

# Soft starters **Altistart 01** The *starting* solution...

Catalogue  
February

# 04



For single-phase and 3-phase asynchronous motors  
from 0.37 to 75 kW / 3 to 85 A.

**1** – Altistart 01

**2** – Altistart U01

**3** – Services

# 1 - Altistart 01 soft starters for asynchronous motors

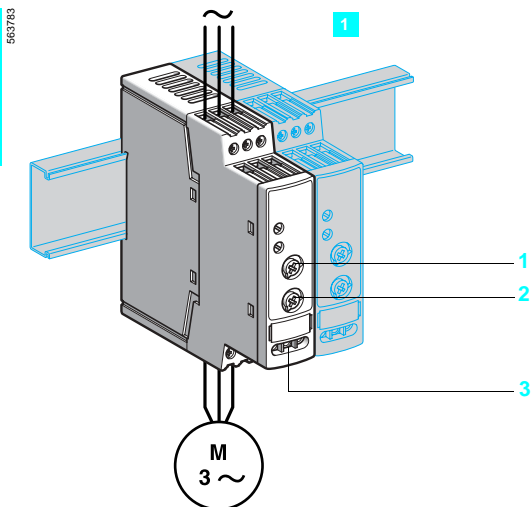
---

■ Presentation .....	pages 1/2 and 1/3
■ Characteristics .....	pages 1/4 and 1/5
■ References .....	page 1/6
■ Dimensions .....	page 1/7
■ Schemes .....	pages 1/8 to 1/15
■ Combinations .....	pages 1/16 and 1/17

# Soft starters for asynchronous motors

## Altistart 01

1



### Presentation

The Altistart 01 soft starter operates either as a torque limiter on starting or as a soft start/soft stop unit for asynchronous motors.

Using the Altistart 01 starter enhances the starting performance of asynchronous motors by allowing the motor to start gradually and smoothly in a controlled manner. Using it can also prevent mechanical shocks, which lead to wear and tear, maintenance work and production downtime. The Altistart 01 limits the starting torque and current peaks on starting on machines which do not require a high starting torque.

These starters are designed for the following simple applications:

- conveyors
- conveyor belts
- pumps
- fans
- compressors
- automatic doors
- small cranes
- belt-drive machines, etc.

The Altistart 01 is compact, easy to install, can be mounted horizontally next to another unit, complies with standards IEC/EN 60947-4-2, UL and CSA certifications, and has CE marking.

The Altistart 01 soft starter offer comprises 3 product ranges:

#### ■ 1 ATS 01N1 soft starters

- Control one phase of the motor power supply (single phase or 3-phase) to limit the starting torque.
- Motor power ratings range from 0.37 kW to 5.5 kW.
- Motor supply voltages range from 110 V to 480 V, 50/60 Hz. An external power supply is required for controlling the starter.

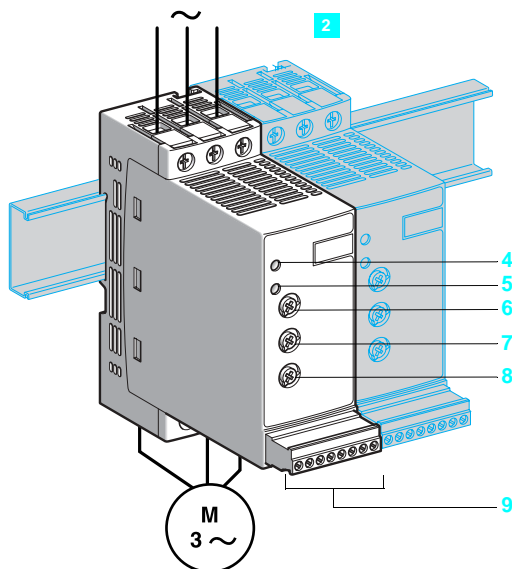
#### ■ 2 ATS 01N2 soft start/soft stop units

- Control two phases of the motor power supply to limit the starting current and for deceleration.
- Motor power ratings range from 0.75 kW to 75 kW.
- The motor supply voltages are as follows: 230 V, 400 V, 480 V and 690 V, 50/60 Hz. The use of a line contactor is not necessary on machines where electrical isolation is not required.

#### ■ ATSU 01N2 soft start/soft stop units

See pages 2/2 to 2/11.

DF56382



### Description

■ Altistart 01 soft starters (ATS 01N1) are equipped with:

- a potentiometer 1 for controlling the starting time
- a potentiometer 2 for adjusting the start voltage threshold according to the motor load
- 2 inputs 3:
  - 1  $\sphericalangle$  24 V input or 1  $\sim$  110...240 V input for powering the control part that controls the motor

■ Altistart 01 soft start/soft stop units (ATS 01N2) are equipped with:

- a potentiometer 6 for controlling the starting time
- a potentiometer 8 for controlling the deceleration time
- a potentiometer 7 for adjusting the start voltage threshold according to the motor load
- 1 green indicator LED 4: device switched on
- 1 yellow indicator LED 5: motor powered at nominal voltage
- a connector 9:
  - 2 logic inputs for Run/Stop commands
  - 1 logic input for the BOOST function
  - 1 logic output to indicate the end of starting
  - 1 relay output to indicate the starter has a power supply fault or the motor has reached a standstill at the end of the deceleration stage.

# Soft starters for asynchronous motors

## Altistart 01 Functions

### Description (continued)

#### Equivalence table for contact reference

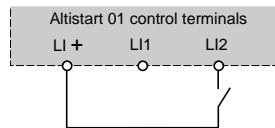
Functions	ATS 01N2●●LU/QN/RT	ATS 01N2●●LY	ATS 01N2●●Q
Relay outputs	R1A	04	04
	R1C	05	05
0 V external power supply	C0M	–	–
Stop command	LI1	02	02
Run command	LI2	03	03
Control power supply	LI + (+ 24 V positive logic)	01 (0 V negative logic)	01 (0 V negative logic)
BOOST	BOOST	–	–
End of starting	LO1	–	–
115 V external power supply	–	06	–
	–	07	–

### Functions

#### ■ 2-wire control:

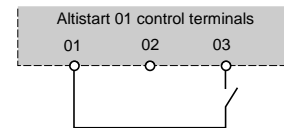
The run and stop commands are controlled by a single logic input. State 1 of logic input LI2 controls the run process and state 0 controls the stop process.

##### ATS 01N2●●LU/QN/RT



Wiring diagram for 2-wire control

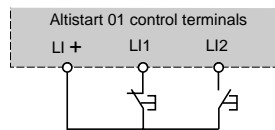
##### ATS 01N2●●LY/Q



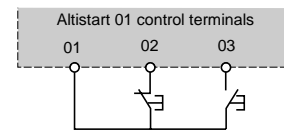
Wiring diagram for 2-wire control

#### ■ 3-wire control:

The run and stop commands are controlled by 2 different logic inputs. Stopping is achieved when logic input LI1 opens (state 0). The pulse on input LI2 is stored until input LI1 opens.



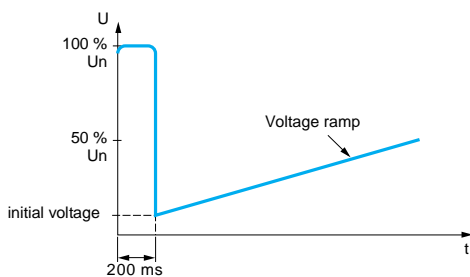
Wiring diagram for 3-wire control



Wiring diagram for 3-wire control

#### ■ Starting time

Controlling the starting time means that the time of the voltage ramp applied to the motor can be adjusted and a gradual starting time achieved, which is dependent on the motor load.



Application of a voltage BOOST equal to 100% of the nominal motor voltage

#### ■ Voltage BOOST function via logic input:

Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction. When the input is at state 1, the function is active (input connected to the + 24 V) and the starter supplies a fixed voltage to the motor for a limited time before starting.

#### ■ End of starting

##### □ Application function via logic output LO1

Soft start/soft stop units ATS 01N206●● to ATS 01N232●● are equipped with an open collector logic output LO, which indicates the end of starting when the motor has reached nominal speed.

##### □ Application function via an option

For ATS01N2●●LY/Q soft start/soft stop units end of starting information can be obtained by adding the option LAD 8N11 with N/O+N/C contacts. The option can be easily connected to the bypass contactor of the electronic(s) unit without dismantling the product.

#### ■ Fault relay

Soft start/soft stop units ATS 01N206●● to ATS 01N232●● have a relay which opens when a fault is detected.

Relay contact R1A-R1C (04-05 for ATS 01N2●●LY/Q) closes with the LI2 command (02-03 for ATS 01N2●●LY/Q) and opens when the motor voltage is around 0 with a decelerated stop or stop immediately on a fault.

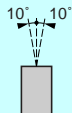
This information can be used for controlling the line contactor and achieving deceleration (by maintaining the line contactor until the motor has stopped).

# Soft starters for asynchronous motors

## Altistart 01

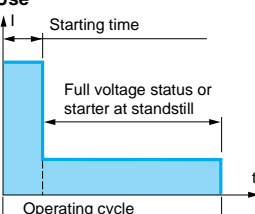
1

### Environment

Type of starter	ATS 01N1●●FT, ATS 01N2●●LU, ATS 01N2●●QN, ATS 01N2●●RT		ATS 01N2●●LY and ATS 01N2●●Q																																									
Conformity to standards	Altistart 01 electronic starters have been developed to conform to the strictest international standards and the recommendations relating to electrical industrial control devices (IEC, EN), in particular standard IEC/EN 60947-4-2																																											
Electromagnetic compatibility EMC	<table border="1"> <tr> <td>Conducted and radiated emissions</td> <td colspan="3">CISPR 11 level B, IEC 60947-4-2, level B</td> </tr> <tr> <td>Harmonics</td> <td colspan="3">IEC 1000-3-2, IEC 1000-3-4</td> </tr> <tr> <td>EMC immunity</td> <td colspan="3">EN 50082-2, EN 50082-1</td> </tr> <tr> <td>Electrostatic discharge</td> <td colspan="3">IEC 61000-4-2 level 3</td> </tr> <tr> <td>Immunity to radiated radio-electrical interference</td> <td colspan="3">IEC 61000-4-3 level 3</td> </tr> <tr> <td>Immunity to electrical transients</td> <td colspan="3">IEC 61000-4-4 level 4</td> </tr> <tr> <td>Voltage/current impulse</td> <td colspan="3">IEC 61000-4-5 level 3</td> </tr> <tr> <td>Immunity to conducted interference caused by radio-electrical fields</td> <td colspan="3">IEC 61000-4-6 level 3</td> </tr> <tr> <td>Micro-cuts and voltage fluctuation</td> <td colspan="3">IEC 61000-4-11</td> </tr> <tr> <td>Damped oscillating waves</td> <td colspan="3">IEC 61000-4-12 level 3</td> </tr> </table>				Conducted and radiated emissions	CISPR 11 level B, IEC 60947-4-2, level B			Harmonics	IEC 1000-3-2, IEC 1000-3-4			EMC immunity	EN 50082-2, EN 50082-1			Electrostatic discharge	IEC 61000-4-2 level 3			Immunity to radiated radio-electrical interference	IEC 61000-4-3 level 3			Immunity to electrical transients	IEC 61000-4-4 level 4			Voltage/current impulse	IEC 61000-4-5 level 3			Immunity to conducted interference caused by radio-electrical fields	IEC 61000-4-6 level 3			Micro-cuts and voltage fluctuation	IEC 61000-4-11			Damped oscillating waves	IEC 61000-4-12 level 3		
Conducted and radiated emissions	CISPR 11 level B, IEC 60947-4-2, level B																																											
Harmonics	IEC 1000-3-2, IEC 1000-3-4																																											
EMC immunity	EN 50082-2, EN 50082-1																																											
Electrostatic discharge	IEC 61000-4-2 level 3																																											
Immunity to radiated radio-electrical interference	IEC 61000-4-3 level 3																																											
Immunity to electrical transients	IEC 61000-4-4 level 4																																											
Voltage/current impulse	IEC 61000-4-5 level 3																																											
Immunity to conducted interference caused by radio-electrical fields	IEC 61000-4-6 level 3																																											
Micro-cuts and voltage fluctuation	IEC 61000-4-11																																											
Damped oscillating waves	IEC 61000-4-12 level 3																																											
CE marking	The starters bear CE marking in accordance with the European low voltage directives IEC/EN 60947-4-2																																											
Product certification	UL, CSA and C-Tick B44.1-96/ASME A17.5 for starter wired to the motor delta terminal																																											
Degree of protection	IP 20		IP 20 on front panel																																									
Degree of pollution	2 conforming to IEC/EN 60947-4-2		3 conforming to IEC 60664-1 and UL 508																																									
Vibration resistance	1.5 mm peak to peak from 3 to 13 Hz, 1 gn from 13 to 150 Hz conforming to IEC/EN 60068-2-6		2 gn																																									
Shock resistance	15 gn for 11 ms conforming to IEC/EN 60068-2-27		8 gn for 11 ms conforming to IEC/EN 60068-2-27																																									
Relative humidity	5...95% without condensation or dripping water, conforming to IEC/EN 60068-2-3																																											
Ambient air temperature around the device	Storage	°C	- 25...+ 70 conforming to IEC/EN 60947-4-2																																									
	Operation	°C	- 10...+ 40 without derating, up to 50°C with current derating of 2% per °C above 40°C																																									
Maximum operating altitude	m	1000 without derating (above this, derate the current by 2.2% per additional 100 m)		2000 without derating (above this, derate the current by 0.5% per additional 100 m)																																								
Operating position	Maximum permanent angle in relation to the normal vertical mounting position																																											

### Electrical characteristics

Type of starter	ATS	01N1●●FT	01N2●●LU	01N2●●QN	01N2●●RT	01N2●●LY	01N2●●Q		
Category of use	Conforming to IEC 60947-4-2 Ac-53b								
Rated operating voltage	Three-phase voltage	V	200 - 15% to 480 + 10%	200 - 15% to 240 + 10%	380 - 15% to 415 + 10%	440 - 15% to 480 + 10%	230 - 15% to 690 + 10%	400 -15...+ 10%	
Frequency		Hz	50 - 5% to 60 + 5%						
Output voltage	Maximum 3-phase voltage equal to line supply voltage.								
Control power supply voltage		V	~ 110...220 ± 10% ≈ 24 ± 10%	Built into the starter			~ 110 ± 10%	Built into the starter	
Rated operating current		A	3...12	6...32		32...85			
Adjustable starting time		s	1...5	1...10		1...25			
Adjustable deceleration time		s	—	1...10		1...25			
Starting torque		%	30...80% of starting torque of motor connected directly on the line supply						

Type of starter	ATS	01N206●● to 01N222●●	01N232●●	01N2●●LY/01N2●●Q				
Use								
	Starting time	s	1	5	1	5	1	12
	Maximum number of cycles per hour		310	20	180	10	360	30

# Soft starters for asynchronous motors

## Altistart 01

### Electrical characteristics (continued)

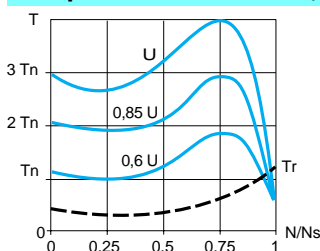
Type of starter	ATS 01N1	03FT	06FT	09FT/12FT			
<b>Control power supply consumption</b>		~ 24 V, 25 mA, ~ 110 V, 30 mA ~ 240 V, 65 mA		~ 24 V, 30 mA, ~ 110 V, 35 mA, ~ 240 V, 80 mA			
<b>Power dissipated</b>	At full load at end of starting	W	4	1			
	In transient state	W	19	31			
<b>Starting current at nominal load (1)</b>	A	15	30	45			
Type of starter	ATS 01N2	06LU/QN/RT	09LU/QN/RT	12LU/QN/RT	22LU/QN/RT	32LU/QN/RT	
<b>Power dissipated</b>	At full load at end of starting	W	4	4	4	4.5	4.5
	In transient state	W	64	94	124	224.5	324.5
<b>Starting current at nominal load (1)</b>	A	30	45	60	110	160	
Type of starter	ATS 01N2	30LY/Q	44LY/Q	72LY/Q	85LY/Q		
<b>Power dissipated</b>	At full load at end of starting	W	22	22	23	23	
	In transient state	W	184	268	436	514	
<b>Starting current at nominal load (1)</b>	A	90	132	216	255		
Type of starter	ATS 01N2	••LU/QN/RT	••LY/Q				
<b>Logic input power supply:</b> For LI1, LI2 and BOOST only (electrically isolated between power and control) <b>LI +, COM</b>		24 V power supply Max. current available 10 mA. No short-circuit and overload protection	–				
<b>Logic inputs</b> <b>LI1, LI2, BOOST (01, 02, 03 for ATS 01N2••LY/Q)</b> Stop, run and boost on start-up functions		Logic inputs with impedance 27 kohms 24 V power supply (U max. 40 V) Max. current consumption 8 mA State 0 if U < 5 V and I < 0.2 mA State 1 if U > 13 V and I > 0.5 mA	Input with internal control relay, internal 24 V power supply Max. current 8 mA State 0 if I < = 3 mA State 1 if I > = 10 mA				
<b>Logic output LO1</b> End of starting signal		Open collector logic output External 24 V power supply (min. 6 V, max. 30 V) Max. current 200 mA	–				
<b>Relay outputs</b> <b>R1A R1C (04, 05 for ATS 01N2••LY/Q)</b>		Normally open (N/O) contact (contact open in fault mode) Minimum switching capacity: 10 mA for ~ 6 V Max. switching capacity on inductive load (cos φ = 0.5 and L/R = 20 ms): 2 A for ~ 250 V or ~ 30 V (AC-15) Max. operating voltage 440 V	Operating category AC-15: Ie 3 A, Ue 250 V, DC-13: Ie 2 A, Ue 24 V, Minimum switching capacity: 10 mA for ~ 17 V Maximum operating voltage 250 V				
<b>LED signalling</b>	green LED	Starter powered up					
	yellow LED	Nominal voltage reached					

(1) Acceleration current complying with the maximum conditions of use (see page 1/4).

