start}})^2 \times T_{\text{start}} \times (N_{\text{starts/h}})}{3600}}$$

With **I_{start}** in Ampere (A); **T_{start}** in second (s); **N_{starts/h}**

2. Compare the starting requirements calculated with ATS130 starting capabilities value and the table corresponding to the mounting conditions.

- Machine starting requirements < ATS130 starting capabilities : verify the operation capabilities on the complete cycle.
- Machine starting requirements > ATS130 starting capabilities :
 - Install the optional cooling fan on the ATS130 to multiply its starting capability by 2.
 - Compare the starting requirements with the starting capabilities of ATS130 with fan.

NOTE: The ATS130 operation capabilities shall be derated according to altitude (if > 1000 m (3280 ft)) and ambient/surrounding temperature (if > 40°C (104°F)).

Example of calculation:

Application requirements:

- Motor 30kW 400V ATS130N2D65LT standalone mounting with clearance
- **I_{start}** = 192A ; **T_{start}** = 15s ; **N_{starts/h}** = 4

$$\text{Starting requirement of the machine} = \sqrt{\frac{192^2 \times 15 \times 4}{3600}} = 24.8$$

Result:

(Starting requirements = 24,8) < (ATS130 starting capabilities = 26)
=> **OK**

Verification of operation capabilities on the complete cycle

$$\text{Application cycle requirement} = \frac{\sqrt{((I_{\text{start}})^2 \times T_{\text{start}} \times (N_{\text{starts/h}})) + ((I_{\text{run}})^2 \times T_{\text{run}} \times (N_{\text{starts/h}}))}}{0.6 \times I_e}$$

With **I_{start}** and **I_{run}** in Ampere (A); **T_{start}** and **T_{run}** in second (s); **N_{starts/h}**.

Verify that Application cycle requirements are lower than the operation capabilities of the ATS130 according to its mounting conditions (refer to the mounting conditions [Determine the maximum starting capabilities per hour, page 24](#)).

NOTE: The ATS130 operation capabilities shall be derated according to altitude (if > 1000 m (3280 ft)) and ambient/surrounding temperature (if > 40°C (104°F)).

Example of calculation:

Application requirements:

- Motor 30kW 400V ATS130N2D65LT standalone mounting with clearance
- **Istart** = 192A ; **Tstart** = 15s ; **Irun** = 60A ; **Trun** = 600s ; **Nbstarts/h** = 4

$$\text{Application cycle requirement} = \frac{\sqrt{(192^2 \times 15 \times 4) + (60^2 \times 600 \times 4)}}{0.6 \times 65} = 84.5$$

Result:

(Application cycle requirements = 84.5) < (ATS130 operating capabilities = 92)
=> OK

Application diagrams

DANGER

HAZARD OF ELECTRIC SHOCK OR ARC FLASH

This product is 2 phases controlled. Then the output T2 is always connected to the mains supply whatever the state of the soft starter.

Before performing any work on the installation, disconnect all power, including external control power that may be present.

Failure to follow these instructions will result in death or serious injury.

Type 1 coordination- Thermal magnetic circuit breaker as Short-Circuit Protective Device, Connection in-line, without boost function, freewheel or controlled stop, 2-wire or 3-wire

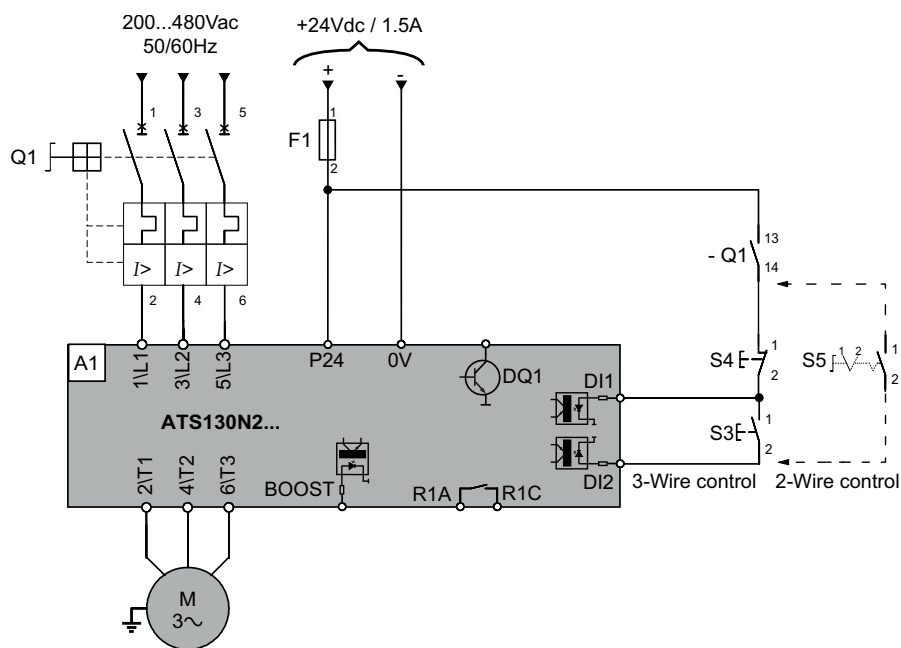
WARNING

UNANTICIPATED DIRECT ON LINE START

- Always switch on the control supply 24Vdc before applying power to the power section of the soft starter by closing the Mains Circuit Breaker (1).
- Never close the Mains Circuit Breaker to apply power on the power section of the soft starter if an error has been detected and is active.
- Verify immediately the cause of the detected error.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) For the references using GV4 circuit breaker, the option GV4AS027 can be added to prevent the closure of the circuit breaker if the 24 Vdc is not present.

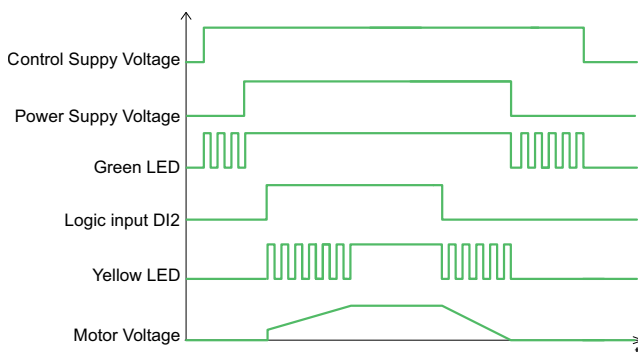


NOTE: Set the potentiometer  **Stop Time (s)** to 0 to get a freewheel.

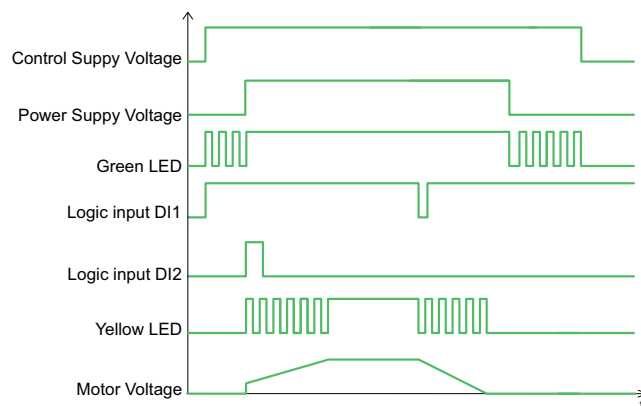
Designation	Component	Description
Q1	Circuit breaker	Thermal-magnetic motor circuit breaker
- Q1	Auxiliary contact of the circuit breaker Q1	Normally open auxiliary contact
F1	Fuse	Short circuit protection of the 24Vdc control supply
S3	Normally open push-button	RUN order
S4	Normally closed push-button	STOP order and freewheel or controlled stop
S5	Selector switch, 2 positions, normally open contact	RUN/STOP command for 2-wire control

Function charts

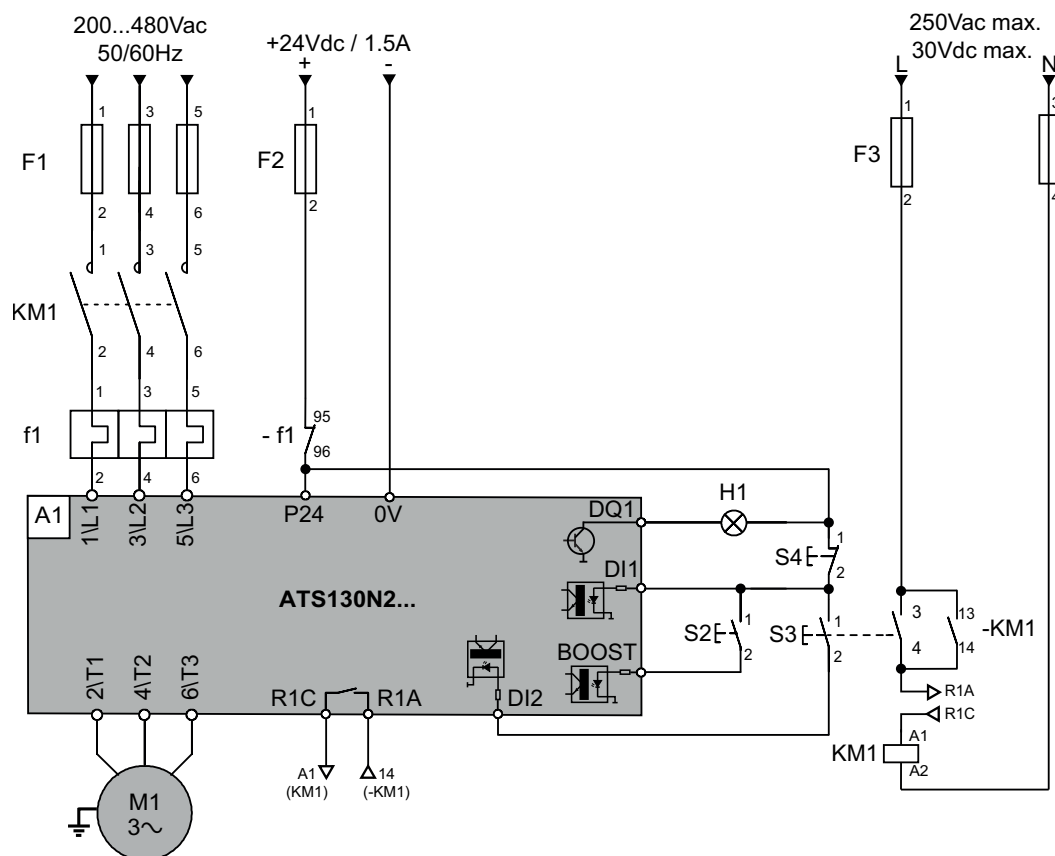
2-wire control with deceleration



3-wire control with deceleration



Type 1 coordination- fuses as Short-Circuit Protective Device, with contactor and motor overload relay, Connection in-line, with boost function, freewheel or controlled stop, 3-wire control



NOTE: Set the potentiometer



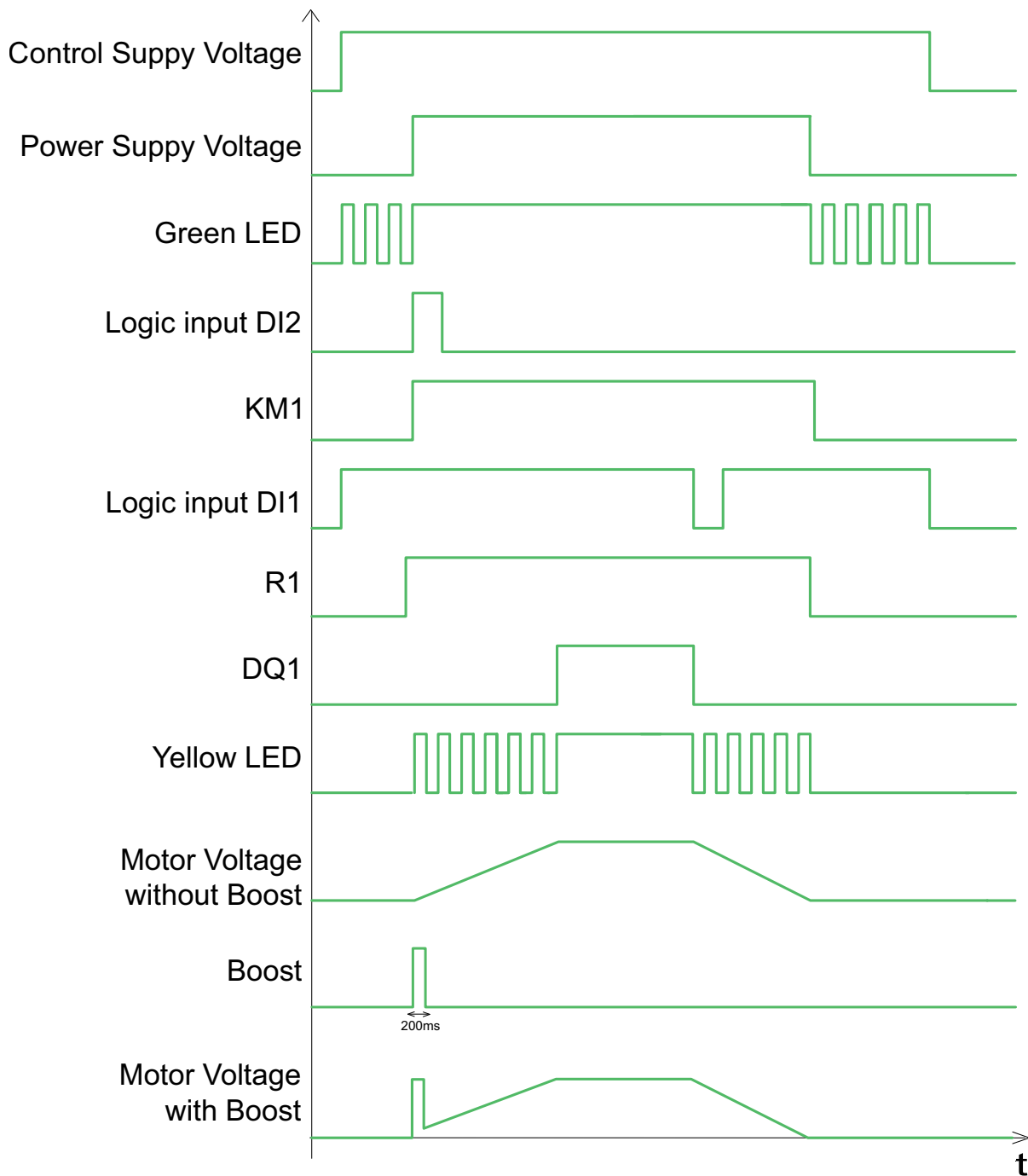
Stop Time (s) to 0 to get a freewheel.

Designation	Component	Description
F1	Fuses	Short circuit protection device for the mains
KM1	Contactor	Line contactor
-KM1	Auxiliary contact of the contactor	Auxiliary contact of the contactor on the command part
f1	Motor overload relay	Thermal protection device for the motor
- f1	Auxiliary contact of the motor overload relay	Auxiliary contact of the motor overload relay F1 inserted in the control circuit
F2	Fuse	Short circuit protection of the 24Vdc control supply
F3	Fuses	Short circuit protection of the control supply
S2	Normally open contact push-button.	RUN command for BOOST command
S3	Normally open contact push-button.	RUN command for 3-wire control

Designation	Component	Description
S4	Normally closed contact push-button	STOP command for 3-wire control
H1	Light	Presence of current

Function charts

3-wire control with deceleration



Electrical Data - Upstream Protective Device

What's in This Chapter

Upstream Protective Device – Introduction 33

Type of coordination 34

IEC Short-Circuit Current Ratings (SCCR) and Branch Circuit
Protection 35

UL Short-Circuit Current Ratings (SCCR) and Branch Circuit Protection 38

Upstream Protective Device – Introduction

Overview

⚡⚠ DANGER

INSUFFICIENT PROTECTION AGAINST OVERCURRENTS CAN CAUSE FIRE OR EXPLOSION

- Use properly rated overcurrent protection devices.
- Use the fuses/circuit breakers specified.
- Do not connect the product to a supply mains whose prospective short circuit current rating (current that flows during a short circuit) exceeds the specified maximum permissible value.
- When rating the upstream mains fuses and the cross sections as well as the lengths of the mains cables, take into account the minimum required prospective short-circuit current (Isc). Refer to the Upstream Protection Device section.
- If the minimum required prospective short-circuit current (Isc) is not available, increase the power of the transformer or decrease the length of the cables.

Failure to follow these instructions will result in death or serious injury.

The values and products for IEC compliance are specified in the present manual.

The values and products for UL/CSA compliance are specified in the annex provided with the product.

General

- The Short Circuit Protective Device (SCPD) rated to the soft starter will help protect the upstream installation in case of a short-circuit internal to the soft starter and mitigate the damage to the soft starter and its surrounding area.
- The SCPD rated to the soft starter is mandatory to help ensuring the safety of the Power Soft Starter System.
It comes in addition to the upstream branch circuit protection which is in compliance with the local regulation for electrical installation.
- The SCPD shall mitigate the damage in case of detected error condition such as an internal short-circuit of the soft starter.
- The SCPD must take into account both following characteristics...
 - a maximum prospective short-circuit current
 - a minimum required prospective short-circuit current (Isc).

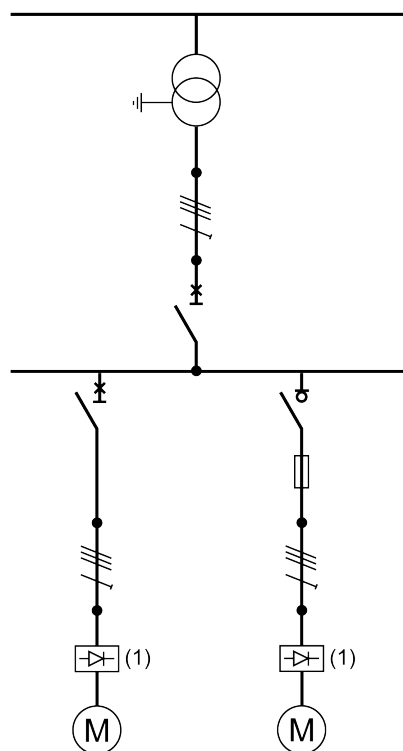
If the minimum required prospective short-circuit current (Isc) is not available, increase the power of the transformer or decrease the length of the cables

In other cases, contact your Schneider Electric Customer Care Center (CCC) www.se.com/CCC for specific selection of Short Circuit Protective Device (SCPD).

Note: The electronic power output short-circuit protection circuitry meets the requirements of IEC 60364-4-41:2005/AMD1 — Clause 411.

Wiring Diagram

This diagram shows an example of installation with both SCPD types, Circuit-breaker and Fuse link rated to the soft starter.



(1) Soft Starter

Type of coordination

The EN/IEC 60947-4-2 make a distinction between two different types of coordination, which are designated coordination type 1 and coordination type 2.

Type 1 coordination:

Type 1 coordination requires that, under short-circuit conditions, the contactor or starter shall cause no danger to persons or installation and may not be suitable for further service without repair and replacement of parts.

Type 2 coordination is not available for ATS130.

NOTE: Use of an Short-Circuit Protective Device not in compliance with the manufacturer's recommendations can invalidate the coordination.

Refer to the Schneider Electric Catalogue to select the appropriate coordination components.

IEC Short-Circuit Current Ratings (SCCR) and Branch Circuit Protection

Introduction

The combinations in the table below have been tested per IEC60947-4-2. These ratings allow proper coordination of short circuit protection.

⚡⚡ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR FIRE

The opening of the branch-circuit protective device is able to be an indication that a fault current has been interrupted.

- Current-carrying parts and other components of the controller should be examined and replaced if damaged.
- If burnout of the current element of an overload relay occurs, the complete overload relay must be replaced.

Failure to follow these instructions will result in death or serious injury.

With circuit breaker - ATS130 Soft Starter connected

Note: For devices subjected to standard fault short circuit test only, the short circuit current and voltage rating shall be marked, "Suitable For Use On A Circuit Capable Of Delivering Not More Than X rms Symmetrical Amperes, Y Volts Maximum".

Soft Starter Catalog Number	Motor (Y)			Minimum enclosure volume dm ³	Short Circuit Current Rating (X) kA	Circuit Breaker (1) Reference	Circuit Breaker accessories mandatory Reference
	230V	400V	440V				
	kW	kW	kW				
ATS130N2D38LT	11	18,5	18,5	48	25	GV3P40	GVAE11
ATS130N2D45LT	11	22	22	48	25	GV3P50	GVAE11
ATS130N2D65LT	18,5	30	30	48	25	GV3P65	GVAE11
ATS130N2D73LT	22	37	37	48	25	GV3P73	GVAE11
ATS130N2D80LT	22	45	45	63	25	GV4PB115● (2)	GV4AE11
ATS130N2C11LT	30	55	55	63	25	GV4PB115● (2)	GV4AE11

(1) set I_{rm} current of the circuit breaker (when available) to a minimum of 5 times I_e of the soft starter.

(2) ● shall be replace by B, N or S.

With circuit breaker - ATS130 Soft Motor Starter connected

Note: For devices subjected to standard fault short circuit test only, the short circuit current and voltage rating shall be marked, "Suitable For Use On A Circuit Capable Of Delivering Not More Than __X__ rms Symmetrical Amperes, __Y__ Volts Maximum".

Soft Starter Catalog Number	Motor (Y)			Minimum enclosure volume dm ³	Short Circuit Current Rating (X) kA	Circuit Breaker for Soft Motor Starter (1) (2) Reference	Circuit Breaker accessories mandatory Reference
	230V	400V	440V				
	kW	kW	kW				
ATS130N2D38LT	11	18,5	18,5	48	25	GV3P401	GVAE11 or GVAM11
ATS130N2D45LT	11	22	22	48	25	GV3P501	GVAE11 or GVAM11
ATS130N2D65LT	18,5	30	30	48	25	GV3P651	GVAE11 or GVAM11
ATS130N2D80LT	22	37	–	48	25	GV4PB80● (3)	GV4AE11
ATS130N2D80LT	–	45	45	63	25	GV4PB115● (3)	GV4AE11
ATS130N2C11LT	30	55	55	63	25	GV4PB115● (3)	GV4AE11

(1) without power terminal for direct mounting for GV3P●●1.

(2) set I_{rm} current of the circuit breaker (when available) to a minimum of 5 times I_e of the soft starter.

(3) ● shall be replaced by B, N or S.

With fuses, contactor and overload relay - ATS130 connected in-line

Note: For devices subjected to standard fault short circuit test only, the short circuit current and voltage rating shall be marked, "Suitable For Use On A Circuit Capable Of Delivering Not More Than __X__ rms Symmetrical Amperes, __Y__ Volts Maximum".

For devices subjected to high fault short circuit tests, the marking shall also include the following:

- "When protected by __Z__ Class Fuses

Soft Starter Catalog Number	Motor (Y)			Minimum enclosure volume dm ³	Short Circuit Current Rating(X) kA	Line Contactor Reference	Thermal Relay Reference
	230V	400V	440V				
	kW	kW	kW				
ATS130N2D38LT	11	18,5	18,5	48	50	LC1D40A●●	LRD340
ATS130N2D45LT	11	22	22	48	50	LC1D50A●●	LRD350
ATS130N2D65LT	18,5	30	30	48	50	LC1D65A●●	LRD365
ATS130N2D73LT	22	37	37	48	50	LC1D80A●●	LRD380
ATS130N2D80LT	22	45	45	48	50	LC1D95●●	LRD3365
ATS130N2C11LT	30	55	55	48	50	LC1D115●●	LRD4367

Soft Starter Catalog Number	Fuse holder Reference	Fuses Characteristic		
		Class (Z)	without stricker Reference	(w x l) Size
ATS130N2D38LT	GS1JD3	aM	DF2FA40	22x58
ATS130N2D45LT	GS1JD3	aM	DF2FA50	22x58
ATS130N2D65LT	GS1JD3	aM	DF2FA63	22x58
ATS130N2D73LT	GS1JD3	aM	DF2FA80	22x58
ATS130N2D80LT	GS1JD3	aM	DF2FA80	22x58
ATS130N2C11LT	GS1KD3	aM	DF2FA125	22x58

UL Short-Circuit Current Ratings (SCCR) and Branch Circuit Protection

Introduction

The combinations in the table below have been tested per UL60947-4-2. These ratings allow proper coordination of short circuit protection.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR FIRE

The opening of the branch-circuit protective device is able to be an indication that a fault current has been interrupted.

- Current-carrying parts and other components of the controller should be examined and replaced if damaged.
- If burnout of the current element of an overload relay occurs, the complete overload relay must be replaced.

Failure to follow these instructions will result in death or serious injury.

With circuit breaker - ATS130 Soft Starter connected

Note: For devices subjected to standard fault short circuit test only, the short circuit current and voltage rating shall be marked, "Suitable For Use On A Circuit Capable Of Delivering Not More Than __X__ rms Symmetrical Amperes, __Y__ Volts Maximum".

Soft Starter Catalog Number	Motor (Y)			Minimum enclosure volume in ³	Short Circuit Current Rating (X) kA	Circuit Breaker Reference	Circuit Breaker accessories mandatory Reference
	208 Vac	230 Vac	460 Vac				
	HP	HP	HP				
ATS130N2D38LT	10	10	25	2929	25	GV3P40	GVAE11
ATS130N2D45LT	10	15	30	2929	25	GV3P50	GVAE11
ATS130N2D65LT (2)	20	20	40	2929	25	GV3P65	GVAE11
ATS130N2D73LT (2)	20	25	50	2929	25	GV4PB80● (1)	GVAE11
ATS130N2D80LT	25	30	60	3840	25	GV4PB115● (1)	GV4AE11
ATS130N2C11LT	30	40	75	3840	25	GV4PB115● (1)	GV4AE11

(1) ● shall be replace by B, N or S

(2) UL certification in progress.