### Connections (Maximum connection capacity and tightening torque)

Type of starter	ATS	01N103FT, 01N106FT	01N109FT, 01N112FT, 01N206•• to 01N232••	01N2••LY and 01N2••Q	
<b>Power circuit</b>		Cage type connector	Connection via Ø 4mm screw clamp		
<b>Flexible wire without cable end</b>	1 conductor	mm <sup>2</sup>	2.5 14 AWG	1.5...10 8 AWG	6...25
	2 conductors	mm <sup>2</sup>	1 17 AWG	1.5...6 10 AWG	6...25
<b>Flexible wire with cable end</b>	1 conductor	mm <sup>2</sup>	2.5 14 AWG	1...6 10 AWG	4...25
	2 conductors	mm <sup>2</sup>	0.75 18 AWG	1...6 10 AWG	4...16
<b>Rigid wire</b>	1 conductor	mm <sup>2</sup>	2.5 14 AWG	1...10 8 AWG	6...35
	2 conductors	mm <sup>2</sup>	1 17 AWG	1...6 10 AWG	6...25
<b>Tightening torque</b>	N.m	0.8	1.9...2.5	5	
<b>Control circuit</b>		Cage type connector	Screw connector		
<b>Flexible wire without cable end</b>	1 conductor	mm <sup>2</sup>	2.5 14 AWG	0.5...2.5 14 AWG	0.75...1.5
	2 conductors	mm <sup>2</sup>	1 17 AWG	0.5...1.5 16 AWG	0.75...1.5
<b>Flexible wire with cable end</b>	1 conductor	mm <sup>2</sup>	2.5 14 AWG	0.5...1.5 16 AWG	0.75...1.5
	2 conductors	mm <sup>2</sup>	0.75 18 AWG	0.5...1.5 16 AWG	0.75...1.5
<b>Rigid wire</b>	1 conductor	mm <sup>2</sup>	2.5 14 AWG	0.5...2.5 14 AWG	0.75...1.5
	2 conductors	mm <sup>2</sup>	1 17 AWG	0.5...1 17 AWG	0.75...1.5
<b>Earth connection</b>		–	–	Tinned connector. Fixed using 6 Ø screws	
<b>Tightening torque</b>	N.m	0.8	0.5	0.7	

### Torque characteristics (typical curves)



The diagram opposite shows the torque/speed characteristic of a cage motor in relation to the supply voltage.

The torque varies in line with the square of the voltage at a fixed frequency.

The gradual increase in the voltage prevents the instantaneous current peak on power-up.

# Soft starters for asynchronous motors

## Altistart 01

1



ATS 01N103FT

DF563802



ATS 01N212QN

DF563803



ATS 01N230LY

### Soft starter for 0.37 to 5.5 kW motor

Motor						Starter		
Motor power (1)						Nominal current	Reference	Weight
Single phase 3-phase								
230 V	210 V	230 V	230 V	400 V	460 V	A		kg
kW	HP	kW	HP	kW	HP			
<b>Single phase 110...230 V or 3-phase 200...480 V supply voltage, 50/60 Hz</b>								
0.37	–	0.37	0.5	1.1	0.5	3	ATS 01N103FT	0.160
	–	0.55	–	–	1.5			
0.75	0.5	0.75	1	2.2	2	6	ATS 01N106FT	0.160
	–	1.1	1.5	–	3			
1.1	1	1.5	2	4	5	9	ATS 01N109FT	0.280
1.5	1.5	2.2	3	5.5	7.5	12	ATS 01N112FT	0.280

### Soft start/soft stop unit for 0.75 to 15 kW motor

Motor		Starter		
Motor power (1)		Nominal current	Reference	Weight
kW	HP			
<b>3-phase supply voltage: 200...240 V 50/60 Hz</b>				
0.75/1.1	1/1.5	6	ATS 01N206LU	0.420
1.5	2	9	ATS 01N209LU	0.420
2.2/3	3/–	12	ATS 01N212LU	0.420
4/5.5	5/7.5	22	ATS 01N222LU	0.560
7.5	10	32	ATS 01N232LU	0.560
<b>3-phase supply voltage: 380...415 V 50/60 Hz</b>				
1.5/2.2	–	6	ATS 01N206QN	0.420
3/4	–	9	ATS 01N209QN	0.420
5.5	–	12	ATS 01N212QN	0.420
7.5/11	–	22	ATS 01N222QN	0.560
15	–	32	ATS 01N232QN	0.560
<b>3-phase supply voltage: 440...480 V 50/60 Hz</b>				
–	2/3	6	ATS 01N206RT	0.420
–	5	9	ATS 01N209RT	0.420
–	7.5	12	ATS 01N212RT	0.420
–	10/15	22	ATS 01N222RT	0.560
–	20	32	ATS 01N232RT	0.560

### Soft start/soft stop unit for 15 to 75 kW motor

#### 3-phase supply voltage: 230...690 V 50/60 Hz

Motor							Starter		
Motor power (1)							Nominal current	Reference	Weight
230 V	230 V	400 V	400 V	460 V	575 V	690 V			
kW	HP	kW	HP	HP	HP	kW	A		kg
7.5	10	15	15	20	30	30	32	ATS 01N230LY	2.400
11	15	22	25	30	40	37	44	ATS 01N244LY	2.400
18.5	25	37	40	50	60	55	72	ATS 01N272LY	3.800
22	30	45	50	60	75	75	85	ATS 01N285LY	3.800

#### 3-phase supply voltage: 400 V 50/60 Hz

Motor		Starter		
Motor power (1)		Nominal current	Reference	Weight
kW	HP			
22	25	44	ATS 01N244Q	2.400
37	40	72	ATS 01N272Q	3.800
45	50	85	ATS 01N285Q	3.800

### Accessories



Description	Used for starter	Reference	Weight kg
Plate for quick mounting on DIN rail	ATS 01N230LY, ATS 01N244●	VY1 H4101	–
Adaptor for mounting on □ DZ5 MB rail	ATS 01N103FT, ATS 01N106FT	RHZ 66	0.005
Auxiliary contact, provides information that the motor is at full voltage	ATS 01N2●●●LY, ATS 01N2●●●Q	LAD 8N11	–

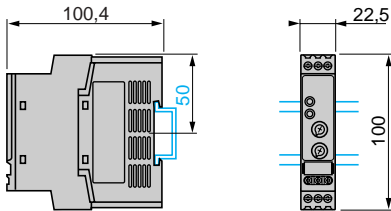
(1) Standard power ratings of motors, HP power ratings indicated according to standard UL 508.




# Soft starters for asynchronous motors Altistart 01

**ATS 01N103FT, ATS 01N106FT**

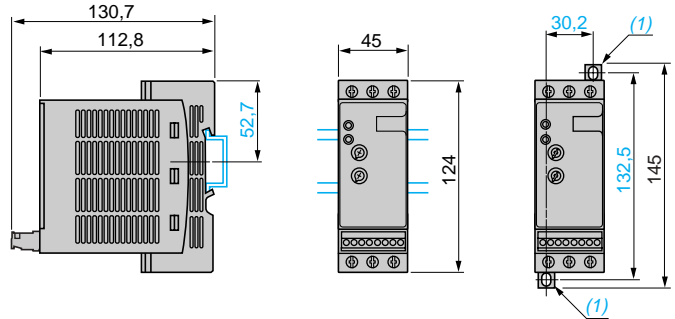
Mounting on  (35 mm) rail or  rail with adaptor RHZ 66




**ATS 01N109FT, ATS 01N112FT**

Mounting on  (35 mm) rail

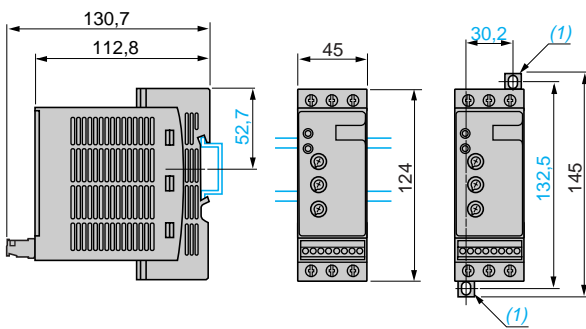
Screw fixing




**ATS 01N206 to ATS 01N212**

Mounting on  (35 mm) rail

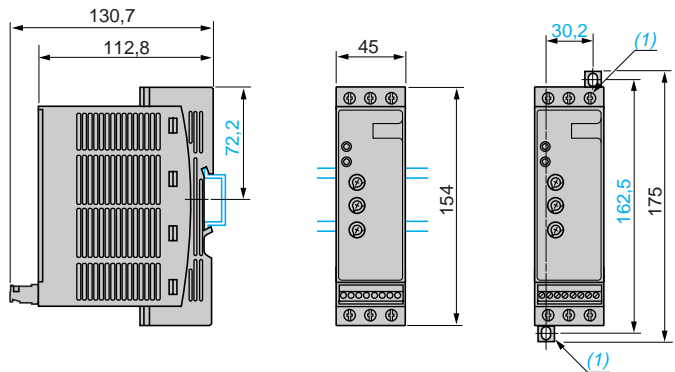
Screw fixing



**ATS 01N222 to ATS 01N232**

Mounting on  (35 mm) rail


Screw fixing



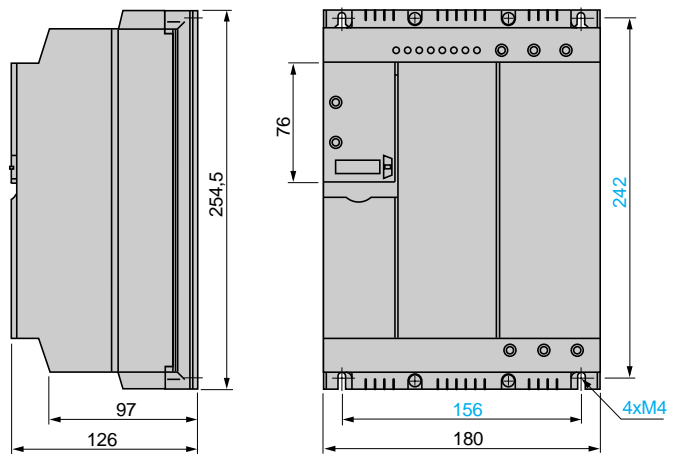
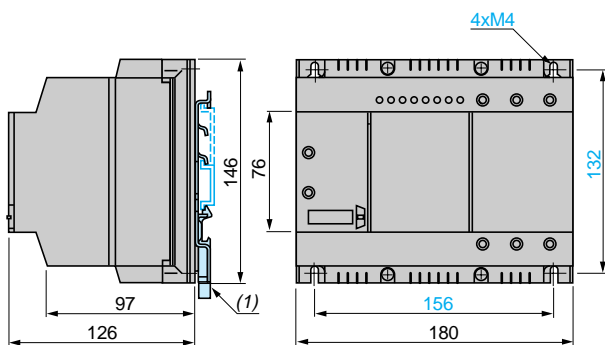
(1) Retractable fixings

(1) Retractable fixings

**ATS 01N230LY, ATS 01N244LY, ATS 01N244Q**

Quick mounting on  rail (35 or 70 mm) using plate VY1 H4101 (1)

**ATS 01N272LY, ATS 01N285LY, ATS 01N272Q, ATS 01N285Q**



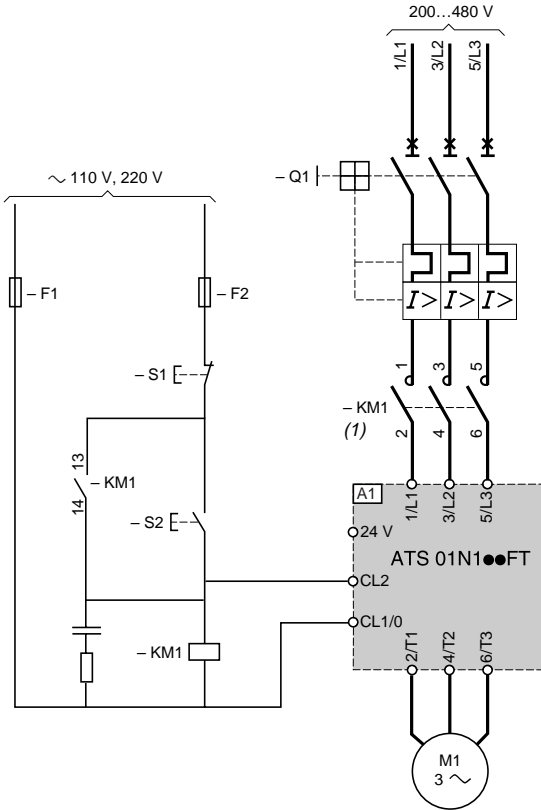
# Soft starters for asynchronous motors

Altistart 01

For 0.37 to 5.5 kW motors

## ATS 01N1●●FT soft starters

Single-phase or 3-phase power supply



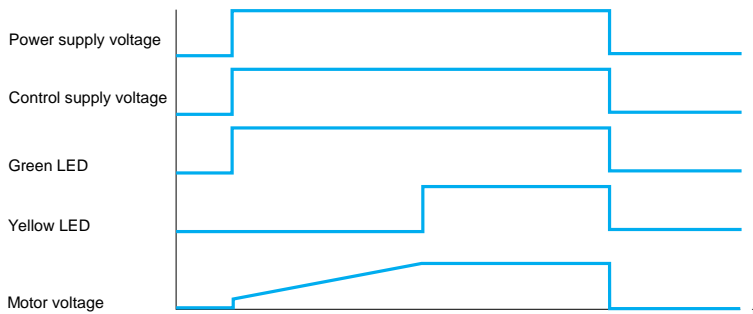
**Note :** For single-phase motors, use the ATS 01N1●●FT without connecting the 2<sup>nd</sup> phase 3/L2, 4/T2. Wait 5 seconds after switching the soft starter off before switching it on again.