With circuit breaker - ATS130 Soft Motor Starter connected

Note: For devices subjected to standard fault short circuit test only, the short circuit current and voltage rating shall be marked, "Suitable For Use On A Circuit Capable Of Delivering Not More Than __X__ rms Symmetrical Amperes, __Y__ Volts Maximum".

Soft Starter Catalog Number	Motor (Y)			Minimum enclosure volume	Short Circuit Current Rating (X)	Circuit Breaker for Soft Motor Starter (1)	Circuit Breaker accessories mandatory
	208 Vac	230 Vac	460 Vac				
	HP	HP	HP				
ATS130N2D38LT	10	10	25	2929	25	GV3P401 (2)	GVAE11 or GVAM11
ATS130N2D45LT	10	15	30	2929	25	GV3P501 (2)	GVAE11 or GVAM11
ATS130N2D65LT (4)	20	20	40	2929	25	GV3P651 (2)	GVAE11 or GVAM11
ATS130N2D80LT	20	25	50	2929	25	GV4PB80● (3)	GV4AE11
ATS130N2D80LT	25	30	60	3840	25	GV4PB80● (3)	GV4AE11
ATS130N2C11LT	30	40	75	3840	25	GV4PB115● (3)	GV4AE11

(1) without power terminal for direct mounting for GV3P●●1

(2) Large spacing cover GV3G66 mandatory when associated to ATS130 (Type F motor starter), supplied separately from GV3P products, supplied altogether for GV4PB products

(3) ● shall be replace by B, N or S

(4) UL certification in progress.

With fuses, contactor and overload relay - ATS130 connected in-line

Note: For devices subjected to standard fault short circuit test only, the short circuit current and voltage rating shall be marked, "Suitable For Use On A Circuit Capable Of Delivering Not More Than __X__ rms Symmetrical Amperes, __Y__ Volts Maximum".

For devices subjected to high fault short circuit tests, the marking shall also include the following:

- "When protected by __Z__ Class Fuses"

Soft Starter Catalog Number	Motor (Y)			Minimum enclosure volume	Short Circuit Current Rating (X)	Power fuse		Line Contactor	Overload Relay
	208 Vac	230 Vac	460 Vac						
	HP	HP	HP			in ³	kA		
ATS130N2D38LT	10	10	25	2929	65	J	60	LC1D40A●●	LRD340
ATS130N2D45LT	10	15	30	2929	65	J	90	LC1D50A●●	LRD350
ATS130N2D65LT (1)	20	20	40	2929	65	J	110	LC1D80●●	LRD3361
ATS130N2D73LT (1)	20	25	50	2929	65	J	150	LC1D80●●	LRD3363
ATS130N2D80LT	25	30	60	2929	65	J	175	LC1D80●●	LRD3363
ATS130N2C11LT	30	40	75	2929	65	J	200	LC1D115●●	LRD4365

(1) UL certification in progress.

Cables Characteristics

DANGER

HAZARD OF FIRE OR ELECTRIC SHOCK

- Wire cross sections and tightening torques must comply with the specifications provided in this document.
- If you use flexible multi-wire cables for a connection with a voltage higher than 25 Vac, you must use ring type cable lugs or wire ferrules, depending on the wire gauge and the specified stripping length of the cable.

Failure to follow these instructions will result in death or serious injury.

DANGER

HAZARD OF FIRE OR ELECTRIC SHOCK

If the product is used below its rated power and you choose to reduce the wire cross section compared to the specified minimum wire cross section given at rated condition, ensure that the selected wire cross section is compliant with the duty cycle and current load of the application.

Failure to follow these instructions will result in death or serious injury.

Type of cables

This data is provided only for copper cables.

NOTE: Only use cables with solid wires or rigid stranded wires.

Only use cables with insulator heat resistance of 75°C (167°F) min.

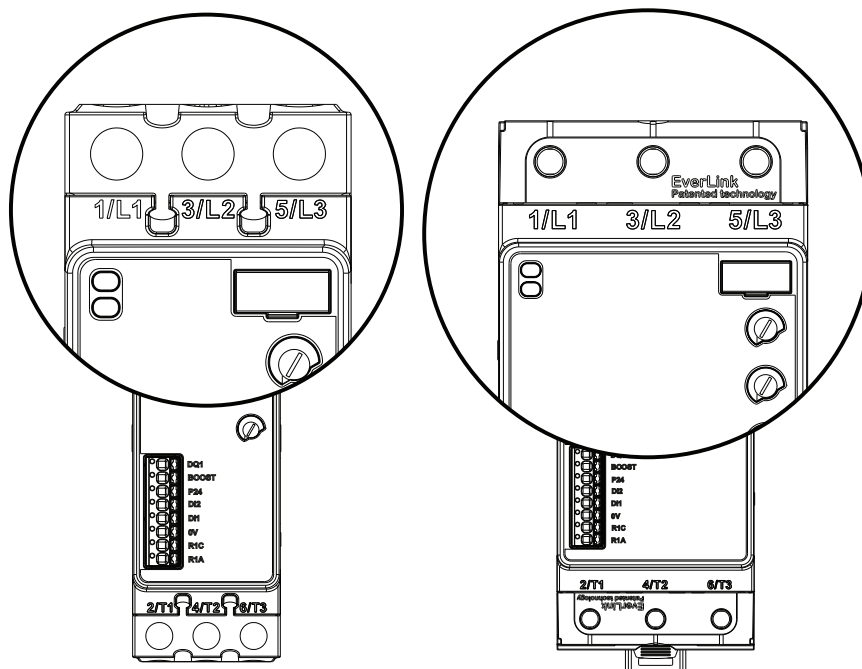
Standard linear capacity cables can be used with Altivar Soft Starter. Use of cables with lower linear capacity could increase cable length performances.

NOTE: Always keep the control cables away from the power cables.

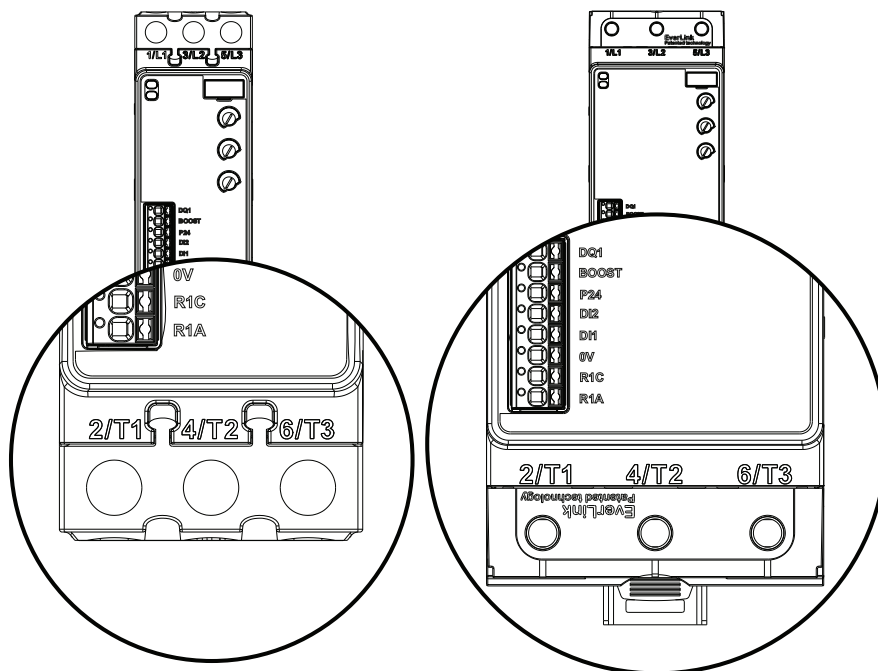
Power Part Description

Information provided in this chapter are for the Power Part:

- Supply Mains connections (1/L1, 3/L2, 5/L3)



- Motor connections (2/T1, 4/T2, 6/T3)



Power Part – Recommended wire cross section and Cable Stripping Length

Soft Starter Catalog Number	Wire Cross Section at rated condition mm ² (AWG)	Tightening torque N.m (lb.in)	Cable Stripping Length mm (in.)
ATS130N2D38LT	10 (AWG6)	8 (70)	16 ± 0.5 (0.63 ± 0.02)
ATS130N2D45LT	10 (AWG6)	8 (70)	
ATS130N2D65LT	16 (AWG4)	8 (70)	
ATS130N2D73LT	25 (AWG2)	8 (70)	
ATS130N2D80LT	25 (AWG2)	9 (80)	20 ± 0.5
ATS130N2C11LT	35 (AWG1)	9 (80)	(0.79 ± 0.02)
NOTE: Minimum permissible cross sections are provided, if the product is used below its rated power. In this case, ensure that the wire cross section is compliant with the duty cycle and current load.			

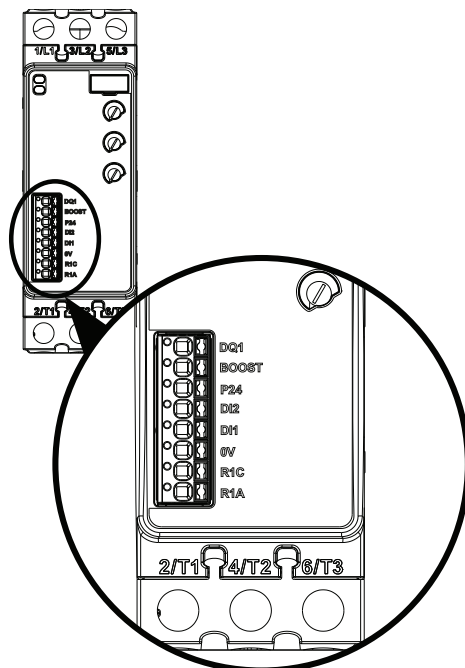
Power Part – Minimum and maximum wire cross section accepted by power terminal blocks

Soft Starter Catalog Number	Minimum Mechanical Wire Cross Section mm ² (AWG)	Maximum Mechanical Wire Cross Section mm ² (AWG)
ATS130N2D38LT	1 x 1 (AWG16)	2 x 35 (AWG2)
ATS130N2D45LT	1 (AWG16)	
ATS130N2D65LT	1 (AWG16)	
ATS130N2D73LT	1 (AWG16)	
ATS130N2D80LT	2 (AWG14)	2 x 70 (AWG2/0)
ATS130N2C11LT	2 (AWG14)	
NOTE: The mechanical characteristics concern power terminal only and do not take into account the cabling equipment (cable clamp, cable gland,...) that are designed for the rated conditions.		
NOTE: Minimum permissible cross sections are provided, if the product is used below its rated power. In this case, ensure that the wire cross section is compliant with the duty cycle and current load.		

Control Part Description

Information provided in this chapter are for the Control Part:

DQ1, BOOST, P24, DI2, DI1, 0V, R1C, R1A



The control terminals are installed with one-way plug-in connectors. The terminals are approved for stranded conductors and solid conductors. Use wire cable ends (ferrules) if possible.

Terminals are spring loaded, no tightening torque is required.

Control Part – Recommended wire cross section and Cable Stripping Length

Those values are given for a single wire per terminal. Use a shunt to create a bridge between terminals if necessary.

Minimum relay output wire cross section mm ² (AWG)	Other minimum wire cross section mm ² (AWG)	Maximum connection capacity mm ² (AWG)	Cable Stripping Length mm (in.)
0.75 (18)	0.5 (20)	2.5 (13)	10 ± 0.5 (0.39 ± 0.02)

Storage and Shipping

Ambient/ Surrounding temperature	Transport	-	-40...70° C (-13...158 °F)
	Storage		-25...70° C (-13...158 °F)
Relative humidity	Transport	IEC 60068-2-3	5...95% without condensation or dripping water
	Storage		
Vibration resistance	Transport	IEC 60068-2-6	• 3 mm peak to peak at 2 to 9 Hz • 10 m/s² (1g) at 9 to 200 Hz
	Storage		
Shock resistance	Transport	IEC 60068-2-27	100 m/s ² (10 g) during 11 ms
	Storage		

Online Datasheet and Documentation

For more information related to transport and storage, refer to the datasheet on www.se.com or via the product QR code and go to **Characteristics**.

Access to the Online Datasheet and Documentation

Scan the QR code in front of the soft starter to get the product datasheet (see **Characteristics**) and online documentation.



Librairie Schneider		EN	
	Range	Altivar Soft Starter ATS130	
	Ref.	ATS130SDC11L2	
	Desc.	Altivar Soft Starter ATS130, 750A, 208...690V AC, control supply 110...230V AC	
	SN	XXXXXXXXXXXX	
Characteristics		>	
Documentation		>	

Installing the product

What’s in This Part

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Mounting	49
Wiring Instructions.....	63

Before beginning the installation

What's in This Chapter

Inspecting the Product 48

Conductive foreign objects may cause parasitic voltage.

 **DANGER**

ELECTRIC SHOCK AND/OR UNANTICIPATED EQUIPMENT OPERATION

- Keep foreign objects such as chips, screws or wire clippings from getting into the product.
- Verify correct seat of seals and cable entries in order to avoid deposits and humidity.

Failure to follow these instructions will result in death or serious injury.

Inspecting the Product

Unpack the soft starter and verify that it is not damaged.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

 **DANGER**

ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION

Do not use damaged products or accessories.

Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

Step	Action
1	Verify that the reference number printed on the nameplate corresponds to the purchase order.
2	Before performing any installation work inspect the product for visible damage.

Store the product in its original packaging if not installed immediately after inspection.

Mounting

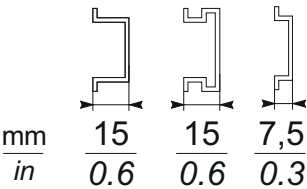
What's in This Chapter

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Mounting and removing the optional fan VW3G941305	62

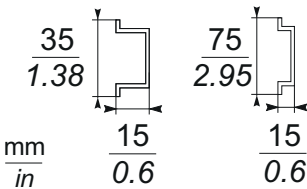
Mounting the ATS130 on a DIN rail

DIN rail characteristics

ATS130N2D38LT...ATS130N2D73LT



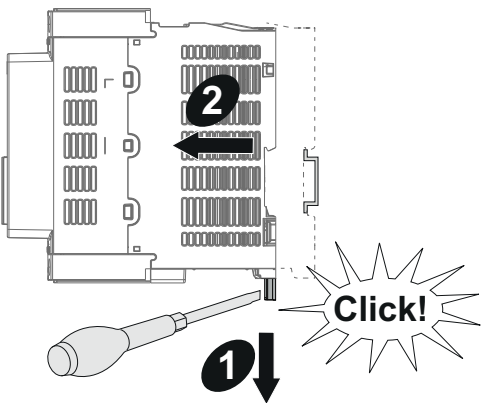
ATS130N2D80LT and
ATS130N2C11LT



Mounting

By pushing the product	By pressing on the tab						
Only for : mm in <table border="1"><thead><tr><th>mm</th><th>in</th></tr></thead><tbody><tr><td>15</td><td>0.6</td></tr><tr><td>15</td><td>0.6</td></tr></tbody></table> 1 2 Click!	mm	in	15	0.6	15	0.6	1 2 3 Click!
mm	in						
15	0.6						
15	0.6						

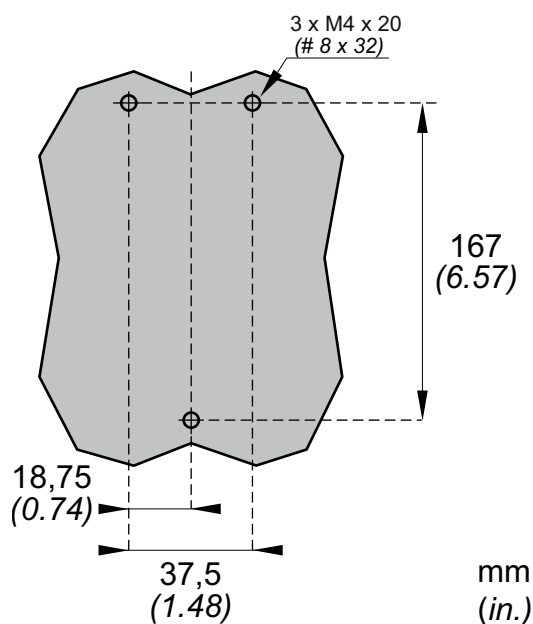
Removing



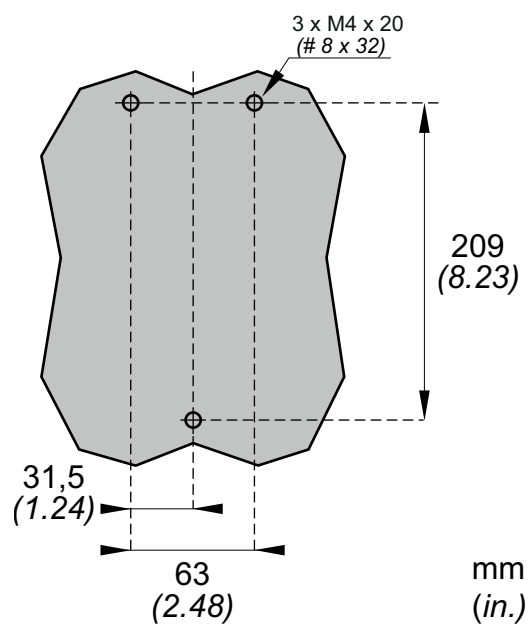
Mounting the ATS130 on a back plate with screws

Screw characteristics

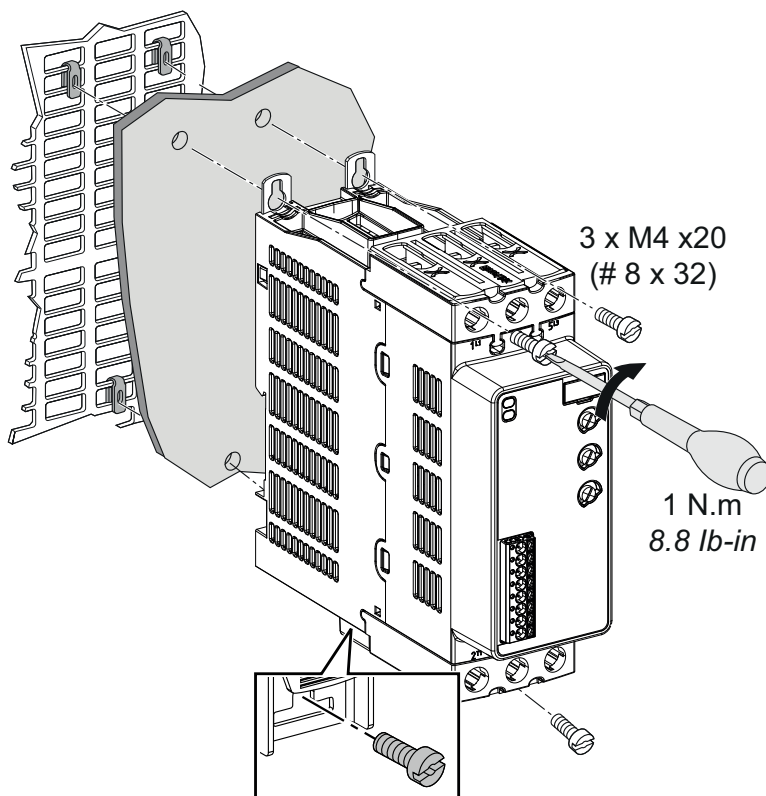
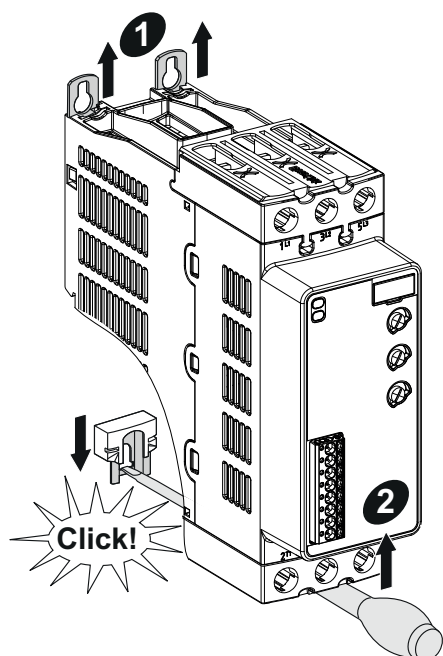
ATS130N2D38LT...ATS130N2D73LT



ATS130N2D80LT and ATS130N2C11LT



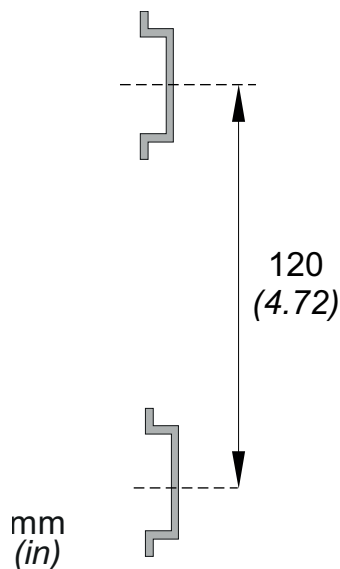
Mounting and removing



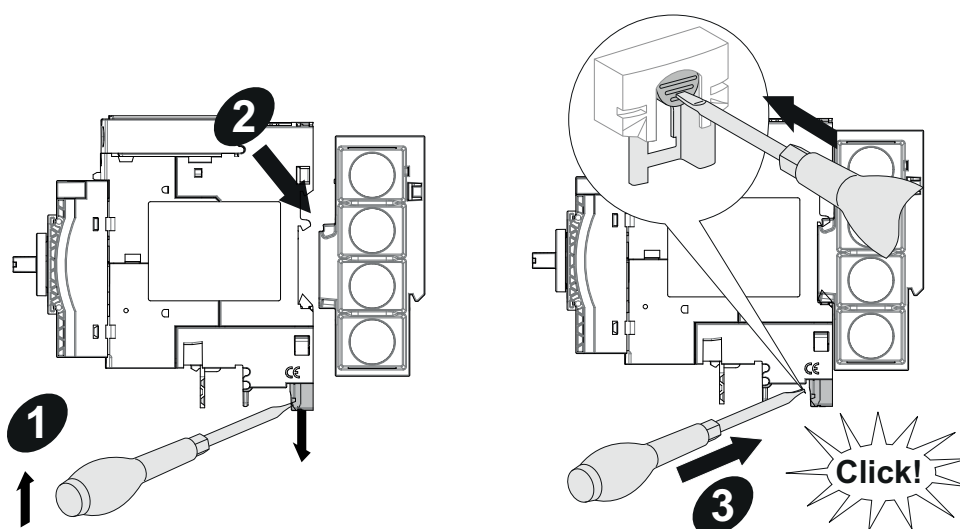
Mounting of the ATS130 Soft Motor Starter on DIN rails for ATS130N2D38LT...ATS130N2D73LT

1. Install DIN rails

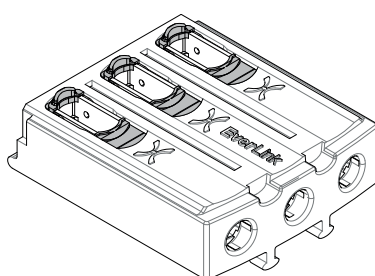
Distance between DIN Rails:



2. Assembling Tesys Deca Frame 3 and the fixing kit VW3G921304



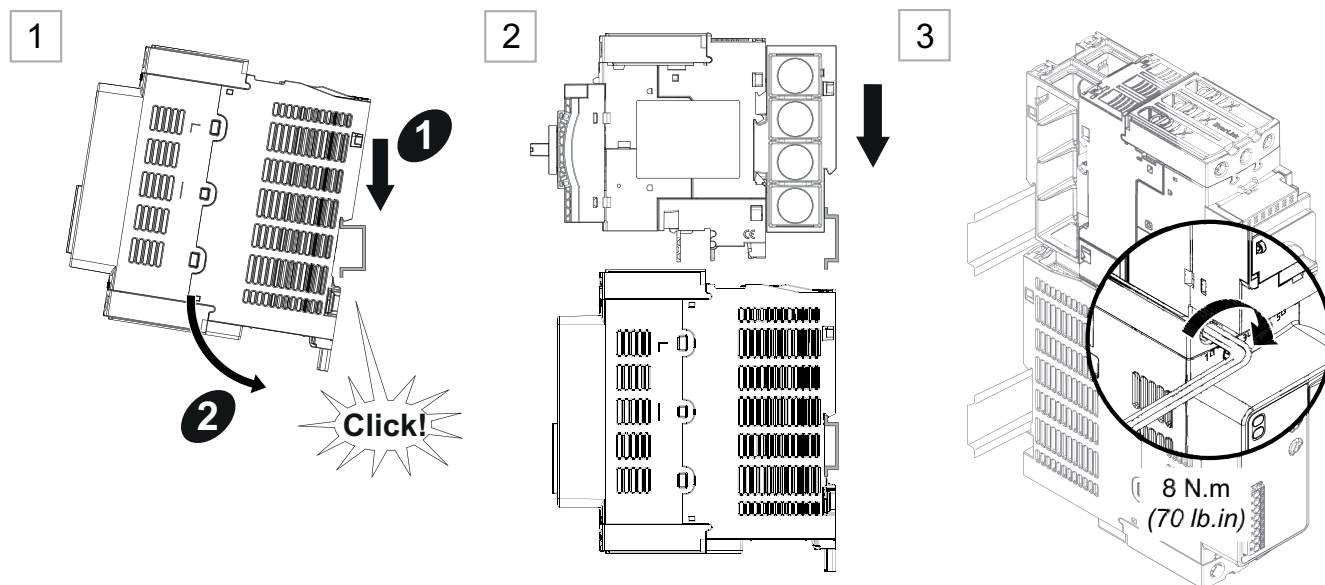
3. Open the Everlink terminal block



Make sure the upper terminal block of the ATS130 is fully open before assembling the Tesys Deca Frame 3 circuit breaker and the soft starter.