(1) A line contactor must be used in the sequence.

**Compatible components** (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft starter
Q1	GV2 ME circuit-breaker
KM1	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
S1, S2	XB4 B or XB5 B pushbuttons

## Function chart



# Soft starters for asynchronous motors

## Altistart 01

For 0.75 to 15 kW motors

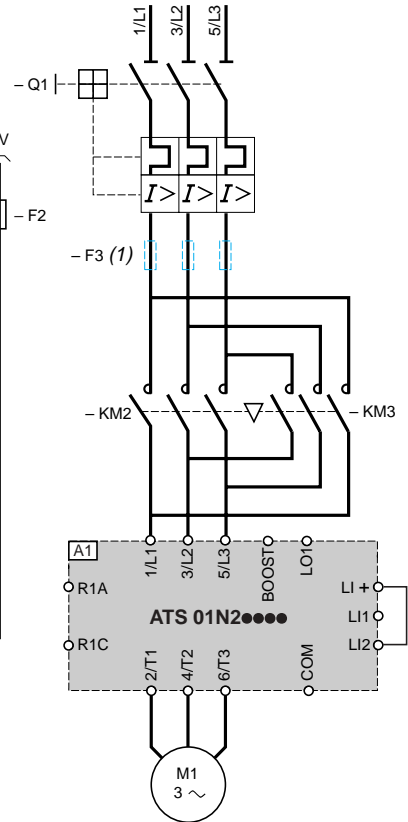
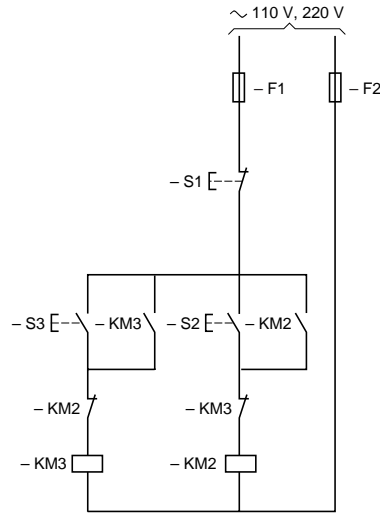
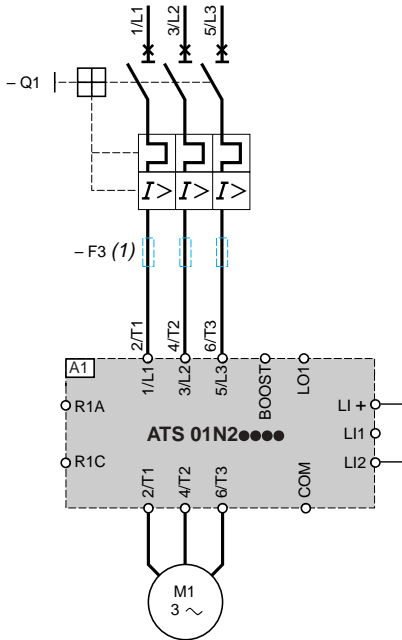
### ATS 01N2●●LU/QN/RT soft start/soft stop units

Manual control without deceleration (freewheel), with GV2 and GV3 motor circuit-breaker

ATS 01N206●● to ATS 01N232●●

Automatic control with reversal of operating direction, without deceleration (freewheel)

ATS 01N206●● to ATS 01N232●●



(1) For type 2 coordination.

**Compatible components** (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft start/soft stop unit
Q1	GV2 ME circuit-breaker
KM1, KM2, KM3	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
F3	3 fast-acting fuses
S1, S2, S3	XB4 B or XB5 B pushbuttons

# Soft starters for asynchronous motors

Altistart 01

For 0.75 to 15 kW motors

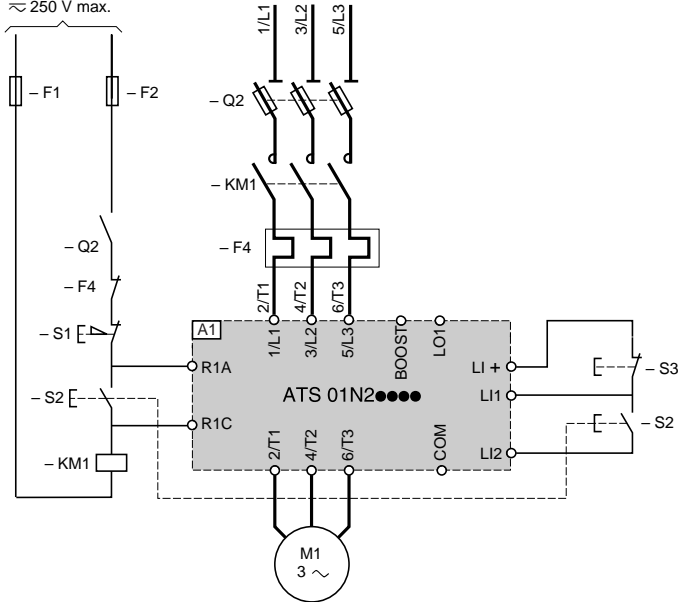
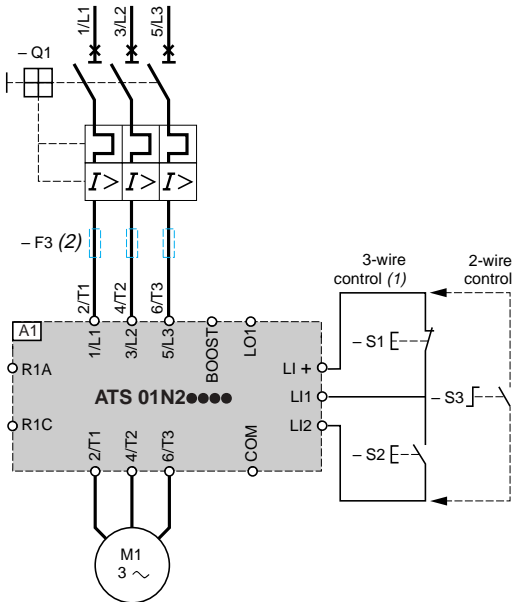
## ATS 01N2●●LU/QN/RT soft start/soft stop units

Automatic control with or without deceleration (freewheel), without contactor

ATS 01N206●● to ATS 01N232●●

Automatic control with or without deceleration (freewheel), with contactor

ATS 01N206●● to ATS 01N232●●



(1) Use shielded wires above 1 m.  
(2) For type 2 coordination.

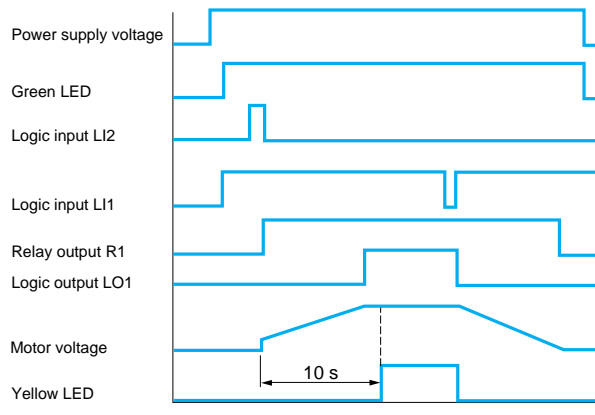
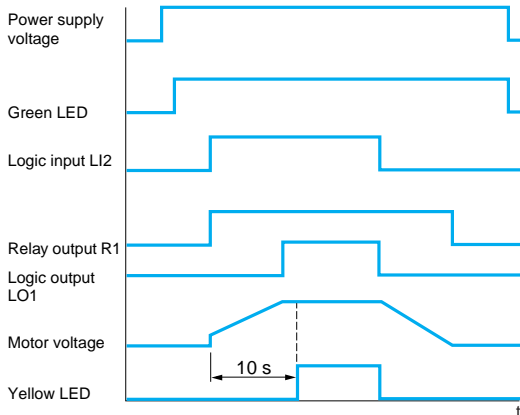
**Compatible components** (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft start/soft stop unit
Q1	GV2 ME circuit-breaker
Q2	Fuse switches
F4	Thermal overload relay
KM1	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
F3	3 fast-acting fuses
S1, S2, S3	XB4 B or XB5 B pushbuttons

## Function charts

### 2-wire control with deceleration

### 3-wire control with deceleration



# Soft starters for asynchronous motors

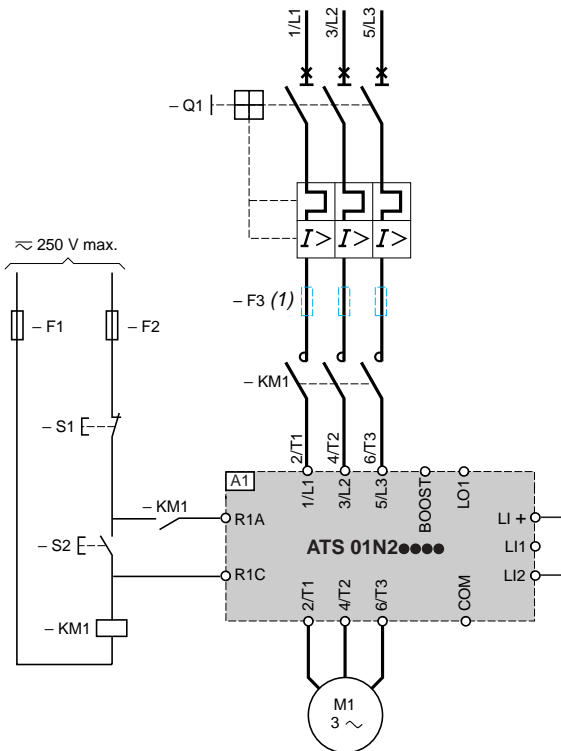
Altistart 01

For 0.75 to 15 kW motors

## ATS 01N2●●LU/QN/RT soft start/soft stop units

Automatic control without deceleration (freewheel), with a maintaining function

ATS 01N206●● to ATS 01N232●●



(1) For type 2 coordination.

**Compatible components** (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft start/soft stop unit
Q1	GV2 ME circuit-breaker
KM1	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
F3	3 fast-acting fuses
S1, S2	XB4 B or XB5 B pushbuttons

# Soft starters for asynchronous motors

Altistart 01

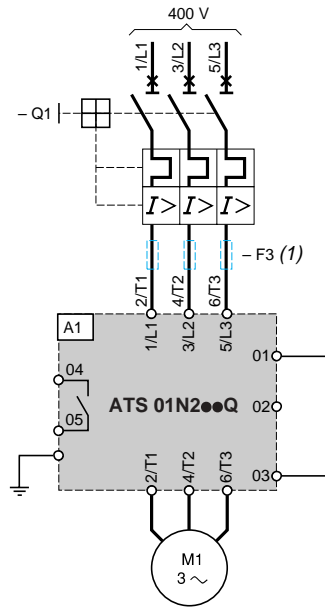
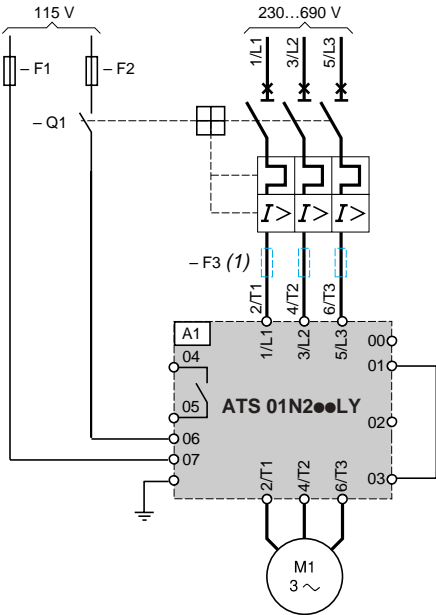
For 15 to 75 kW motors

## ATS 01N2●●LY and ATS 01N2●●Q soft start/soft stop units (compatible components, see page 1/13)

Manual control without deceleration (freewheel), with GV3 and GV7 motor circuit-breaker

ATS 01N230LY to ATS 01N285LY

ATS 01N244Q to ATS 01N285Q



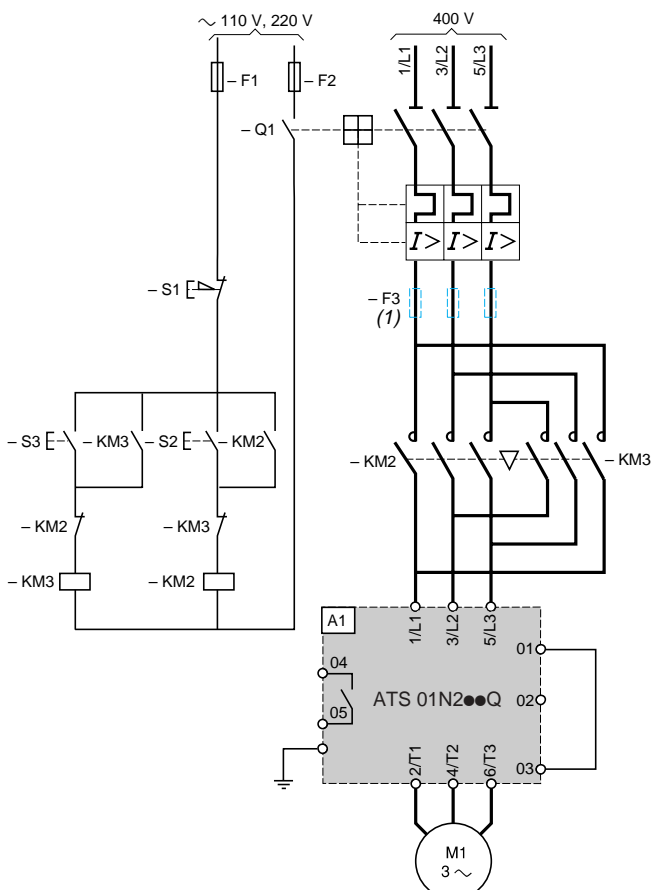
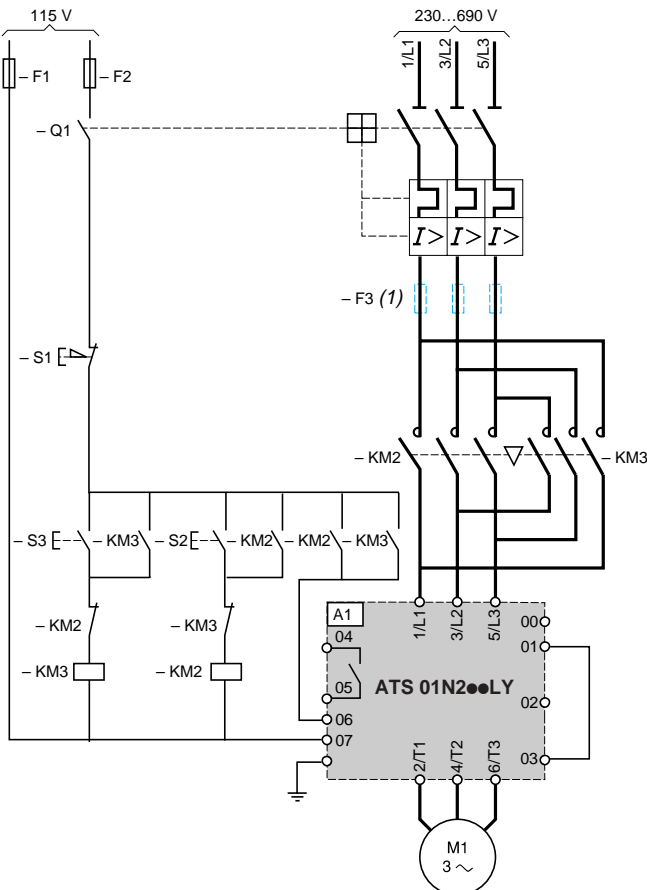
(1) For type 2 coordination.

(1) For type 2 coordination.