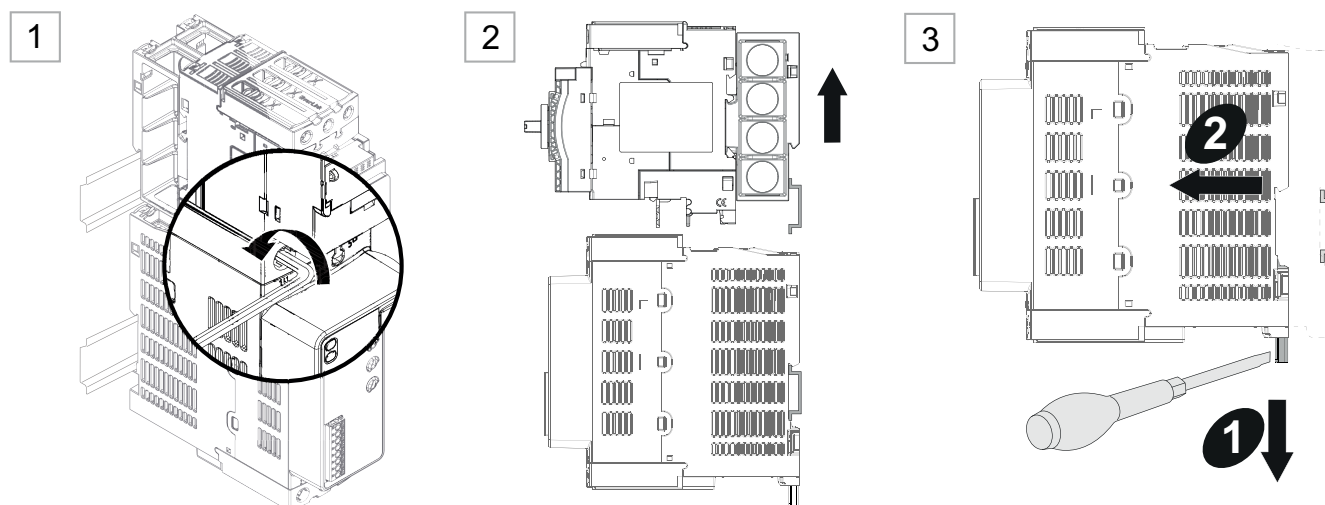
4. Mounting

Note: For more information about mounting of the soft starter on a DIN rail, refer to Mounting the ATS130 on DIN rail, page 50.



5. Removing

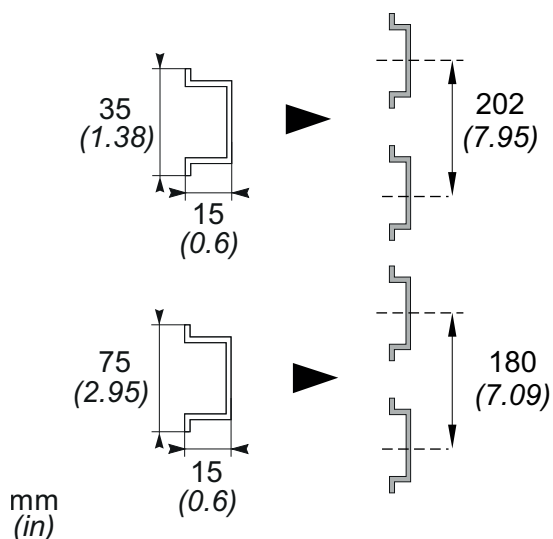
Note: For more information about removing the soft starter from a DIN rail, refer to Mounting the ATS130 on DIN rail, page 50.



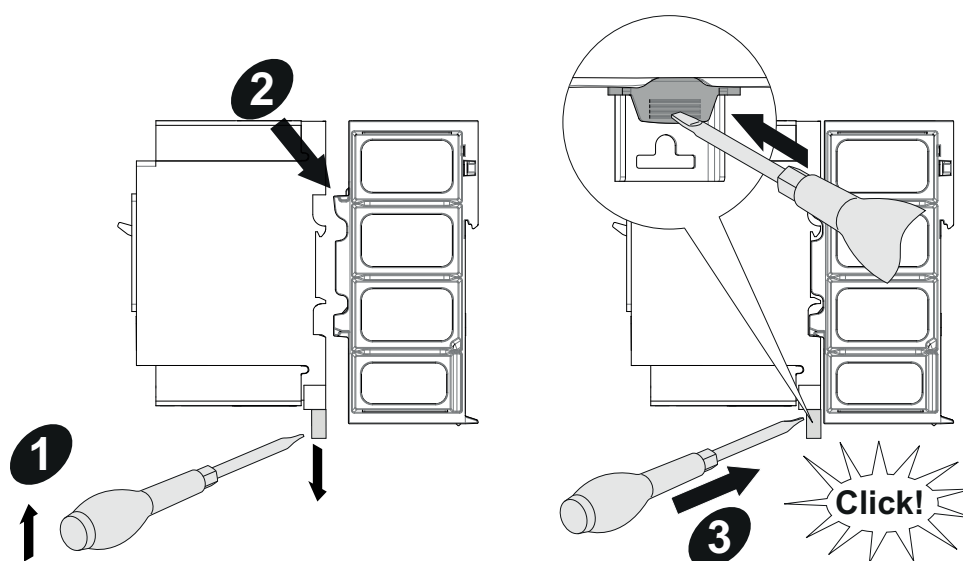
Mounting of the ATS130 Soft Motor Starter on DIN rails for ATS130N2D80LT and ATS130N2C11LT

1. Install DIN rails

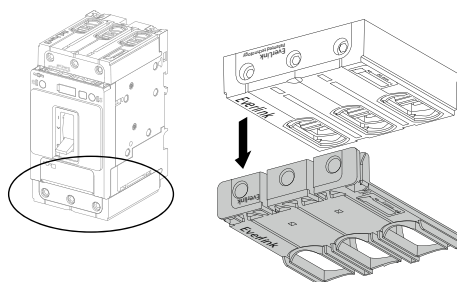
Distance between DIN Rails:



2. Assembling Tesys Deca Frame 4 and the fixing kit VW3G921305

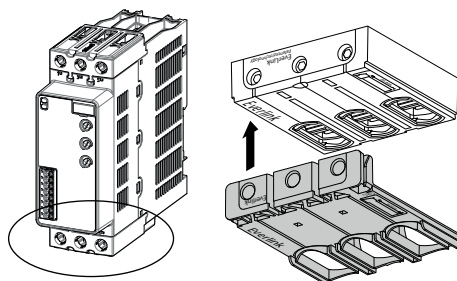


3. Remove the large spacing cover from the bottom of the Tesys Deca Frame 4 circuit breaker



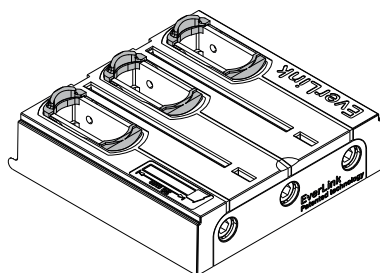
Make sure to remove the large spacing cover of the lower terminal block of the Tesys Deca Frame 4 circuit breaker before proceeding with the assembly.

4. Put the large spacing cover to the bottom of the ATS130 Soft Starter



Make sure to put the large spacing cover on the lower terminal block of the ATS130 Soft Starter.

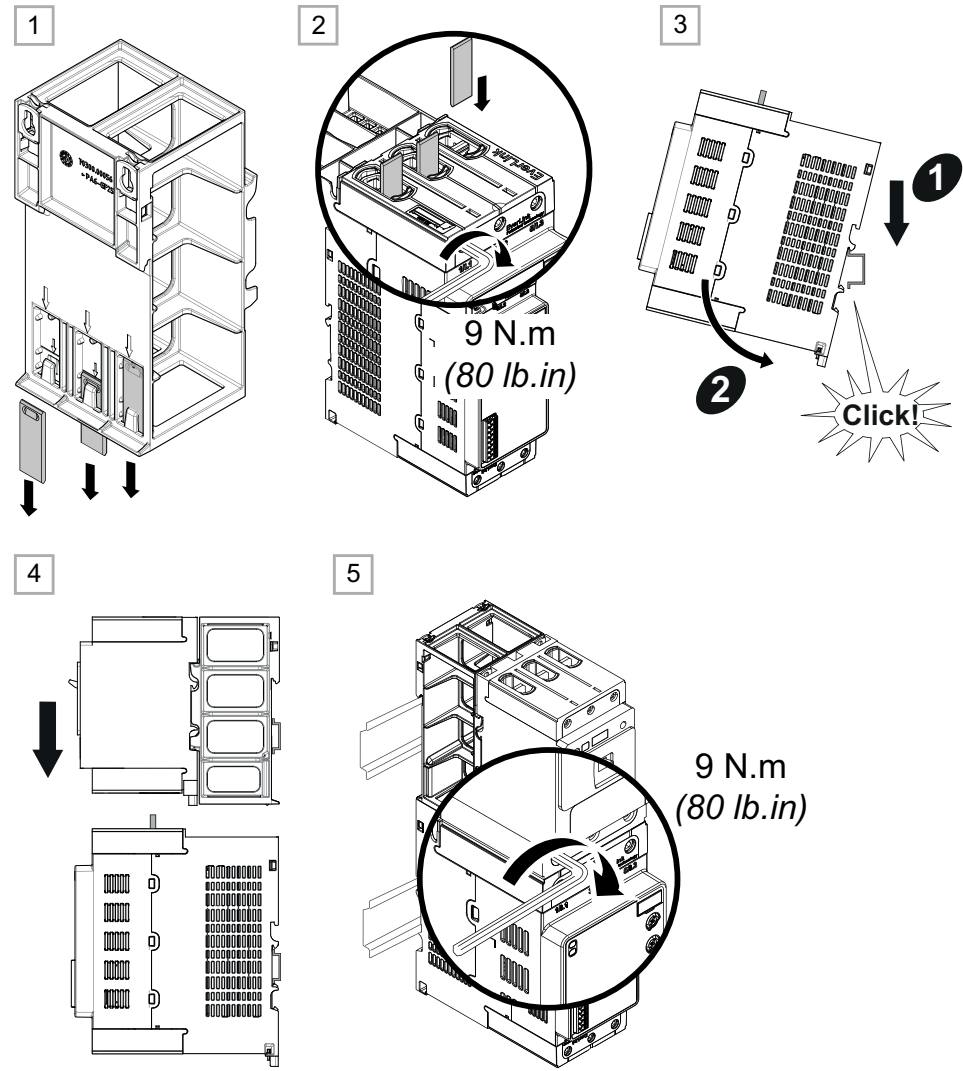
5. Open the Everlink terminal block



Make sure the upper terminal block of the ATS130 and the lower terminal block of the Tesys Deca Frame 4 circuit breaker is fully open before proceeding with the assembly.

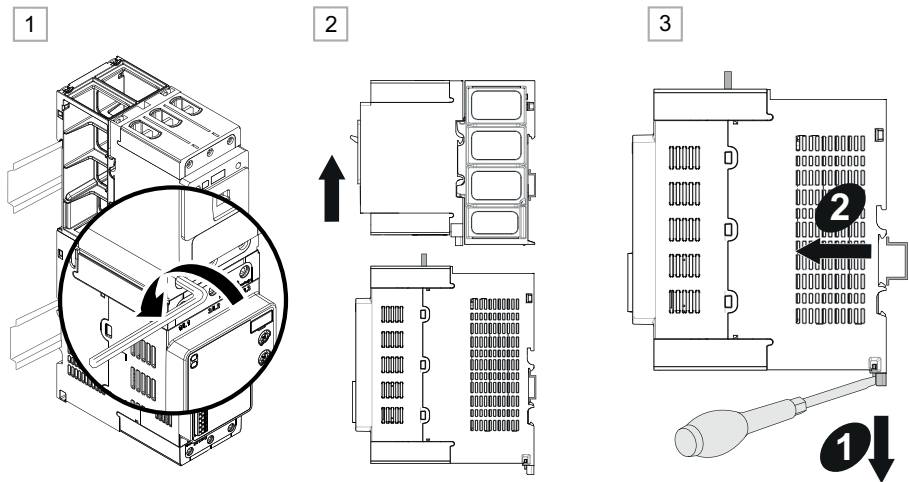
6. Mounting

Note: For more information about mounting of the soft starter on a DIN rail, refer to Mounting the ATS130 on DIN rail, page 50.