## Automatic control with reversal of operating direction, without deceleration (freewheel)

ATS 01N230LY to ATS 01N285LY

ATS 01N244Q to ATS 01N285Q



(1) For type 2 coordination.

(1) For type 2 coordination.

# Soft starters for asynchronous motors

Altistart 01

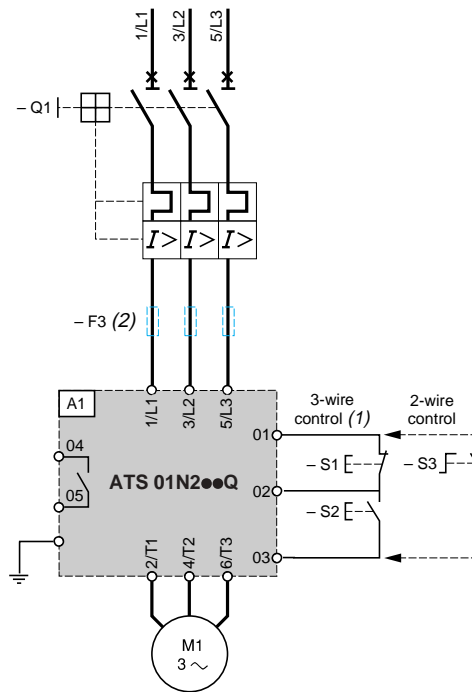
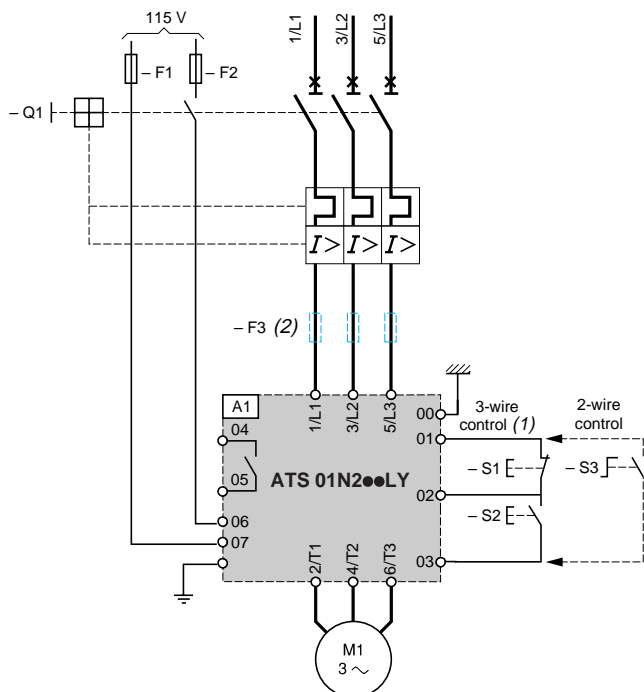
For 15 to 75 kW motors

## ATS 01N2●●LY and ATS 01N2●●Q soft start/soft stop units (continued)

Automatic control with or without deceleration (freewheel), without contactor

ATS 01N230LY to ATS 01N285LY

ATS 01N244Q to ATS 01N285Q



(1) Use shielded wires above 1 m.  
(2) For type 2 coordination.

(1) Use shielded wires above 1 m.  
(2) For type 2 coordination.

**Compatible components** (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft start/soft stop unit
Q1	GV3 or GV7 circuit-breaker
KM2, KM3	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
F3	3 fast-acting fuses
S1, S2, S3	XB4 B or XB5 B pushbuttons

# Soft starters for asynchronous motors

Altistart 01

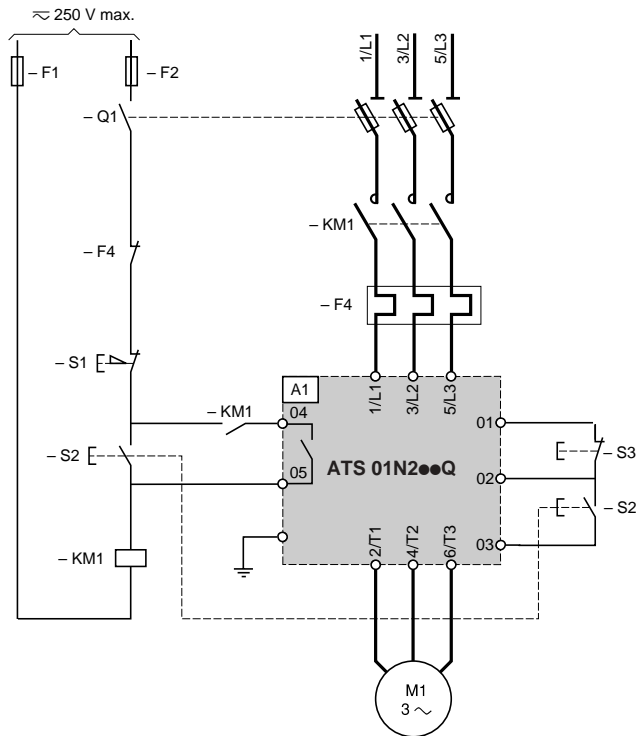
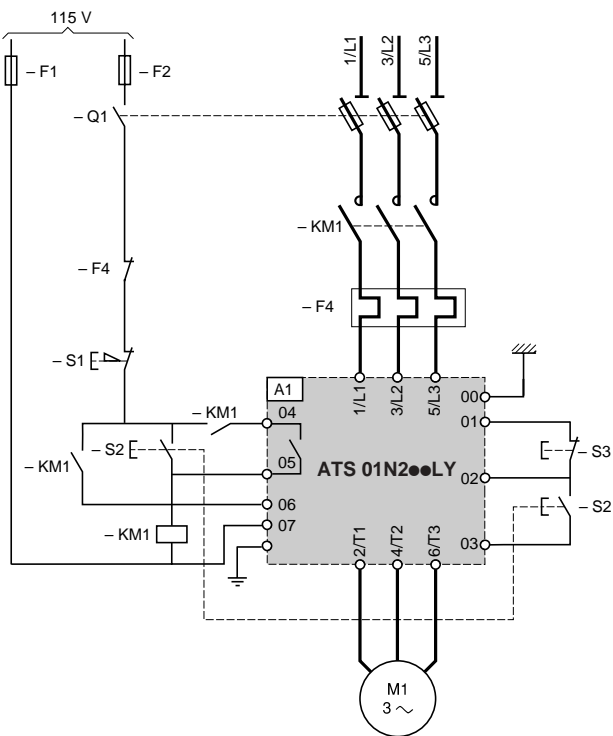
For 15 to 75 kW motors

## ATS 01N2●●LY and ATS 01N2●●Q soft start/soft stop units (continued)

Automatic control with or without deceleration (freewheel), with contactor

ATS 01N230LY to ATS 01N285LY

ATS 01N244Q to ATS 01N285Q



Compatible components (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft start/soft stop unit
Q1	GK1 disconnecter
KM1	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
F4	LR2 D thermal overload relay
S1, S2, S3	XB4 B or XB5 B pushbuttons



# Soft starters for asynchronous motors

Altistart 01

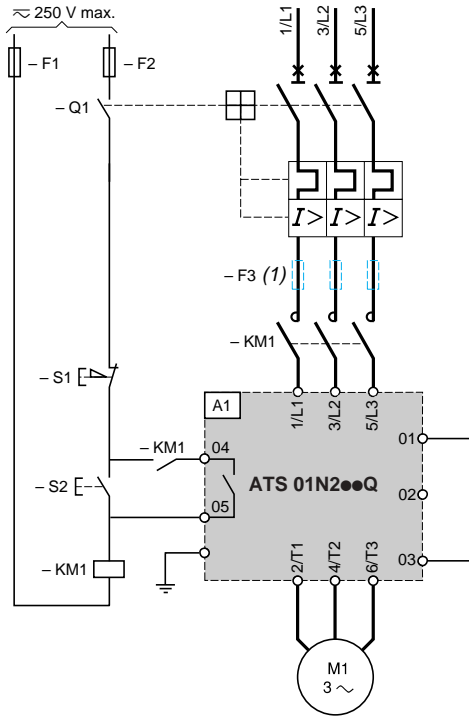
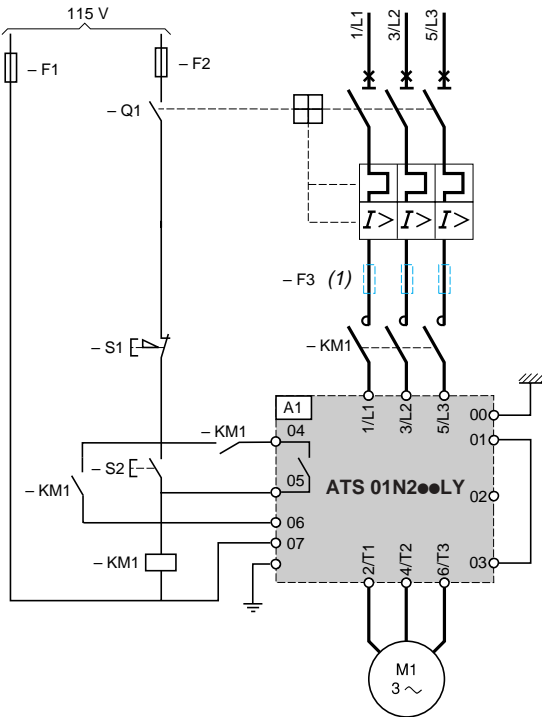
For 15 to 75 kW motors

## ATS 01N2●●LY and ATS 01N2●●Q soft start/soft stop units (continued)

Automatic control without deceleration (freewheel), with a maintaining function

ATS 01N230LY to ATS 01N285LY

ATS 01N244Q to ATS 01N285Q



(1) For type 2 coordination.

**Compatible components** (For full references, see pages 1/16 and 1/17 or refer to our catalogue: "Motor starter solutions - Control and protection components".)

Code	Description
A1	Soft starter
Q1	GV3 circuit-breaker
KM1	LC1 ●●● + LA4 DA2U
F1, F2	Control protection fuses
F3	3 fast-acting fuses
S1, S2	XB4 B or XB5 B pushbuttons

# Soft starters for asynchronous motors

Altistart 01

400 V power supply, type 1 coordination

## Components to be combined in accordance with standards IEC 60947-1 and IEC 60947-4-2

Combine either circuit-breaker (light blue columns), contactor, starter, or switches/fuses (dark blue columns), contactor, starter

Motor		Starter Class 10	Type of circuit-breaker Telemecanique	Rating	Type of contactor	Type of switch or switch disconnecter (base unit)	Am fuses Reference	Rating	I <sup>2</sup> t	Thermal overload relay
kW	A			A				A	A <sup>2</sup> s	
M1		A1	Q1		KM1, KM2, KM3	Q2				F4
0.37	0.98	ATS 01N103FT	GV2 ME05	1	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA02	2	265	LR2 K0306 LRD 05
0.55	1.5	ATS 01N103FT	GV2 ME06	1.6	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA02	2	265	LR2 K0307 LRD 06
0.75	2	ATS 01N103FT	GV2 ME07	2.5	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA02	2	265	LR2 K0308 LRD 07
1.1	2.5	ATS 01N103FT	GV2 ME08	4	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA04	4	265	LR2 K0308 LRD 08
		ATS 01N206QN	GV2 ME08	4	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA04	4	265	LR2 K0308 LRD 08
1.5	3.5	ATS 01N106FT	GV2 ME08	4	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA06	6	265	LR2 K0310 LRD 08
		ATS 01N206QN	GV2 ME08	4	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA06	6	265	LR2 K0310 LRD 08
2.2	5	ATS 01N106FT	GV2 ME10	6.3	LC1 K06 or LC1 D09	LS1 D2531	DF2 CA08	8	265	LR2 K0312 LRD 10
		ATS 01N206QN	GV2 ME10	6.3	LC1 K09 or LC1 D09	LS1 D2531	DF2 CA08	8	265	LR2 K0312 LRD 10
3	6.5	ATS 01N106FT	GV2 ME14	9	LC1 K09 or LC1 D09	LS1 D2531	DF2 CA12	12	265	LR2 K0314 LRD 12
		ATS 01N206QN	GV2 ME14	9	LC1 K09 or LC1 D09	LS1 D2531	DF2 CA12	12	265	LR2 K0314 LRD 12
4	8.4	ATS 01N109FT	GV2 ME14	9	LC1 K09 or LC1 D09	LS1 D2531	DF2 CA12	12	610	LR2 K0316 LRD 14
		ATS 01N209QN	GV2 ME14	9	LC1 K09 or LC1 D09	LS1 D2531	DF2 CA12	12	610	LR2 K0316 LRD 14
5.5	11	ATS 01N112FT	GV2 ME16	13	LC1 K12 or LC1 D12	LS1 D2531	DF2 CA16	16	610	LR2 K0321 LRD 16
		ATS 01N212QN	GV2 ME16	13	LC1 K12 or LC1 D12	LS1 D2531	DF2 CA16	16	610	LR2 K0321 LRD 16
7.5	14.8	ATS 01N222QN	GV2 ME20	17	LC1 D18	LS1 D2531	DF2 CA20	20	6050	LRD 21
9	18.1	ATS 01N222QN	GV2 ME21	21	LC1 D25	LS1 D2531	DF2 CA25	25	6050	LRD 21
11	21	ATS 01N222QN	GV2 ME22	23	LC1 D25	LS1 D2531	DF2 CA25	25	6050	LRD 22
15	28.5	ATS 01N232QN	GV2 ME32	32	LC1 D32	GK1 EM	DF2 EA40	40	7200	LR2 D3353
18.5	35	ATS 01N244Q	GV3 ME40	40	LC1 D38	GK1 EM	DF2 EA40	40	8000	LR2 D3355
22	42	ATS 01N244Q	GV3 ME63	63	LC1 D50	GK1 FM	DF2 FA63	63	8000	LR2 D3357
30	57	ATS 01N272Q	GV3 ME63	63	LC1 D65	GK1 FM	DF2 FA63	63	9000	LR2 D3359
37	69	ATS 01N272Q	GV3 ME80	80	LC1 D80	GK1 FM	DF2 FA80	80	9000	LR2 D3363
45	81	ATS 01N285Q	GV7 RE100	100	LC1 D95	GK1 FM	DF2 FA100	100	9000	LR2 D3365

# Soft starters for asynchronous motors

Altistart 01

690V power supply, type 1 coordination

## Components to be combined in accordance with standards IEC 60947-1 and IEC 60947-4-2

Combine either circuit-breaker (light blue columns), contactor, starter, or switches/fuses (dark blue columns), contactor, starter

Motor		Starter Class 10	Type of circuit-breaker		Type of contactor	Type of switch or switch disconnecter (base unit)	Am fuses		I <sup>2</sup> t	Thermal overload relay
kW	A		Telemecanique	Rating			Reference	Rating		
M1		A1	Q1	A	KM1	Q2		A	A <sup>2</sup> s	F4
30	33	ATS 01N230LY	GV3 ME40 + GV3 A01	25...40	LC1 D50	GK1 EM	DF2 EA40	40	7200	LR2 D3355
37	40	ATS 01N244LY	GV3 ME63 + GV3 A01	40...63	LC1 D65	GK1 FM	DF2 FA63	63	8000	LR2 D3359
55	58	ATS 01N272LY	GV3 ME80 + GV3 A01	56...80	LC1 D115	GK1 FM	DF2 FA80	80	9000	LR2 D3363
75	75.7	ATS 01N285LY	GV7 RE100 + GV7 A11	60...100	LC1 D150	GK1 FM	DF2 FA100	100	9000	LR2 D3365

## 2 - Altistart U01 soft starters for asynchronous motors

---

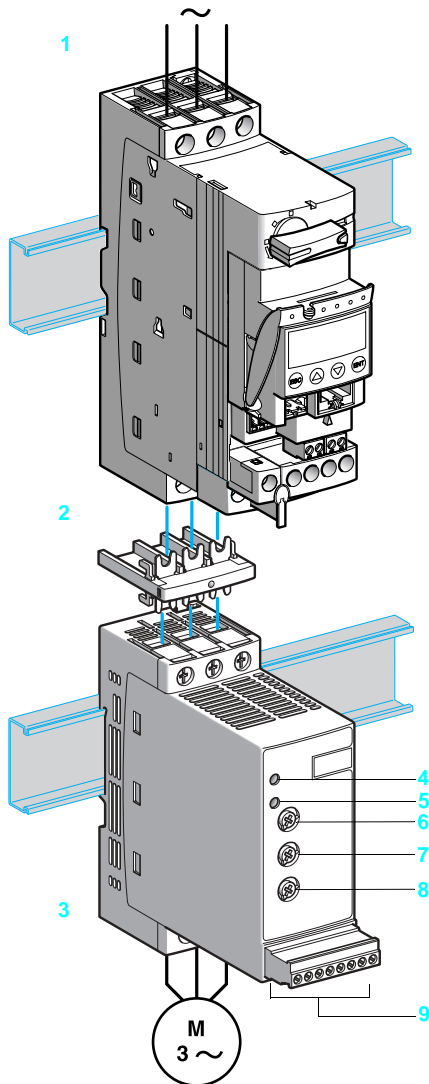
■ Presentation .....	pages 2/2 and 2/3
■ Characteristics .....	pages 2/4 and 2/5
■ References .....	page 2/6
■ Dimensions .....	page 2/7
■ Schemes .....	pages 2/8 to 2/11



# Soft starters for asynchronous motors

## Altistart U01 and TeSys model U

2  
DF563860



### Presentation

The Altistart U01 is a soft start/soft stop unit for asynchronous motors. It is designed primarily for combinations with **TeSys model U** controller-starters.

When combined with a **TeSys model U 1** controller by means of a connector **2**, the Altistart U01 **3** is a power option which provides the “Soft start/soft stop” function. The result is a unique, innovative motor starter.

Using the Altistart U01 starter enhances the starting performance of asynchronous motors by allowing the motor to start gradually, smoothly and in a controlled manner. It can also prevent mechanical shocks which lead to wear and tear, and limits the amount of maintenance work and production downtime. The Altistart U01 limits the starting torque and current peaks on starting, on machines which do not require a high starting torque.

The Altistart U01 is designed for the following simple applications:

- conveyors
- conveyor belts
- pumps
- fans
- compressors
- automatic doors
- small cranes
- belt-driven machines, etc.

The Altistart U01 is compact, easy to install, complies with standards IEC/EN 60947-4-2, with UL, CSA and C-Tick certifications, and has  $\text{C}\text{E}$  marking.

#### ■ ATSU 01N2●●LT soft start/soft stop units

- Control two phases of the motor power supply to limit the starting current and for deceleration.
  - Motor power ratings range from 0.75 kW to 15 kW.
  - Motor supply voltages range from 200 V to 480 V, 50/60 Hz.
- An external power supply is required for controlling the starter.

### Description

#### ■ Altistart U01 soft start/soft stop units are equipped with:

- a potentiometer for controlling the starting time **6**
- a potentiometer for controlling the deceleration time **8**
- a potentiometer for adjusting the start voltage threshold according to the motor load **7**
- 1 green indicator LED **4**: device switched on
- 1 yellow indicator LED **5**: motor powered at nominal voltage
- a connector **9**:
  - 2 logic inputs for Run/Stop commands
  - 1 logic input for the BOOST function
  - 1 logic output to indicate the end of starting
  - 1 relay output to indicate the starter has a power supply fault or the motor has stopped at the end of the deceleration ramp.

# Soft starters for asynchronous motors

## Altistart U01 and TeSys model U

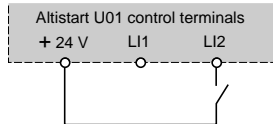
### Description of a TeSys model U controller-starter

Please consult our "TeSys model U Starters-open version" specialist catalogue.

### ATSU 01N2●●LT soft start unit functions

#### ■ 2-wire control:

The run and stop commands are controlled by a single logic input. State 1 of logic input LI2 controls the run process and state 0 controls the stop process.



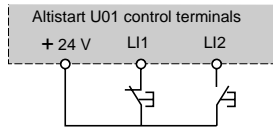
Wiring diagram for 2-wire control

#### ■ 3-wire control:

The run and stop commands are controlled by 2 different logic inputs.

Stopping is achieved when logic input LI1 opens (state 0).

The pulse on input LI2 is maintained until input LI1 opens.



Wiring diagram for 3-wire control

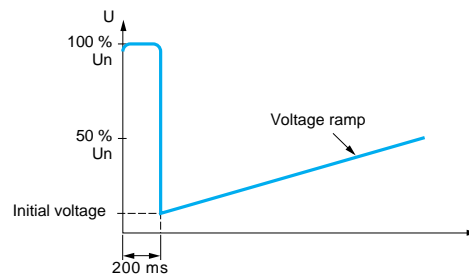
#### ■ Starting time

The starting time setting can be used to adjust the voltage ramp time applied to the motor and to obtain a gradual starting time depending on the motor load.

#### ■ Voltage BOOST function via logic input:

Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction.

When the input is at state 1, the function is active (input connected to the + 24 V) and the starter supplies a fixed voltage to the motor for a limited time before starting.



Application of a voltage BOOST equal to 100% of the nominal motor voltage

#### ■ End of starting

##### □ Logic output LO1 application function

ATSU 01N2●●LT soft start/soft stop units are equipped with an open collector logic output LO, which indicates the end of starting when the motor has reached nominal speed.

#### ■ Fault relay

ATSU 01N2●●LT soft start/soft stop units have a relay which opens when a fault is detected.

The contact of relay R1A-R1C closes when the LI2 run command is sent and opens when the motor voltage approaches 0V on a decelerated stop or instantly in the event of a fault.

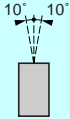
This information can be used for controlling the line contactor and achieving motor deceleration (by maintaining the line contactor until the motor has stopped).

# Soft starters for asynchronous motors

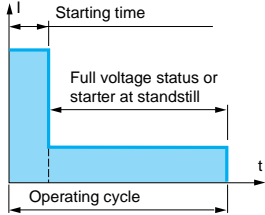
## Altistart U01 and TeSys model U

2

### Environment

<b>Type of starter</b>		<b>ATSU 01N2●●LT</b>	
<b>Conformity to standards</b>		Altistart U01 electronic starters have been developed to conform to the strictest international standards and the recommendations relating to electrical industrial control devices (IEC, EN), in particular standard IEC/EN 60947-4-2.	
<b>Electromagnetic compatibility EMC</b>			
Conducted and radiated emissions		CISPR 11 level B, IEC 60947-4-2, level B	
Harmonics		IEC 1000-3-2, IEC 1000-3-4	
EMC immunity		EN 50082-2, EN 50082-1	
Electrostatic discharge		IEC 61000-4-2 level 3	
Immunity to radiated radio-electrical interference		IEC 61000-4-3 level 3	
Immunity to electrical transients		IEC 61000-4-4 level 4	
Voltage/current impulse		IEC 61000-4-5 level 3	
Conducted and radiated emissions		IEC 61000-4-6 level 3	
Immunity to conducted interference caused by radio-electrical fields		IEC 61000-4-11	
Damped oscillating waves		IEC 61000-4-12 level 3	
<b>CE marking</b>		The starters bear CE marking in accordance with the European low voltage directives IEC/EN 60947-4-2.	
<b>Product certification</b>		UL, CSA and C-Tick	
<b>Degree of protection</b>		IP 20	
<b>Degree of pollution</b>		2 conforming to IEC/EN 60947-4-2	
<b>Vibration resistance</b>		1.5 mm peak to peak from 3 to 13 Hz, 1 gn from 13 to 150 Hz conforming to IEC/EN 60068-2-6	
<b>Shock resistance</b>		15 gn for 11 ms conforming to IEC/EN 60068-2-27	
<b>Relative humidity</b>		5...95% without condensation or dripping water, conforming to IEC/EN 60068-2-3	
<b>Ambient temperature</b> around the unit	Storage	°C	- 25...+ 70 conforming to IEC/EN 60947-4-2
	Operation	°C	- 10...+ 40 without derating, up to 50°C with current derating of 2% per °C above 40°C
<b>Maximum operating altitude</b>		m	1000 without derating (above this, derate the current by 2.2% per additional 100 m)
<b>Operating position</b> Maximum permanent angle in relation to the normal vertical mounting position			

### Electrical characteristics

<b>Type of starter</b>		<b>ATSU 01N2●●LT</b>						
<b>Category of use</b>		Conforming to IEC 60947-4-2						
<b>Rated operating voltage</b>		3-phase ~ voltage	V					
<b>Frequency</b>			Hz					
<b>Output voltage</b>			Maximum 3-phase voltage equal to line supply voltage.					
<b>Control supply voltage</b>			= 24 V, 100 mA ± 10%					
<b>Rated operating current</b>		A	6...32					
<b>Adjustable starting time</b>		s	1...10					
<b>Adjustable deceleration time</b>		s	1...10					
<b>Starting torque</b>		%	30...80% of starting torque of motor connected directly on the line supply					
<b>Type of starter</b>		<b>ATSU</b>	<b>01N206LT</b>	<b>01N209LT</b>	<b>01N212LT</b>	<b>01N222LT</b>	<b>01N232LT</b>	
<b>Control power supply consumption</b>			= 24 V, 65 mA			= 24 V, 100 mA		
<b>Power dissipated</b>		At full load at end of starting	W	1.5	1.5	1.5	2.5	2.5
		In transient state at 5 times the rated operating current	W	61.5	91.5	121.5	222.5	322.5
<b>Type of starter</b>		<b>ATSU 01N206LT to ATSU 01N222LT</b>			<b>ATSU 01N232LT</b>			
<b>Use</b>								
		Starting time	s	1	5	1	5	
		Maximum number of cycles per hour		310	20	180	10	

# Soft starters for asynchronous motors

## Altistart U01 and TeSys model U

2

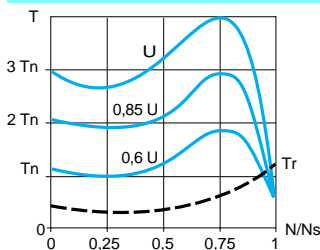
### Electrical characteristics (continued)

<b>Logic input power supply</b> (electrically isolated between power and control) <b>+ 24 V, COM</b>		24 V ±10% Isolated Max. current 100 mA
<b>Logic inputs</b> <b>LI1, LI2, BOOST</b> Stop, run and boost on start-up functions		Logic inputs with impedance 27 kohms; 24 V power supply (U max 40 V) Max current 8 mA State 0 if U < 5 V and I < 0.2 mA State 1 if U > 13 V and I > 0.5 mA
<b>Logic output LO1</b> End of starting signal		Open collector logic output External 24 V power supply (minimum 6 V maximum 30 V) Max current 200 mA
<b>Relay output</b> <b>R1A R1C</b>		Normally open (N/O) contact (contact open in fault mode) Minimum switching capacity: 10 mA for ~ 6 V Max. switching capacity on inductive load (cos φ = 0.5 and L/R = 20 ms): 2 A for ~ 250 V or ~ 30 V (AC-15) Max. operating voltage 440 V
<b>LED signalling</b>	Green LED Yellow LED	Starter powered up Nominal voltage reached

### Connections (Maximum connection capacity and tightening torque)

<b>Power circuit</b>			Connection onto Ø 4 mm screw terminals	
<b>Flexible wire without cable end</b>	1 conductor	mm <sup>2</sup>	1.5...10	8 AWG
	2 conductors	mm <sup>2</sup>	1.5...6	10 AWG
<b>Flexible wire with cable end</b>	1 conductor	mm <sup>2</sup>	1...6	10 AWG
	2 conductors	mm <sup>2</sup>	1...6	10 AWG
<b>Rigid wire</b>	1 conductor	mm <sup>2</sup>	1...10	8 AWG
	2 conductors	mm <sup>2</sup>	1...6	10 AWG
<b>Tightening torque</b>		<b>N.m</b>	1.9...2.5	
<b>Control circuit</b>			Screw connector	
<b>Flexible wire without cable end</b>	1 conductor	mm <sup>2</sup>	0.5...2.5	14 AWG
	2 conductors	mm <sup>2</sup>	0.5...1.5	16 AWG
<b>Flexible wire with cable end</b>	1 conductor	mm <sup>2</sup>	0.5...1.5	16 AWG
	2 conductors	mm <sup>2</sup>	0.5...1.5	16 AWG
<b>Rigid wire</b>	1 conductor	mm <sup>2</sup>	0.5...2.5	14 AWG
	2 conductors	mm <sup>2</sup>	0.5...1	17 AWG
<b>Tightening torque</b>		<b>N.m</b>	0.5	

### Torque characteristics (typical curves)



The diagram opposite shows the torque/speed characteristic of a cage motor in relation to the supply voltage.  
The torque varies in line with the square of the voltage at a fixed frequency. The gradual increase in the voltage prevents the instantaneous current peak on power-up.



# Soft starters for asynchronous motors

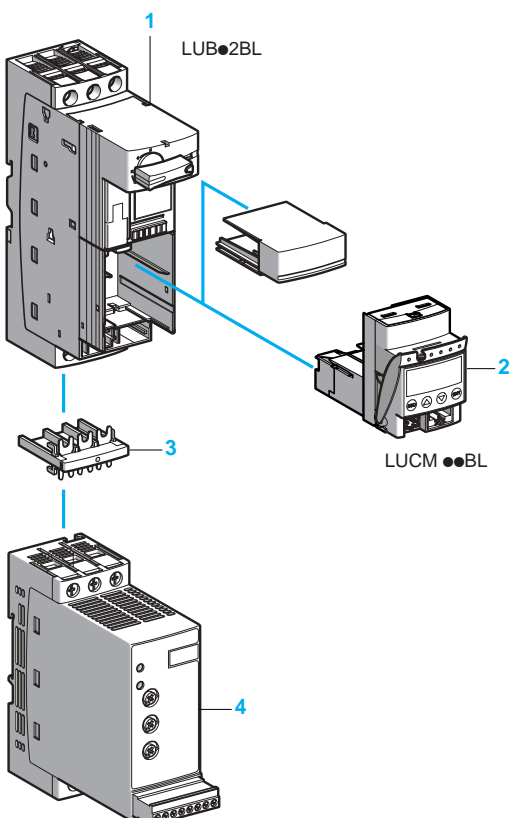
Altistart U01 and TeSys model U

DF531714



ATSU 01N222LT

DF510862



ATSU 01N2●●LT

## Soft start/soft stop unit for 0.75 to 15 kW motors (can be combined with the TeSys model U starter)

Motor				Starter		
Motor power (1)				Nominal current	Reference	Weight
230 V 230 V		400 V	460 V			
kW	HP	kW	HP	A		kg
<b>3-phase supply voltage: 200...480 V 50/60 Hz</b>						
0.75	1	1.5	2	6	ATSU 01N206LT	0.340
1.1	1.5	2.2	3			
1.5	2	3	5	9	ATSU 01N209LT	0.340
-	-	4	-			
2.2	3	5.5	7.5	12	ATSU 01N212LT	0.340
3	-	-	-			
4	5	7.5	10	22	ATSU 01N222LT	0.490
5.5	7.5	11	15			
7.5	10	15	20	32	ATSU 01N232LT	0.490

## Accessories

Description	Used for starter	Reference	Weight kg
Power connector between ATSU 01N2●●LT and TeSys model U	ATSU 01N2●●LT	VW3 G4104 ▲	0.020

## TeSys model U starter and soft start unit combinations

Numerous possibilities for combinations and options are offered. Please consult the "TeSys model U Starters-open version" specialist catalogue.