7. Removing

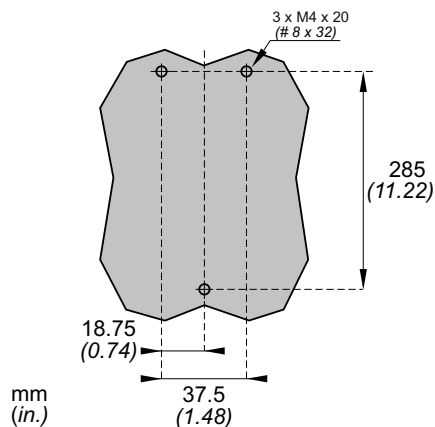
Note: For more information about removing the soft starter from a DIN rail, refer to Mounting the ATS130 on DIN rail, page 50.



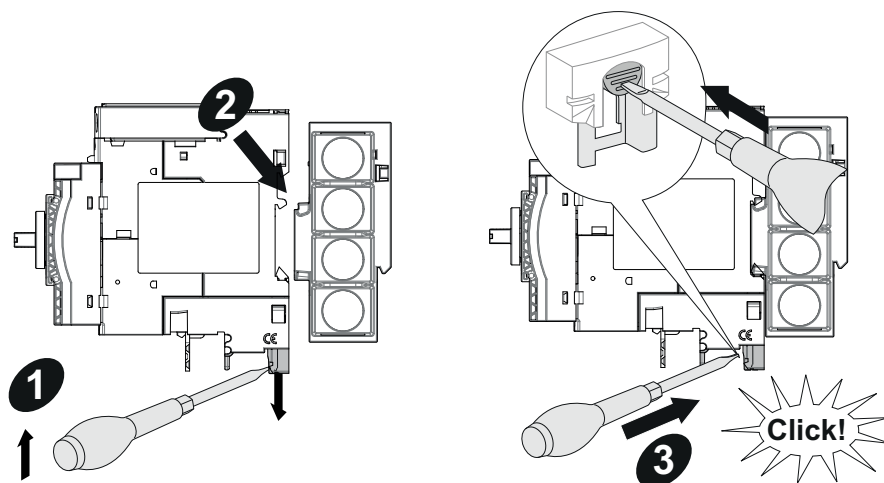
Mounting the ATS130 Soft Motor Starter on a back plate with screws for ATS130N2D38LT...ATS130N2D73LT

1. Prepare the plate

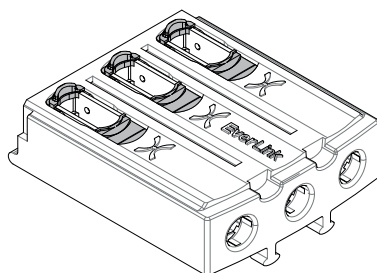
Distance between fixing holes:



2. Assembling Tesys Deca Frame 3 and the fixing kit VW3G921304

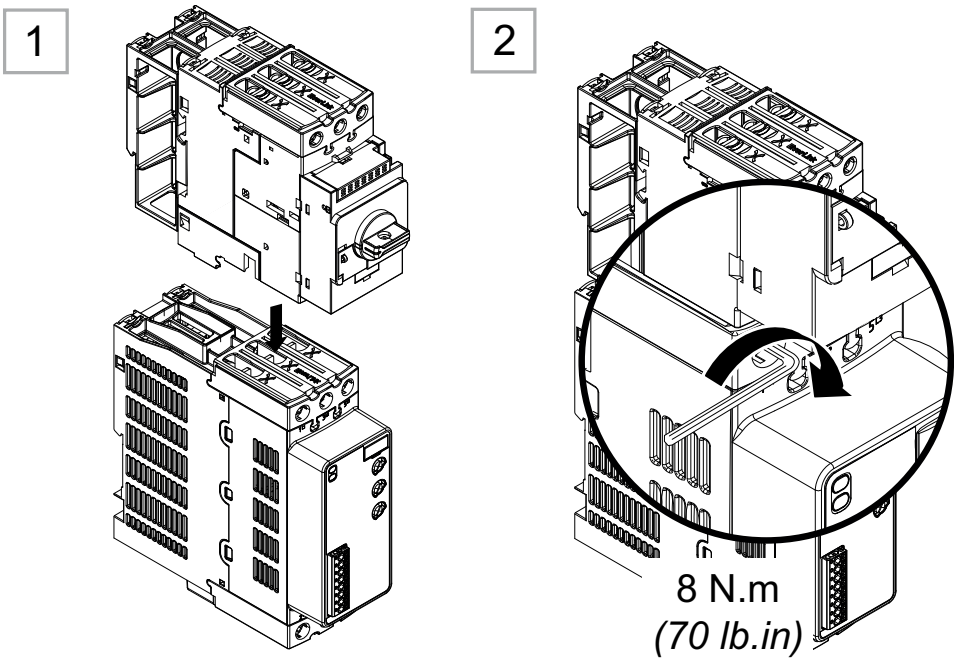


3. Open the Everlink terminal block

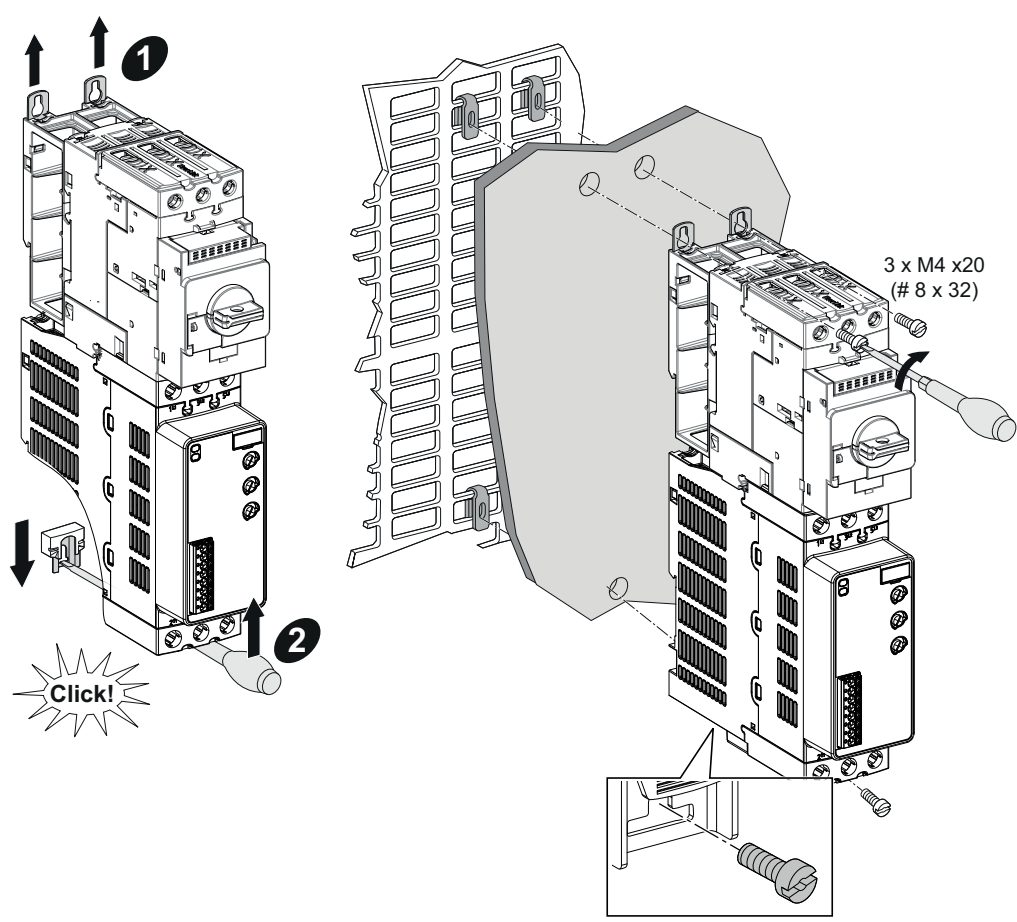


Make sure the upper terminal block of the ATS130 is fully open before assembling the Tesys Deca Frame 3 circuit breaker and the soft starter.

4. Assembling Tesys Deca Frame 3 and the ATS130



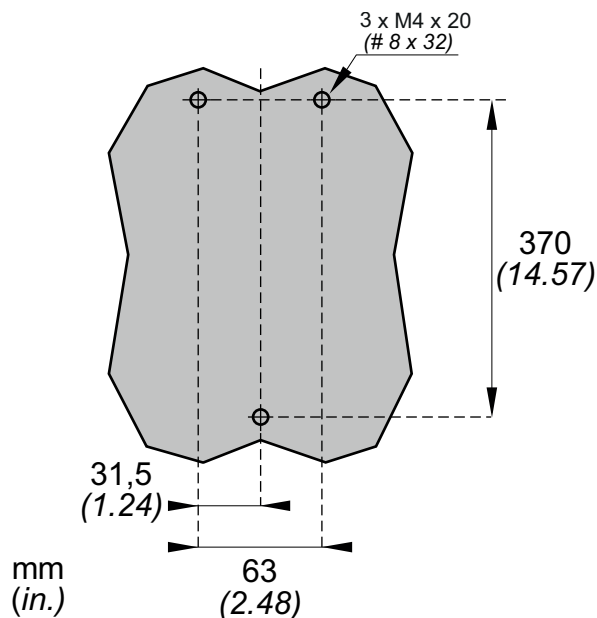
5. Mounting



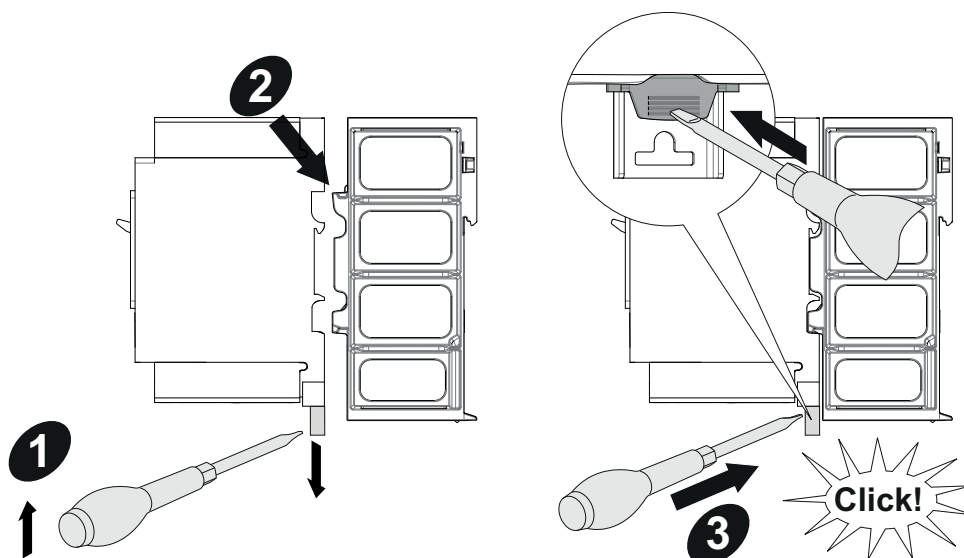
Mounting the ATS130 Soft Motor Starter on a back plate with screws for ATS130N2D80LT and ATS130N2C11LT

1. Prepare the plate

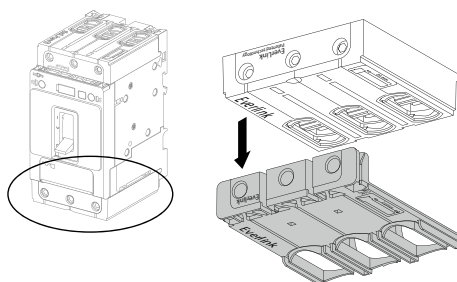
Distance between fixing holes:



2. Assembling Tesys Deca Frame 4 and the fixing kit VW3G921305

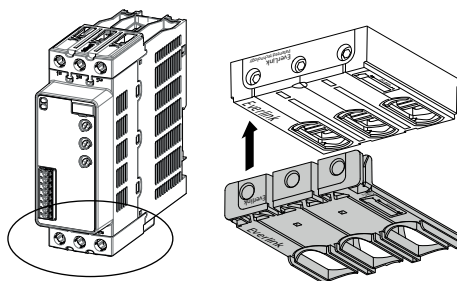


3. Remove the large spacing cover from the bottom of the Tesys Deca Frame 4 circuit breaker



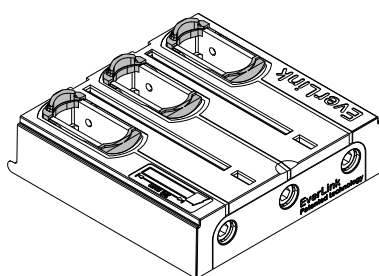
Make sure to remove the large spacing cover of the lower terminal block of the Tesys Deca Frame 4 circuit breaker before proceeding with the assembly.