Motor power			Soft starter	TeSys model U	
230 V	400 V	460 V		Power base	Control unit (2)
Voltage	kW/HP	kW	HP		
0.75/1	1.5	2	ATSU 01N206LT	LUB 12	LUC● 05BL
1.1/1.5	2.2	3	ATSU 01N206LT	LUB 12	LUC● 12BL
1.5/2	3	-	ATSU 01N209LT	LUB 12	LUC● 12BL
-	4	5	ATSU 01N209LT	LUB 12	LUC● 12BL
2.2/3	-	-	ATSU 01N212LT	LUB 12	LUC● 12BL
3/-	5.5	7.5	ATSU 01N212LT	LUB 32	LUC● 18BL
4/5	7.5	10	ATSU 01N222LT	LUB 32	LUC● 18BL
5.5/7.5	11	15	ATSU 01N222LT	LUB 32	LUC● 32BL
7.5/10	15	20	ATSU 01N232LT	LUB 32	LUC● 32BL

Example of a starter-motor combination with:

- 1 non-reversing power base for DOL starting (LUB●2BL)
- 2 control unit (LUCM ●●BL)
- 3 power connector (VW3 G4104)
- 4 Altistart U01 soft start/soft stop unit (ATSU 01N2●●LT)

(1) Standard motor power ratings, HP power ratings indicated according to standard UL 508.  
 (2) Depending on the configuration of the chosen TeSys model U starter, replace the ● with A for standard, B for expandable, and M for multifunction.

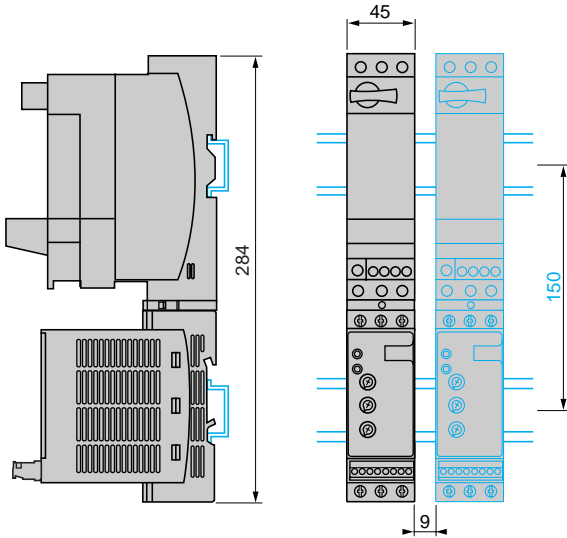
▲ Available 2nd quarter 2004

# Soft starters for asynchronous motors

Altistart U01 and TeSys model U

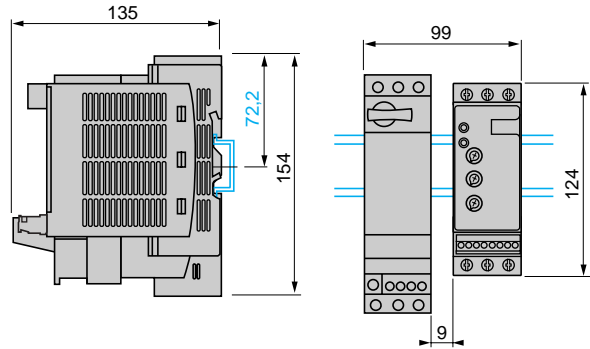
**TeSys model U combination (non-reversing power base) and  
ATSU 01N206LT to ATSU 01N212LT**

Mounting on  (35 mm) rail with VW3 G4104 connector



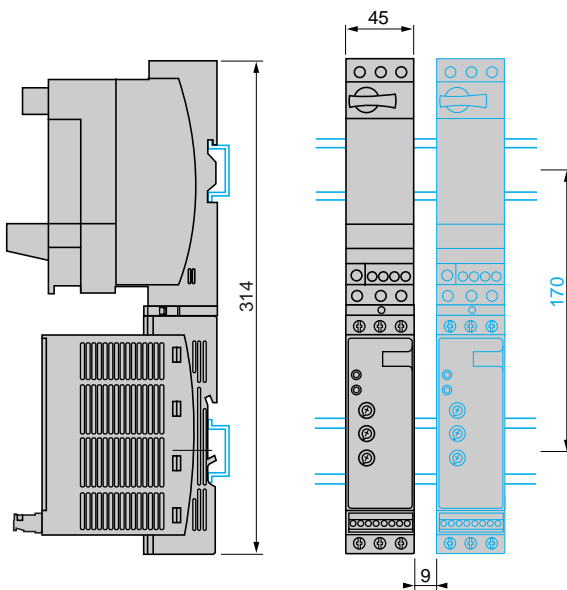
**TeSys model U combination (non-reversing or reversing power  
base) and ATSU 01N206LT to ATSU 01N212LT**

Side by side mounting



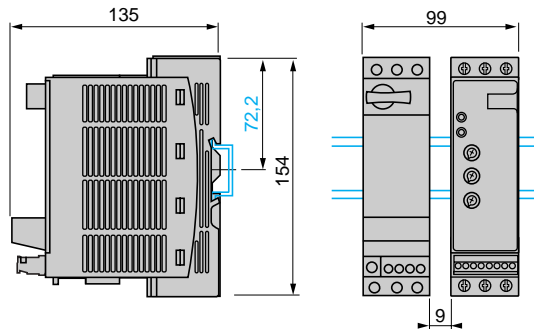
**TeSys model U combination (non-reversing power base) and  
ATSU 01N222LT to ATSU 01N232LT**

Mounting on  (35 mm) rail with VW3 G4104 connector

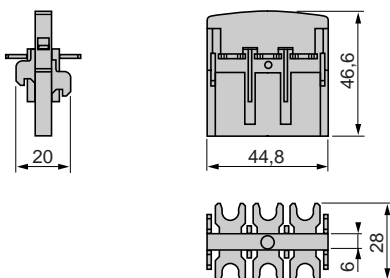


**TeSys model U combination (non-reversing or reversing power  
base) and ATSU 01N222LT to ATSU 01N232LT**

Side by side mounting



**VW3 G4104 connector**



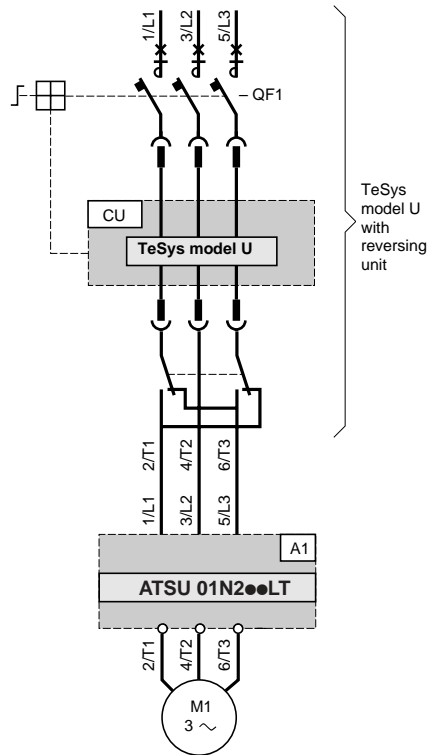
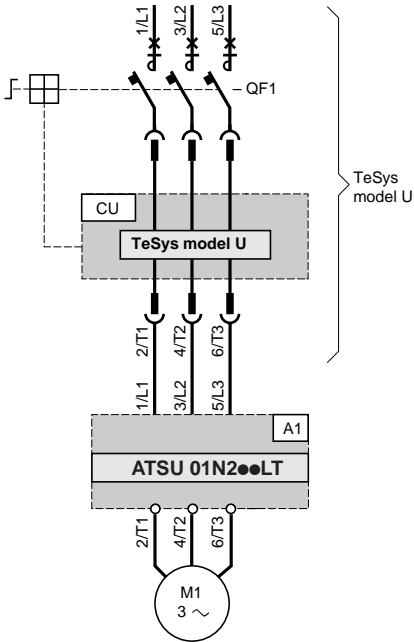
# Soft starters for asynchronous motors

Altistart U01 and TeSys model U  
For 0.75 to 15 kW motors

## ATSU 01N2●●LT soft start/soft stop units

### Power wiring

### Power wiring with reversing unit



**Compatible components** (For full references, see pages 1/16 and 1/17 or consult our "Motor starter solutions - control and protection components" specialist catalogue.)

Code	Description
A1	Soft start/soft stop unit
QF1	TeSys model U controller-starter
CU	TeSys model U control unit

# Soft starters for asynchronous motors

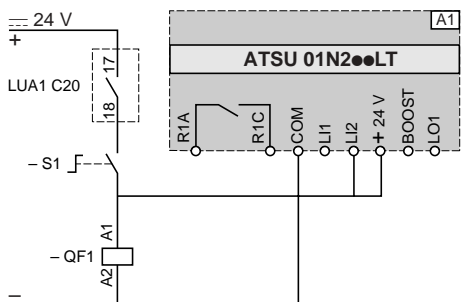
Altistart U01 and TeSys model U

For 0.75 to 15 kW motors

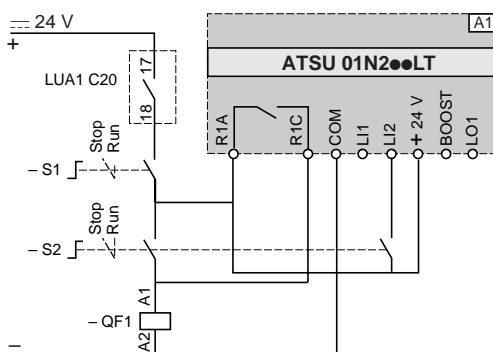
## ATSU 01N2●●LT soft start/soft stop units (continued)

### Automatic 2-wire control

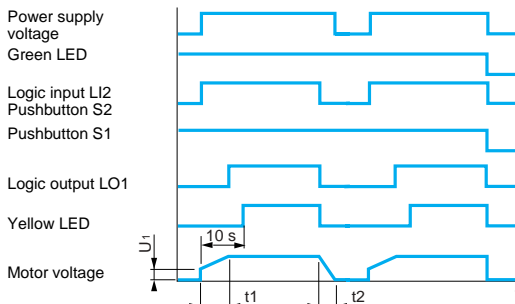
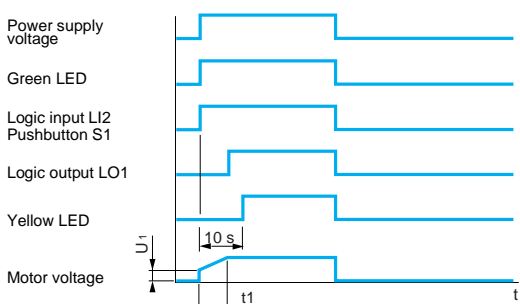
#### Without deceleration



#### With and without deceleration

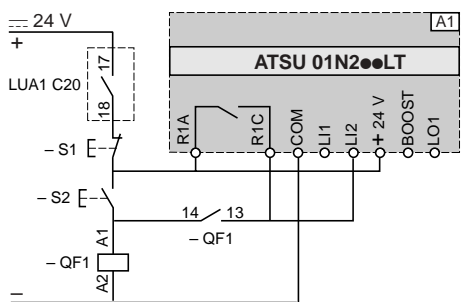


### Functional diagrams

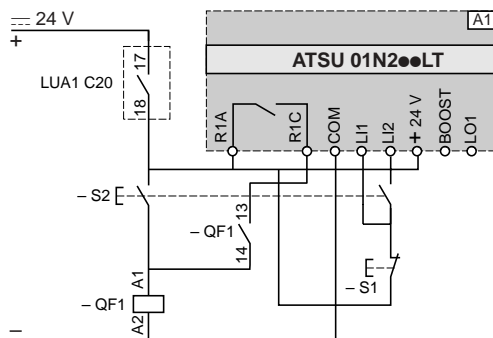


### Automatic 3-wire control

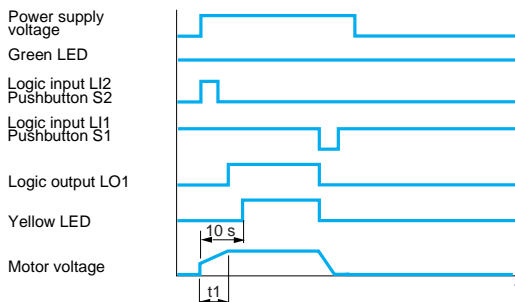
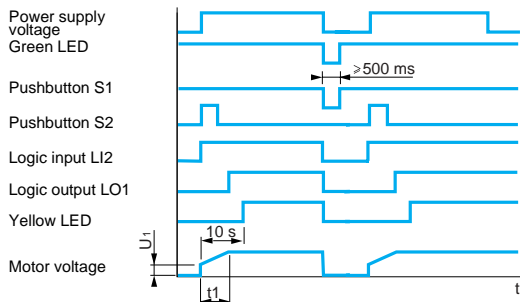
#### Without deceleration



#### With deceleration



### Functional diagrams



A1: Soft start/soft stop unit

S1, S2: XB4 B or XB5 B pushbuttons

QF1: TeSys model U controller-starter

t1: Acceleration time can be controlled by a potentiometer

t2: Deceleration time can be controlled by a potentiometer

U<sub>r</sub>: Starting time can be controlled by a potentiometer

# Soft starters for asynchronous motors

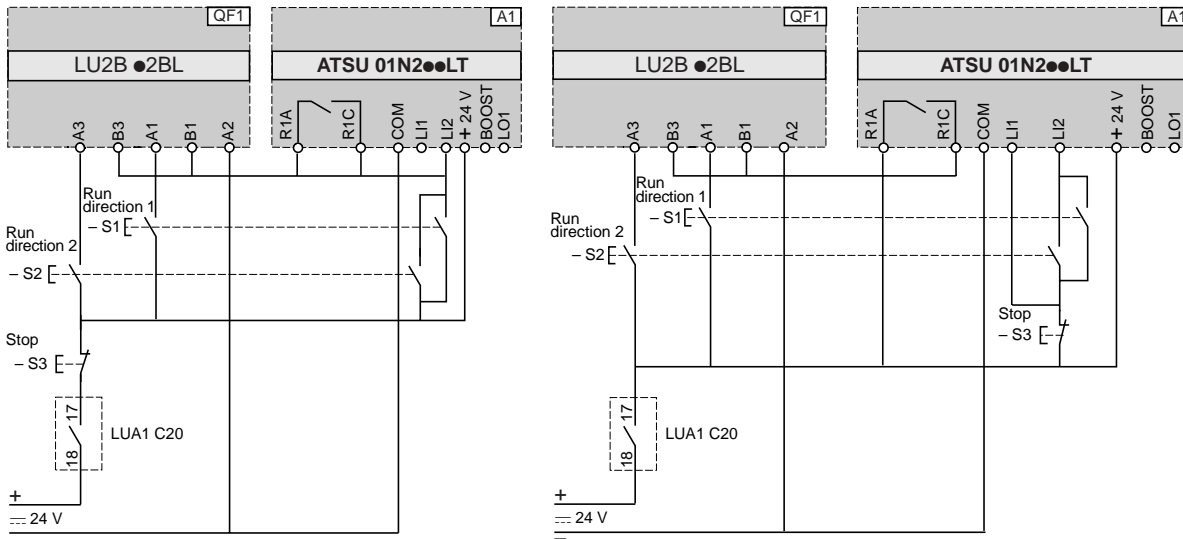
Altistart U01 and TeSys model U  
For 0.75 to 15 kW motors

## ATSU 01N2●●LT soft start/soft stop units (continued)

Automatic 3-wire control, with reversing unit

Without deceleration

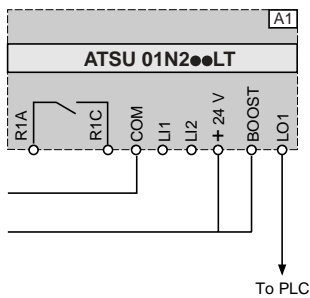
With deceleration



QF1: TeSys model U controller-starter with reversing unit  
A1: Soft start/soft stop unit  
S1, S2, S3: XB4 B or XB5 B pushbuttons  
S3: minimum depression time 500 ms

QF1: TeSys model U controller-starter with reversing unit  
A1: Soft start/soft stop unit  
S1, S2, S3: XB4 B or XB5 B pushbuttons

## Boost on starting and end of starting signal



A1: Soft start/soft stop unit

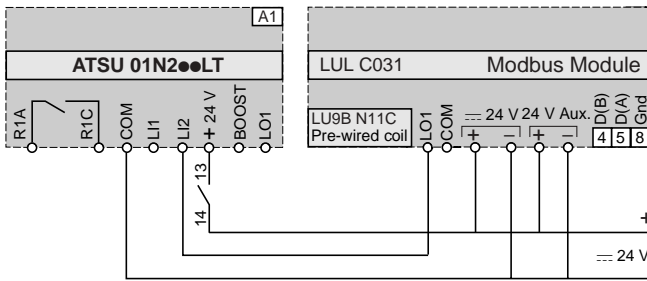
# Soft starters for asynchronous motors

Altistart U01 and TeSys model U  
For 0.75 to 15 kW motors

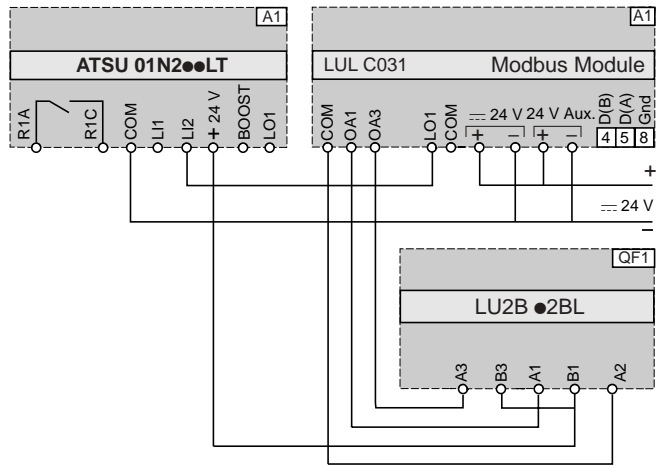
## ATSU 01N2●●LT soft start/soft stop units (continued)

Automatic control with Modbus communication module, with and without deceleration

Without reversing unit



With reversing unit



Function	Register	Bit	Value
<b>Powering down TeSys U and ATSU</b>			
-	704	0	0
<b>Automatic control without deceleration</b>			
Run	700	0	1
Stop	704	0	0
<b>Automatic control with deceleration</b>			
Run	700	0	1
Soft stop	700	0	0

Function	Register	Bit	Value
<b>Powering up TeSys U and ATSU</b>			
Forward	704	0	1
Reverse	704	1	1
<b>Powering down TeSys U and ATSU</b>			
Forward	704	0	0
Reverse	704	1	0
<b>Automatic control without deceleration</b>			
Run	700	0	1
Stop forward	704	0	0
Stop reverse	704	1	0
<b>Automatic control with deceleration (forward or reverse)</b>			
Run	700	0	1
Soft stop	700	0	0

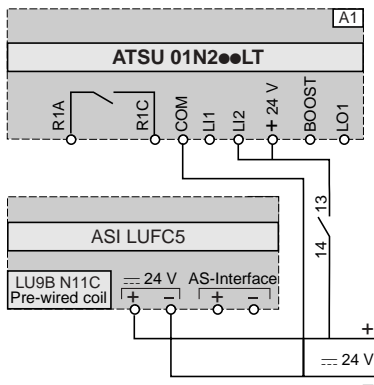
A1: Soft start/soft stop unit

A1: Soft start/soft stop unit

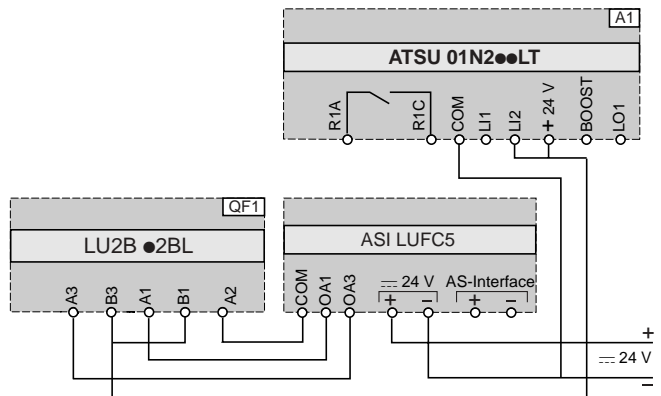
QF1: TeSys model U controller-starter with reversing unit

Automatic control with AS-Interface communication module, without deceleration

Without reversing unit



With reversing unit



Function	Bit	Value
<b>Power-up and automatic control without deceleration</b>		
Run	D0	1
Stop	D0	0

Function	Bit	Value
<b>Power-up and automatic control without deceleration</b>		
Run forward	D0	1
Stop	D0	0
Run reverse	D1	1
Stop	D1	0

A1: Soft start/soft stop unit

A1: Soft start/soft stop unit

QF1: TeSys model U controller-starter with reversing unit

---

## Schneider Electric worldwide

- Addresses ..... pages 3/2 to 3/7



# Schneider Electric worldwide

Up-dated: 28-07-2003

<b>Afghanistan</b>	Contacts are assured by	<b>Schneider Electric India</b>		
<b>Albania</b>	Contacts are assured by	<b>Schneider Electric Austria</b>		
<b>Algeria</b>	■ Schneider Electric	voie A Lot C22 Zone industrielle Rouiba - Alger	Tel. : +213 21 92 97 02 à 09 Fax : +213 21 92 97 00 à 01	
<b>Andorra</b>	Contacts are assured by	<b>Schneider Electric France</b>		
<b>Angola</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>		
<b>Anguilla</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Antartica</b>	Contacts are assured by	<b>Schneider Electric Brazil</b>		
<b>Antigua &amp; Barbuda</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Argentina</b>	■ Schneider Argentina	Viamonte 2850 - 1678 Caseros (provincia Buenos Aires)	Tel.: +54 1 716 88 88 Fax: +54 1 716 88 33	<a href="http://www.schneider-electric.com.ar">www.schneider-electric.com.ar</a>
<b>Armenia</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>		
<b>Aruba</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Australia</b>	■ Schneider Electric (Australia) Pty. Limited	2 Solent Circuit Norwest Business Park Baulkham Hill _ NSW 2153	Tel.: +61 298 51 28 00 Fax: +61 296 29 83 40	<a href="http://www.schneider.com.au">www.schneider.com.au</a>
<b>Austria</b>	■ Schneider Austria Ges.m.b.H.	Birostrasse 11 1239 Wien	Tel.: +431 610 540 Fax: +431 610 54 54	<a href="http://www.schneider-electric.at">www.schneider-electric.at</a>
<b>Azerbaijan</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>		
<b>Bahamas</b>	■ Schneider Electric	Union Village PO Box 3901 - Nassau	Tel. : +1 242 327 42 91 Fax : +1 242 327 42 91	<a href="http://www.squared.com">www.squared.com</a>
<b>Bahrain</b>	■ Schneider Electric	Floor 1 - Juma Building Abu Horaira Avenue PO Box 355 - 304 Manama	Tel.: +97 322 7897 Fax: +97 321 8313	
<b>Bangladesh</b>	Contacts are assured by	<b>Schneider Electric India</b>		
<b>Barbados</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Belarus</b>	■ Schneider Electric Industries SA	Prospect Macherova 5, of. 202 220004 Minsk	Tel. : +375 172 23 75 50 Fax : +375 172 23 97 61	
<b>Belgium</b>	■ Schneider Electric nv/sa	Dieweg 3 B - 1180 Brussels	Tel.: +3223737711 Fax: +3223753858	<a href="http://www.schneider-electric.be">www.schneider-electric.be</a>
<b>Belize</b>	Contacts are assured by	<b>Schneider Electric USA</b>		
<b>Benin</b>	Contacts are assured by	<b>Schneider Electric Ivory Coast</b>		
<b>Bermuda</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Bhutan</b>	Contacts are assured by	<b>Schneider Electric India</b>		
<b>Bolivia</b>	Contacts are assured by	<b>Schneider Electric Chile</b>		
<b>Bosnia and Herzegovina</b>	Contacts are assured by	<b>Schneider Electric Croatia</b>		
<b>Botswana</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>		
<b>Bouvet island</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Brazil</b>	■ Schneider Electric Brazil Ltda.	Avenida Das Nações Unidas 23223 Jurubatuba - CEP 04795-907 São Paulo-SP	Tel.: +55 55 24 52 33 Fax: +55 55 22 51 34	<a href="http://www.schneider-electric.com.br">www.schneider-electric.com.br</a>
<b>Brunei (Darussalam)</b>	Contacts are assured by	<b>Schneider Electric Singapore</b>		
<b>Bulgaria</b>	■ Schneider Electric	Expo 2000, Boulevard Vaptzarov 1407 Sofiav	Tel.: +3592 919 42 Fax: +3592 962 44 39	<a href="http://www.schneiderelectric.bg">www.schneiderelectric.bg</a>
<b>Burkina Faso</b>	Contacts are assured by	<b>Schneider Electric Ivory Coast</b>		
<b>Burundi</b>	Contacts are assured by	<b>Schneider Electric Kenya</b>		
<b>Cambodia</b>	Contacts are assured by	<b>Schneider Electric Viet Nam</b>		
<b>Cameroon</b>	■ Schneider Electric Cameroon	166, rue de l'Hôtel de Ville BP12087 - Douala	Tel.: +237 343 38 84 Fax: +237 343 11 94	
<b>Canada</b>	■ Schneider Canada	19, Waterman Avenue M4 B1Y2 Toronto - Ontario	Tel.: +1 416 752 8020 Fax: +1 416 752 4203	<a href="http://www.schneider-electric.ca">www.schneider-electric.ca</a>
<b>Cape Verde</b>	Contacts are assured by	<b>Schneider Electric Senegal</b>		
<b>Caribee</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Cayman islands</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Central African Republic</b>	Contacts are assured by	<b>Schneider Electric Cameroon</b>		
<b>Chad</b>	Contacts are assured by	<b>Schneider Electric Cameroon</b>		
<b>Chile</b>	■ Schneider Electric Chile S.A.	Avda. Pde Ed. Frei Montalva, 6001-31 Conchali - Santiago	Tel.: +56 2 444 3000 Fax: +56 2 423 9335	<a href="http://www.schneider-electric.co.cl">www.schneider-electric.co.cl</a>
<b>China</b>	■ Schneider Beijing	Landmark bldg-Room 1801 8 North Dong Sanhuan Rd Chaoyang District 100004 Beijing	Tel.: +86 10 65 90 69 07 Fax: +86 10 65 90 00 13	<a href="http://www.schneider-electric.com.cn">www.schneider-electric.com.cn</a>

3





# Schneider Electric worldwide

Up-dated: 28-07-2003

<b>Christmas island</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Cocos (Keeling) islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Colombia</b>	■ Schneider Electric de Colombia S.A.	Calle 45A #102-48 Bogota DC	Tel.: +57 1 426 97 00 Fax: +57 1 426 97 40
<b>Comoros</b>	Contacts are assured by	<b>Schneider Electric la Reunion</b>	
<b>Congo</b>	Contacts are assured by	<b>Schneider Electric Cameroon</b>	
<b>Cook islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Costa Rica</b>	■ Schneider Centroamérica Ltda.	1.5 kms oeste de la Embajada Americana, Pavas, San José, Costa Rica C.A. Apartado: 4123-1000 San Jose	Tel.: +506 232-60-55 Fax: +506 232-04-26  <b>www.schneider-ca.com</b>
<b>Croatia</b>	■ Schneider Electric SA	Fallerovo Setaliste 22 HR - 10000 Zagreb	Tel.: +385 1 367 100 Fax: +385 1 367 111
<b>Cuba</b>	■ Schneider Electric	Bureau de Liaison de La Havane Calle 36- N°306-Apto1 Entre 3ra y 5ta Avenida Miramar Playa Habana	Tel.: +53 724 15 59 Fax: +53 724 12 17
<b>Cyprus</b>	■ Schneider Electric Cyprus	28 General Timayia Avenue Kyriakos Building, Block #A301 Larnaca 6046	Tel.: +00357 248 12646 Fax: +00357 246 37382
<b>Czech Republic</b>	■ Schneider Electric CZ, s.r.o.	Thámová 13 Praha 8 - 186 00	Tel.: +420 2 810 88 111 Fax: +420 2 24 81 08 49  <b>www.schneider-electric.cz</b>
<b>Democratic Rep. of Congo</b>	Contacts are assured by	<b>Schneider Electric Cameroon</b>	
<b>Denmark</b>	■ Schneider Electric A/S	Baltorpbakken 14 DK-2750 Ballerup	Tel.: +45 44 73 78 88 Fax: +45 44 68 5255  <b>www.schneider-electric.dk</b>
<b>Djibouti</b>	Contacts are assured by	<b>Schneider Electric Egypt</b>	
<b>Dominican Republic</b>	■ Schneider Electric	Calle Jacinto Manon Esq. Federico Geraldino Edificio D' Roca Plaza Suite 402, Ens. Paraiso - Santo Domingo	Tel.: +1 809 334 66 63 Fax: +1 809 334 66 68
<b>Ecuador</b>	■ Schneider Electric Ecuador SA	Av.Republica del Salvador 1082 y Nac Edificio Mansion Blanca-Quito	Tel. : +593 2 224 42 42 Fax : +593 2 224 42 94
<b>Egypt</b>	■ Schneider Electric Egypt sae	68, El Tayaran Street Nasr City, 11371 - Cairo	Tel.: +20 24 01 01 19 Fax: +20 24 01 66 87  <b>www.schneider.com.eg</b>
<b>El Salvador</b>	Contacts are assured by	<b>Schneider Electric USA</b>	
<b>Equatorial Guinea</b>	Contacts are assured by	<b>Schneider Electric Cameroon</b>	
<b>Eritrea</b>	Contacts are assured by	<b>Schneider Electric Egypt</b>	
<b>Estonia</b>	■ Lexel Electric	Ehitajate tee 110 EE 12618 Tallinn	Tel. : +372 650 97 00 Fax : +372 650 97 22
<b>Ethiopia</b>	Contacts are assured by	<b>Schneider Electric Egypt</b>	
<b>Falkland islands</b>	Contacts are assured by	<b>Schneider Electric Brazil</b>	
<b>Faroe islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Fiji</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Finland</b>	■ Schneider Electric Oy	Sinimäentie 14 02630 Espoo	Tel. : +358 9 527 000 Fax : +358 9 5270 0376  <b>www.schneider-electric.fi</b>
<b>France</b>	■ Schneider Electric SA	5, rue Nadar 92500 Rueil Malmaison	Tel.: +33 (0)1 41 29 82 00 Fax: +33 (0)1 47 51 80 20  <b>www.schneider-electric.fr</b>
<b>French Polynesia</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>French West Indies</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>	
<b>Gabon</b>	Contacts are assured by	<b>Schneider Electric Cameroon</b>	
<b>Gambia</b>	Contacts are assured by	<b>Schneider Electric Senegal</b>	
<b>Georgia</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>	
<b>Germany</b>	■ Schneider Electric GmbH	Gothaer Straße 29 D-40880 Ratingen	Tel.: +49210 240 40 Fax: +492 10 240 49 256  <b>www.schneiderelectric.de</b>
<b>Ghana</b>	■ Schneider Electric Ghana	PMB Kia 3rd Floor Opeibea House Airport Commercial Center Liberation road - Accra	Tel. : +233 21 70 11 687 Fax : +233 21 77 96 22
<b>Gibraltar</b>	Contacts are assured by	<b>Schneider Electric Spain</b>	
<b>Greece</b>	■ Schneider Electric AE	14th km - RN Athens-Lamia GR - 14564 Kifissia	Tel.: +302 106 29 52 00 Fax: +302 106 29 52 10  <b>www.schneider-electric.com.gr</b>
<b>Greenland</b>	Contacts are assured by	<b>Schneider Electric United States</b>	
<b>Grenada</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>	
<b>Guadeloupe</b>	Contacts are assured by	<b>Schneider Electric Martinique</b>	
<b>Guam</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	