4. Put the large spacing cover to the bottom of the ATS130 Soft Starter



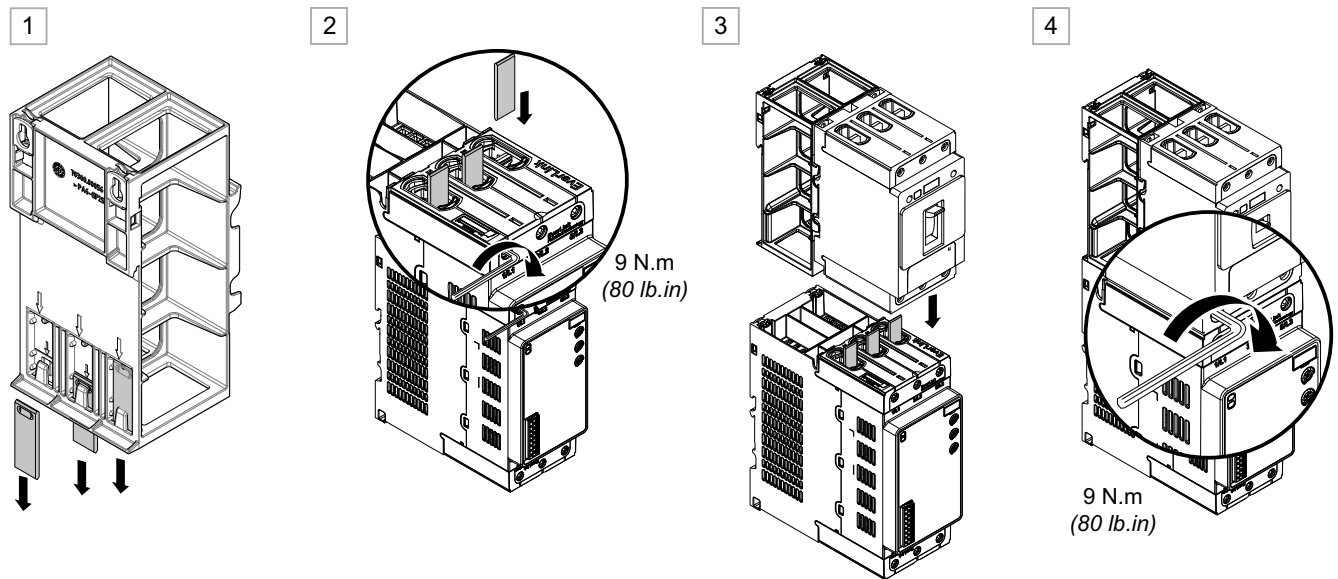
Make sure to put the large spacing cover on the lower terminal block of the ATS130 Soft Starter.

5. Open the Everlink terminal block

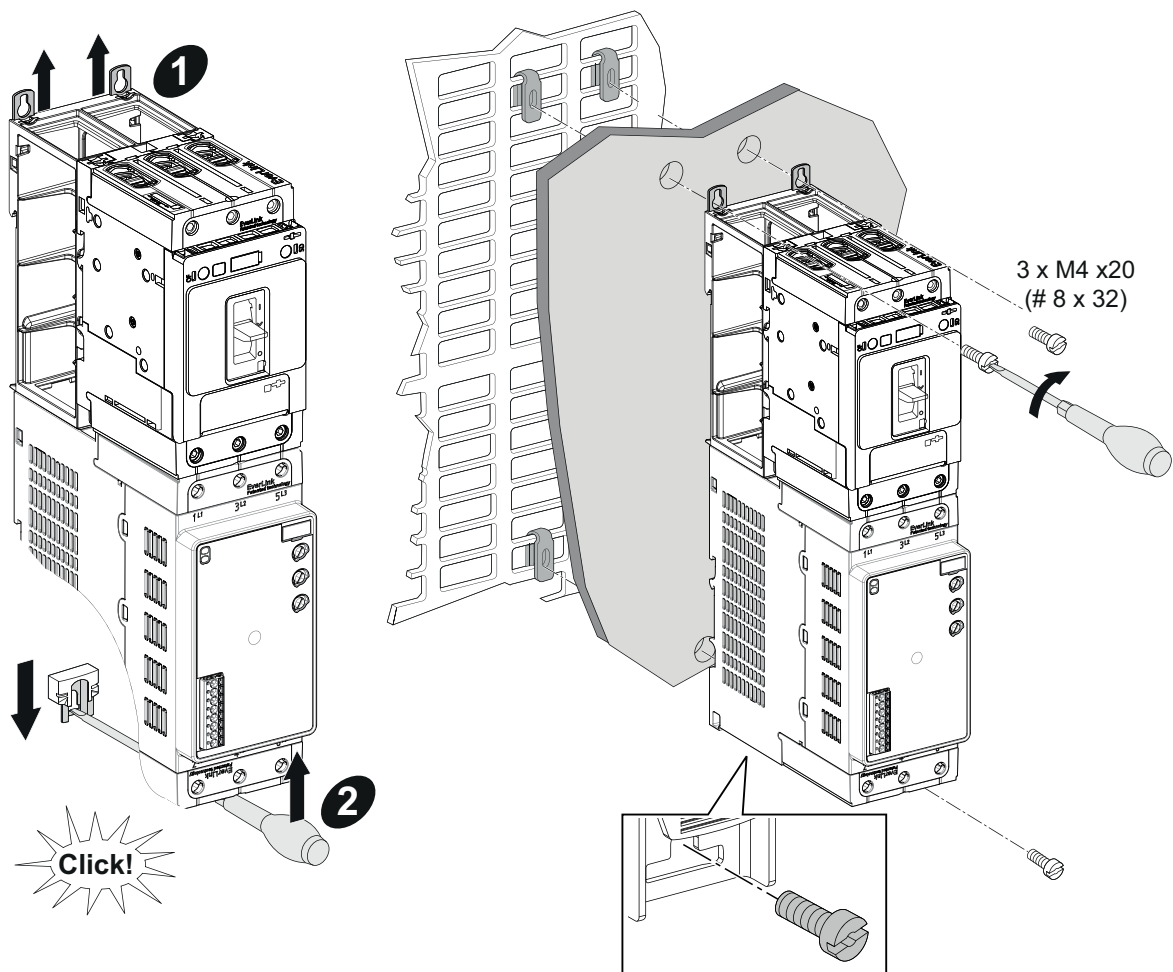


Make sure the upper terminal block of the ATS130 and the lower terminal block of the Tesys Deca Frame 4 circuit breaker is fully open before proceeding with the assembly.

6. Assembling Tesys Deca Frame 4 and the ATS130



7. Mounting

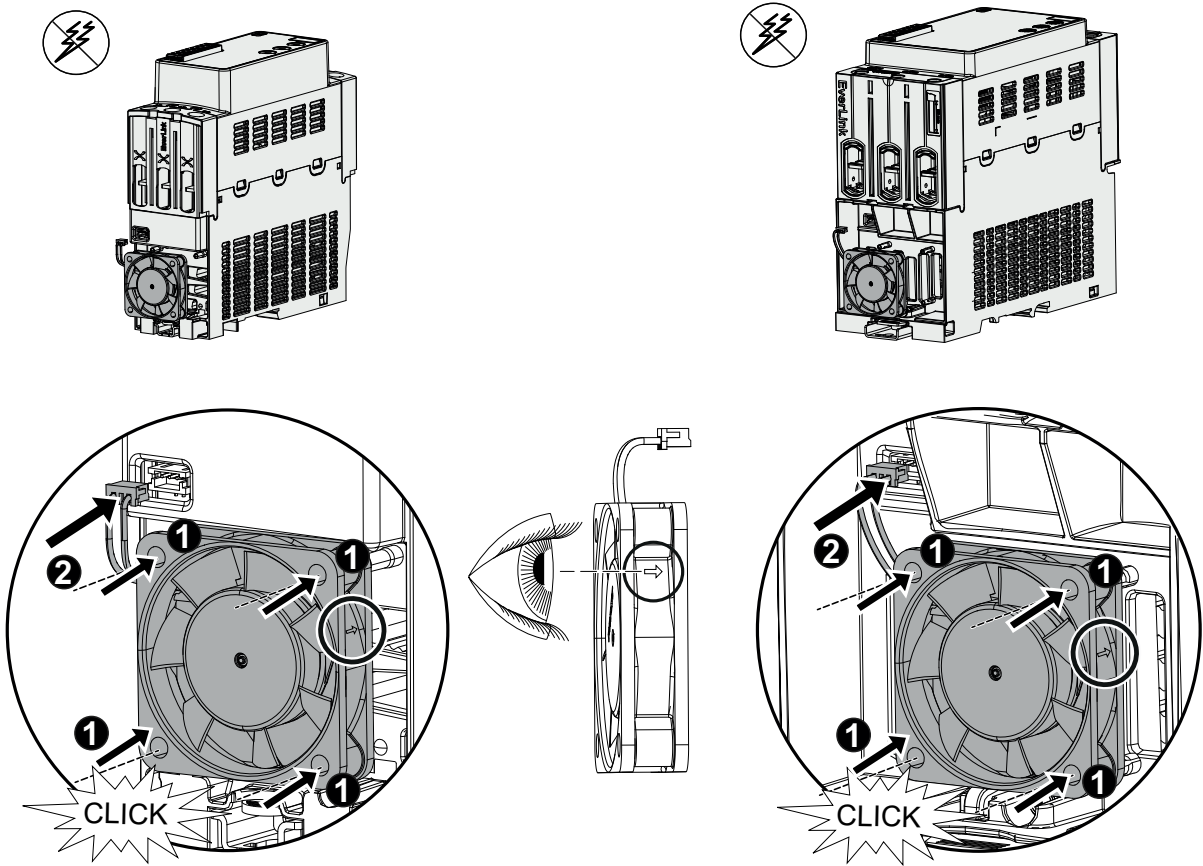


Mounting and removing the optional fan VW3G941305

Mounting the fan on ATS130

ATS130N2D38LT, ATS130N2D45LT,
ATS130N2D65LT, ATS130N2D73LT

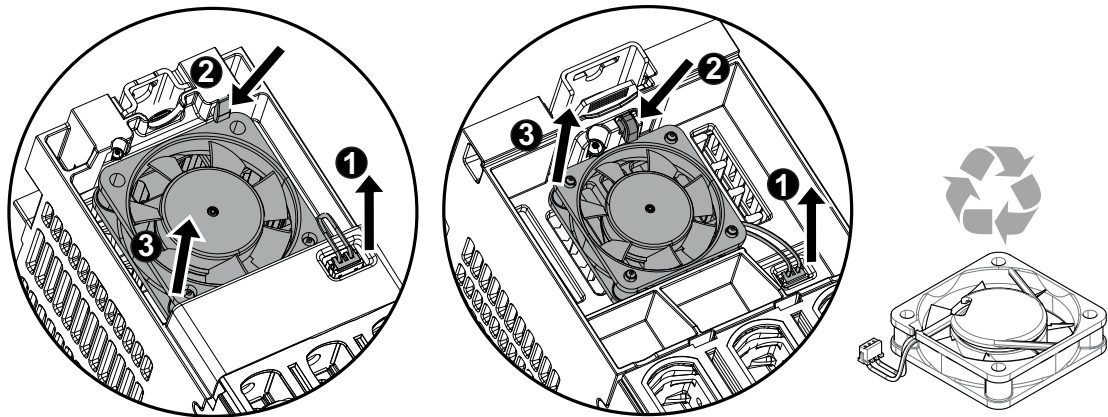
ATS130N2D80LT, ATS130N2C11LT



Removing the fans on ATS130

ATS130N2D38LT, ATS130N2D45LT,
ATS130N2D65LT, ATS130N2D73LT

ATS130N2D80LT
ATS130N2C11LT



Wiring Instructions

Connection Instructions

⚠️⚠️ DANGER

INSUFFICIENT PROTECTION AGAINST OVERCURRENTS CAN CAUSE FIRE OR EXPLOSION

- Use properly rated overcurrent protection devices.
- Use the fuses/circuit breakers specified.
- Do not connect the product to a supply mains whose prospective short circuit current rating (current that flows during a short circuit) exceeds the specified maximum permissible value.
- When rating the upstream mains fuses and the cross sections as well as the lengths of the mains cables, take into account the minimum required prospective short-circuit current (I_{sc}). Refer to the Upstream Protection Device section.
- If the minimum required prospective short-circuit current (I_{sc}) is not available, increase the power of the transformer or decrease the length of the cables.

Failure to follow these instructions will result in death or serious injury.

Equipment Grounding

⚠️⚠️ DANGER

ELECTRIC SHOCK CAUSED BY INSUFFICIENT GROUNDING

- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of the entire installation.
- The cross section of the protective ground conductor must comply with the applicable standards.
- Do not use conduits as protective ground conductors; use a protective ground conductor inside the conduit.
- Do not consider cable shields to be protective ground conductors.

Failure to follow these instructions will result in death or serious injury.

Power Part – Recommended wire cross section and Cable Stripping Length

Soft Starter Catalog Number	Wire Cross Section at rated condition mm ² (AWG)	Tightening torque N.m (lb.in)	Cable Stripping Length mm (in.)
ATS130N2D38LT	10 (AWG6)	8 (70)	16 ± 0.5 (0.63 ± 0.02)
ATS130N2D45LT	10 (AWG6)	8 (70)	
ATS130N2D65LT	16 (AWG4)	8 (70)	

Soft Starter Catalog Number	Wire Cross Section at rated condition mm ² (AWG)	Tightening torque N.m (lb.in)	Cable Stripping Length mm (in.)
ATS130N2D73LT	25 (AWG2)	8 (70)	
ATS130N2D80LT	25 (AWG2)	9 (80)	20 ± 0.5
ATS130N2C11LT	35 (AWG1)	9 (80)	(0.79 ± 0.02)
NOTE: Minimum permissible cross sections are provided, if the product is used below its rated power. In this case, ensure that the wire cross section is compliant with the duty cycle and current load.			

Control Part – Recommended wire cross section and Cable Stripping Length

Those values are given for a single wire per terminal. Use a shunt to create a bridge between terminals if necessary.

Minimum relay output wire cross section mm ² (AWG)	Other minimum wire cross section mm ² (AWG)	Maximum connection capacity mm ² (AWG)	Cable Stripping Length mm (in.)
0.75 (18)	0.5 (20)	2.5 (13)	10 ± 0.5 (0.39 ± 0.02)

Checking Installation

Check List: Before Switching On

Unsuitable settings or unsuitable data or unsuitable wiring may trigger unintended movements, trigger signals, damage parts and disable monitoring functions.

⚠ WARNING	
UNANTICIPATED EQUIPMENT OPERATION	
• Only start the system if there are no persons or obstructions in the zone of operation. • Verify that a functioning emergency stop push-button is within reach of all persons involved in the operation. • Do not operate the product with unknown settings or data. • Verify that the wiring is appropriate for the settings. • Never modify a parameter unless you fully understand the parameter and all effects of the modification. • When commissioning, carefully run tests for all operating states, operating conditions and potential error situations. • Anticipate movements in unintended directions or oscillation of the motor.	
Failure to follow these instructions can result in death, serious injury, or equipment damage.	

Check List: Mechanical Installation

Verify the mechanical installation of the entire soft starter system:

Step	Action	✓
1	Does the installation meet the specified distance requirements?	
2	Did you tighten all fastening screws according to the specified tightening torque? Is the DIN rail clamp/hook system locked ?	

Check List: Electrical Installation

Verify the electrical connections and the wiring:

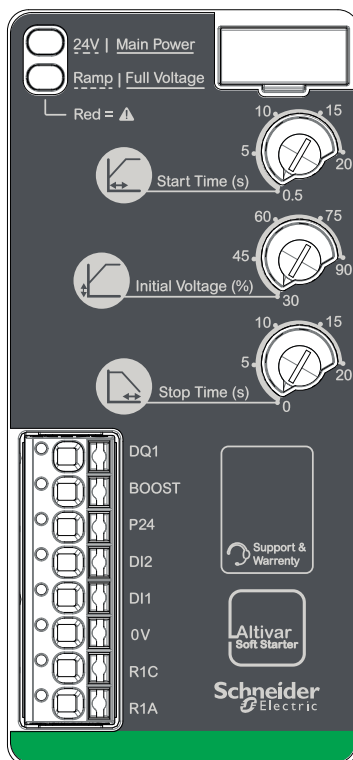
Step	Action	✓
1	Did you connect all protective Ground conductors?	
2	The correct tightening of the screws may be altered during assembly and wiring phases of the soft starter. Verify and adjust the tightening of all terminal screws to the specified nominal torque.	
3	Do all fuses and circuit breaker have the correct rating; are the fuses of the specified type? Refer to the information provided in the Catalog.	
4	Did you connect or insulate all wires at the cable ends?	
5	Did you properly separate and insulate the control and power wiring?	
6	Did you properly connect and install all cables and connectors?	
7	Do all plug-in terminals colors and markings correspond to the colors and marking of the control block	
8	Did you properly connect the signal wires?	

Check List: Covers and Seals

Verify that all devices, doors and covers of cabinet are properly installed to meet the required degree of protection.

Commissioning

HMI



Roles of potentiometers

- The potentiometer  **Start Time (s)** is used to set the time of the voltage ramp.
Range: (0.5...20).
- The potentiometer  **Initial Voltage (%)** is used to set the starting voltage.
Range: (30...90).
- The potentiometer  **Stop Time (s)** is used to set the deceleration ramp.
Range: (0...20).

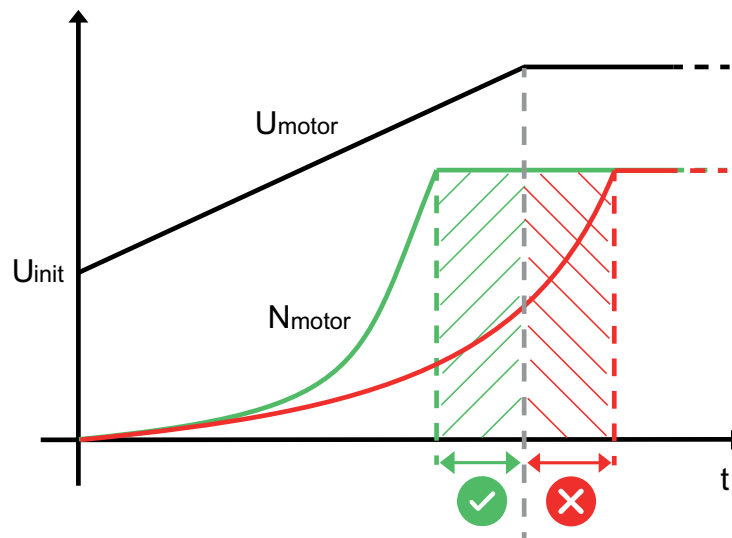
NOTE: Set this potentiometer to **0** to get a freewheel.

Steps for setting up the starter the first time

Step	Action	LEDs Status																														
1	Set the thermal current of the protection device (circuit breaker or motor overload relay).	 24V Main Power  Ramp Full Voltage																														
2	Set the potentiometers in accordance with the application. Refer to the following table as guidelines: <table><tr><th>Application</th><th> Start Time (s)</th><th> Initial Voltage (%)</th><th> Stop Time (s)</th><th>BOOST Function</th></tr><tr><td>Pump</td><td>15</td><td>30</td><td>10</td><td>No</td></tr><tr><td>Fan</td><td>20</td><td>30</td><td>0</td><td>No</td></tr><tr><td>Scroll compressor</td><td>0.5</td><td>50</td><td>0</td><td>No</td></tr><tr><td>Piston</td><td>10</td><td>75</td><td>0</td><td>Yes</td></tr><tr><td>Conveyor</td><td>10</td><td>75</td><td>10</td><td>Yes</td></tr></table>		Application	 Start Time (s)	 Initial Voltage (%)	 Stop Time (s)	BOOST Function	Pump	15	30	10	No	Fan	20	30	0	No	Scroll compressor	0.5	50	0	No	Piston	10	75	0	Yes	Conveyor	10	75	10	Yes
Application	 Start Time (s)		 Initial Voltage (%)	 Stop Time (s)	BOOST Function																											
Pump	15		30	10	No																											
Fan	20		30	0	No																											
Scroll compressor	0.5		50	0	No																											
Piston	10	75	0	Yes																												
Conveyor	10	75	10	Yes																												
3	Supply the control part.																															
4	Check that DI2 is not energized.																															
5	Supply the power part.																															
6	Energize DI2 to start the motor.	 24V Main Power  Ramp Full Voltage																														
7	Verify the rotation direction.	 24V Main Power  Ramp Full Voltage																														
8	Open DI1 to stop the motor. NOTE: In 2–wire control, open DI2 to stop the motor.	 24V Main Power  Ramp Full Voltage																														

Adjustment Methodology

NOTE: The motor must reach its nominal speed before the internal bypass is closed:



Observations		Actions
The motor does not start.	➔	Use BOOST by activating BOOST DI.
Inertia lower than expected	➔	Decrease: 1. Initial Voltage (%) 2. or Start Time (s)
Inertia stronger than expected	➔	Increase: 1. Initial Voltage (%) 2. or Start Time (s)
Abrupt stop. Example: water hammer	➔	Increase Stop Time (s)
Too long stop. Example: (pump application) check valve not closed.	➔	Decrease Stop Time (s)

Status LEDs and Troubleshooting

About the LED

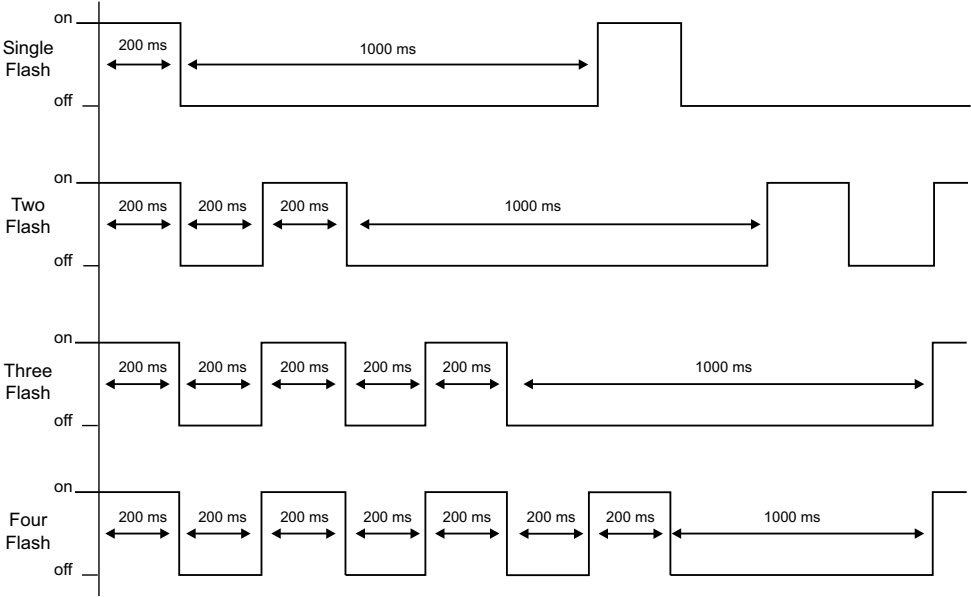
The LEDs can have several states.

For example:

: LED Lights up.

: LED Off.

: LED Flashing once (or more). See graphs below:



Normal behavior

LEDs Status	Cause
 24V Main Power Ramp Full Voltage	Control part and power part energized.
 24V Main Power Ramp Full Voltage	Control part energized but power part not energized.
 24V Main Power Ramp Full Voltage	Acceleration Ramp up.
	Deceleration Ramp down.
 24V Main Power Ramp Full Voltage	Steady state and running.

Troubleshooting

If the cause of the error that has triggered the transition to the operating state Fault disappears, the device resumes normal operation.

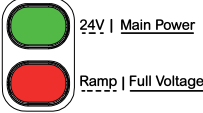
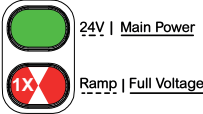
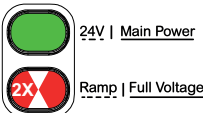
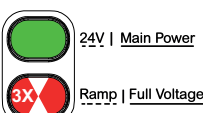
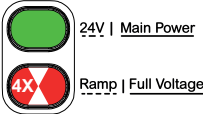
Depending on the type of command (2 wires or 3 wires), it can result in immediate restart.

⚠ WARNING

UNANTICIPATED EQUIPMENT OPERATION

Verify that using the 2 wires command does not result in unsafe conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

LEDs Status	Error	Cause	Remedy	Reset of errors
Lights up 	- Missing load voltage. - Phase failure. - Missing load. Note: When motor is in steady state (bypass mode) this failure can not be detected.	Phase L1/L2/L3 is missing or fails/ collapses when the motor is operating.	Check the mains connection.	Reset of errors by switch-off the control voltage.
		Motor phase T1/T2/ T3 is not connected.	Check the motor connection.	
		Bypass relay or thyristor module is Short-circuited.	Return device to manufacturer.	
Flashes 1x 	Control voltage too low.	Control voltage is outside the permissible range.	Check control voltage.	Auto reset when error is no longer present. Auto start if start command.
Flashes 2x 	Bypass error.	Bypass relay does not close in bypass mode.	Return device to manufacturer.	Reset of errors by restarting the ATS130. Apply: 2 successive RUN for RESET 1 RUN for restart
Flashes 3x 	Overload.	Motor and load too large. Start cycle higher than allowed.	Check the motor and load, and check the soft starter's dimension.	Auto reset when error is no longer present at heatsink temperature below 55°C. Auto start if start command.
	Overtemperature.	Fan missing or not working.	Check or add fan. Check cabinet ventilation.	
Flashes 4x 	Watchdog failure.	Software malfunction.	Return device to manufacturer.	Reset of errors by switch-off the control voltage.

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As standards, specifications, and design change from time to time,
please ask for confirmation of the information given in this publication.

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