# Schneider Electric worldwide

Up-dated: 28-07-2003

<b>Guatemala</b>	Contacts are assured by	<b>Schneider Electric United States</b>	
<b>Guinea-Bissau</b>	Contacts are assured by	<b>Schneider Electric Sénégal</b>	
<b>Guinea</b>	Contacts are assured by	<b>Schneider Electric Ivory Coast</b>	
<b>Guyana</b>	Contacts are assured by	<b>Schneider Electric United States</b>	
<b>Haiti</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>	
<b>Heard &amp; Mac Donald isl.</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Honduras</b>	Contacts are assured by	<b>Schneider Electric United States</b>	
<b>Hong Kong</b>	■ Schneider Electric (Hong Kong) Ltd	Room 3108-28, 31th Floor, Sun Hung Kai Centre, 30 Harbour Road, Wanchai	Tel.: +852 25 65 06 21 Fax: +852 28 11 10 29
<b>Hungary</b>	■ Schneider Electric Hungária Villamossági Rt.	Fehérvári út 108 – 112 H-1116 Budapest	Tel.: +36 1 382 26-06 Fax: +36 1 206 1429
<b>Iceland</b>	Contacts are assured by	<b>Schneider Electric Denmark</b>	
<b>India</b>	■ Schneider Electric India	Max House, 1 Dr Jha Marg, Okhla 110 020 New Dehli	Tel. : +91 11 631 85 84 Tel. : +91 11 631 71 61
<b>Indonesia</b>	■ P.T. Schneider Indonesia	Ventura Building 7th Floor Jalan R.A. Kartini Kav.26 Cilandak - 12430 Jakarta	Tel.: +62 +21 750 44 06 Fax: +62 +21 750 44 15/ 16
<b>Iran (Islamic Republic of)</b>	■ Telemecanique Iran	1047 Avenue VALI ASSR P.O. Box 15875-3547 15116 Teheran	Tel.: +98 218 71 01 42 Fax: +98 218 71 81 87
<b>Irak</b>	■ Schneider Electric Industries SA	38050 Grenoble Cedex 9	Tel.: +33 04 76 60 54 27 Fax: +33 04 76 60 56 60
<b>Ireland</b>	■ Schneider Electric Ireland	Maynooth Road Cellbridge - Co. Kildare	Tel.: +353+0 1 6012200 Fax: +353+0 1 6012201
<b>Italy</b>	■ Schneider Electric S.p.A.	Centro Direzionale Colleoni Palazzo Sirio - Viale Colleoni, 7 20041 Agrate Brianza (Mi)	Tel.: +39 39 655 8111 Fax: +39 39 605 6237
<b>Ivory Coast</b>	■ Schneider Electric Afrique de l'Ouest	Rue Pierre et Marie Curie 18 BP 2027 Abidjan 18	Tel.: +225 21 75 00 10 Fax: +225 21 75 00 30
<b>Jamaica</b>	■ Schneider Electric	Shop#5, Plaza Dunrobin 30 Dunrobin Avenue - Kingstown	Tel. : +1876 755 41 27 Tel. : +931 87 74
<b>Japan</b>	■ Schneider Electric Japan Ltd	Torigoe F. Bldg 1-8-2, Torigoe Taito-Ku - 111-0054 Tokyo	Tel.: +81 358 35 35 81 Fax: +81 358 35 35 85
<b>Jordan</b>	■ Schneider Electric Industr. Jordan	Jordan University Street Abu Al Haj Commercial Complex 2nd Floor - Office # 202 - Amman	Tel.: 962 65 16 78 87 Fax: 962 65 16 79 1
<b>Kazakstan</b>	■ Schneider Electric Kazakhstan Liaison Office	Prospekt Abaia 157 off 9 480009 Almaty	Tel. : +7 327 250 93 88 Tel. : +7 327 250 63 70
<b>Kenya</b>	■ Schneider East Africa	Power Technics Complex Monbasa Road - PO Box 46345 Nairobi	Tel. : +254 2.824.156 Fax : +254 2.824.157
<b>Kiribati</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Korea</b>	■ Schneider Electric Korea Ltd	3Floor, Cheil Bldg., 94-46, 7-Ka Youngdeungpodong, Youngdeungpo-ku 150-037 Seoul	Tel. : +82 2 2630 9700 Fax : +82 2 2630 9800
<b>Kurdistan</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>	
<b>Kuwait</b>	■ Schneider Electric Kuwait	Al Gaas Tower - Sharq 2nd Floor PO Box 20092 - 13 061 Safat	Tel.: +965 240 75 46 Fax: +965 240 75 06
<b>Kyrgyz Republic</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>	
<b>Laos</b>	Contacts are assured by	<b>Schneider Electric Thailand</b>	
<b>Latvia</b>	■ Lexel Electric	60A A.Deglava str. LV1035 Riga	Tel. : +371 780 23 74/75 Fax : +371 754 62 80
<b>Lebanon</b>	■ Schneider Electric Liban	Tabaris, Avenue Charles Malek Immeuble Ashada, 8 P.O. Box 166223 - Beyrouth	Tel. : +961 1 20 46 20 Tel. : +961 1 20 31 19
<b>Lesotho</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>	
<b>Liberia</b>	Contacts are assured by	<b>Schneider Electric Ghana</b>	
<b>Libya</b>	Contacts are assured by	<b>Schneider Electric Tunisia</b>	
<b>Liechtenstein</b>	Contacts are assured by	<b>Schneider Electric Switzerland</b>	
<b>Lithuania</b>	■ Lexel Electric	44, Verkiu str. LT-2012 Vilnius	Tel. : +370 278 59 59/61 Fax : +370 278 59 60
<b>Loro Sae</b>	Contacts are assured by	<b>Schneider Electric Australia</b>	
<b>Luxembourg</b>	■ Schneider Electric Industrie SAS	Agence de Metz 1, Rue Graham Bell - BP n° 35190 57075 Metz cedex 3 - France	Tel.: 33 03 87 39 06 03 Fax: 33 03 87 74 25 96

3



# Schneider Electric worldwide

Up-dated: 28-07-2003

<b>Macau</b>	Contacts are assured by	<b>Schneider Electric China</b>		
<b>Macedonia</b>	Contacts are assured by	<b>Schneider Electric Bulgaria</b>		
<b>Madagascar</b>	Contacts are assured by	<b>Schneider Electric la Reunion</b>		
<b>Malawi</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>		
<b>Malaysia</b>	■ Schneider Electric (Malaysia) Sdn Bhd	No.11 Jalan U1/19, Seksyen U1 Hicom-Glenmarie Industrial Park 40150 Shah Alam Selangor Darul Ehsan	Tel.: (603) 7883 6333 Fax: (603) 7883 6188	<a href="http://www.schneider-electric.com.my">www.schneider-electric.com.my</a>
<b>Maldives</b>	Contacts are assured by	<b>Schneider Electric Reunion</b>		
<b>Mali</b>	Contacts are assured by	<b>Schneider Electric Senegal</b>		
<b>Malta</b>	Contacts are assured by	<b>Schneider Electric Tunisia</b>		
<b>Marshall islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Martinique</b>	■ Schneider Electric	Schneider Electric Immeuble Cottrell - ZI de la Lézarde 97232 Le Lamentin	Tel.: +05 96 51 06 00 Fax: +05 96 51 11 26	
<b>Mauritania</b>	Contacts are assured by	<b>Schneider Electric Senegal</b>		
<b>Mauritius</b>	■ Schneider Electric	Route côtière Calodyne - Mauritius	Tel.: 230 282 18 83 Fax: 230 282 18 84	
<b>Mayotte</b>	Contacts are assured by	<b>Schneider Electric Reunion</b>		
<b>Mexico</b>	■ Groupe Schneider Mexico	Calz. Rojo Gomez N° 1121-A Col. Guadalupe del Moral México, D.F. - C.P. 09300	Tel.: +525 686 30 00 Fax: +525 686 24 09	<a href="http://www.schneider-electric.com.mx">www.schneider-electric.com.mx</a>
<b>Micronesia</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Moldova</b>	Contacts are assured by	<b>Schneider Electric Romania</b>		
<b>Monaco</b>	Contacts are assured by	<b>Schneider Electric France</b>		
<b>Mongolia</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>		
<b>Montserrat</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Morocco</b>	■ Schneider Electric Morocco	26, rue Ibnou Khalikane Quartier Palmiers 20100 Casablanca	Tel.: +212 299 08 48 to 57 Fax: +212 299 08 67 and 69	<a href="http://www.schneider.co.ma">www.schneider.co.ma</a>
<b>Mozambique</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>		
<b>Myanmar</b>	Contacts are assured by	<b>Schneider Electric Singapore</b>		
<b>Namibia</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>		
<b>Nauru</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Nepal</b>	Contacts are assured by	<b>Schneider Electric India</b>		
<b>Netherlands</b>	■ Schneider Electric BV	Waarderweg 40 - Postbus 836 2003 RV Haarlem	Tel.: +31 23 512 4124 Fax: +31 23 512 4100	<a href="http://www.schneider-electric.nl">www.schneider-electric.nl</a>
<b>Netherlands Antilles</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>New Caledonia</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>New Zealand</b>	■ Schneider Electric (NZ) Ltd	14 Charann Place Avondale P.O. Box 15355 - New Lynn Auckland	Tel.: +64 9 829 04 90 Fax: +64 9 829 04 91	<a href="http://www.schneider-electric.co.nz">www.schneider-electric.co.nz</a>
<b>Nicaragua</b>	Contacts are assured by	<b>Schneider Electric United States</b>		
<b>Niger</b>	Contacts are assured by	<b>Schneider Electric Ivory Coast</b>		
<b>Nigeria</b>	■ Schneider Electric Nigeria Limited	Biro plaza - 8th Floor - Plot 634 Abeyemo Alakija Street Victoria Islan - Lagos	Tel.: +234 1 2702973 Fax: +234 1 2702976	
<b>Niue</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Norfolk island</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>North Korea</b>	Contacts are assured by	<b>Schneider Electric China</b>		
<b>Northern Mariana islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Norway</b>	■ Schneider Electric Norge A/S	Solgaard Skog 2 Postboks 128 - 1501 Moss	Tel.: +47 6924 9700 Fax: +47 6925 7871	<a href="http://www.schneider-electric.no">www.schneider-electric.no</a>
<b>Oman</b>	■ Schneider Electric CA	c/o Arab Development Co PO Box 439 - 113 Muscat	Tel.: +968 77 163 64 Fax: +968 77 104 49	
<b>Pakistan</b>	■ Schneider Electric Pakistan	43-L, 2nd floor, M.M. Alam Road, Gulberg II - Lahore	Tel.: +92 42 5754471 à 73 Fax: +92 42 5754474	
<b>Palau</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Panama</b>	Contacts are assured by	<b>Schneider Electric United States</b>		
<b>Papua New Guinea</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Paraguay</b>	Contacts are assured by	<b>Schneider Electric Uruguay</b>		



# Schneider Electric worldwide

Up-dated: 28-07-2003

<b>Peru</b>	■ Schneider Electric Peru S.A.	Los Telares n°231 Urb. Vulcano, Ate Lima 03	Tel.: +511 348 44 11 Fax: +511 348 05 23	<a href="http://www.schneider-electric.com.pe">www.schneider-electric.com.pe</a>
<b>Philippines</b>	■ Schneider Electric Philippines, Inc	5th Floor, ALCO Building 391 Sen. Gil Puyat Avenue Makati 1209	Tel.: +632 896 6063 Fax: +632 896 7229	
<b>Pitcairn</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Poland</b>	■ Schneider Electric Polska Sp.zo.o.	ul. Lubinowa 4a 03-878 - Warszawa	Tel.: +48 22 511 8 200 Fax: +48 22 511 8 210	<a href="http://www.schneider-electric.pl">www.schneider-electric.pl</a>
<b>Portugal</b>	■ Schneider Electric Portugal	Av.do Forte, 3 Edificio Suécia II, Piso 3-A CP 2028 Carnaxide 2795 Linda-A-Velha	Tel.: +351 21 416 5800 Fax: +351 21 416 5857	<a href="http://www.schneiderelectric.pt">www.schneiderelectric.pt</a>
<b>Puerto Rico</b>	Contacts are assured by	<b>Schneider Electric United States</b>		
<b>Qatar</b>	■ Schneider Electric Qatar Branch	c/o Khalifa BinFahred Al Thani Trad.and Co - P.O. Box 4484 Doha	Tel.: +97 4424358 Fax: +97 4424358	
<b>Reunion</b>	■ Schneider Electric	Immeuble Futura, 190, rue des 2 canons BP 646 - 97497 Sainte Clothilde	Tel.: +262 28 14 28 Fax: +262 28 39 37	
<b>Romania</b>	■ Schneider Electric	Bd Ficusului n°42 Apimondia, Corp.A, et.1, Sector 1 Bucuresti	Tel.: +401 203 06 50 Fax: +401 232 15 98	<a href="http://www.schneider-electric.ro">www.schneider-electric.ro</a>
<b>Russian Federation</b>	■ Schneider Electric ZAO	Enisseyskaya 37 129 281 Moscow	Tel.: +7095 797 40 00 Fax: +7095 797 40 03	<a href="http://www.schneider-electric.ru">www.schneider-electric.ru</a>
<b>Rwanda</b>	Contacts are assured by	<b>Schneider Electric Kenya</b>		
<b>Samoa</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>San Marino</b>	Contacts are assured by	<b>Schneider Electric Italy</b>		
<b>Sandwich &amp; Georgia island</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Sao Tome &amp; Principe</b>	Contacts are assured by	<b>Schneider Electric Senegal</b>		
<b>Saudi Arabia</b>	■ Schneider Electric	Second Industrial City P.O. Box 89249 - 11682 Riyadh	Tel.: +966 1 265 1515 Fax: +966 1 265 1860	
<b>Senegal</b>	■ Schneider Electric Sénégal	BP 15952 - Dakar-Fann Rond point N'Gor - Dakar	Tel.: +221 820 68 05 Fax: +221 820 58 50	
<b>Seychelles</b>	Contacts are assured by	<b>Schneider Electric Reunion</b>		
<b>Sierra Leone</b>	Contacts are assured by	<b>Schneider Electric Ghana</b>		
<b>Singapore</b>	■ Schneider Electric Singapore Pte Ltd	10 Ang Mo Kio Street 65 #02-17/20 TechPoint Singapore 569059	Tel.: +65 484 78 77 Fax: +65 484 78 00	<a href="http://www.schneider-electric.com.sg">www.schneider-electric.com.sg</a>
<b>Slovak Republic</b>	■ Schneider Electric Slovakia spol s.r.o.	Borekova 10 SK-821 06 Bratislava	Tel.: +02 45 52 40 10 and 40 30 Fax: +02 45 52 40 00	<a href="http://www.schneider-electric.sk">www.schneider-electric.sk</a>
<b>Slovenia</b>	■ Schneider Electric, d.o.o.	Dunasjka 47 1000 Ljubljana	Tel.: +386 1 23 63 555 Fax: +386 1 23 63 559	<a href="http://www.schneider-electric.si">www.schneider-electric.si</a>
<b>Solomon islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Somalia</b>	Contacts are assured by	<b>Schneider Electric Egypt</b>		
<b>South Africa</b>	■ Schneider Electric South Africa (PTY) Ltd	Private Bag X139 Halfway House 1685 - Midrand.	Tel.: +27 11 254 6400 Fax: +27 11 315 8830	<a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a>
<b>Spain</b>	■ Schneider Electric España, S.A.	Pl. Dr. Letamendi, 5-7 08007 Barcelona	Tel.: +34 93 484 3100 Fax: +34 93 484 3308	<a href="http://www.schneiderelectric.es">www.schneiderelectric.es</a>
<b>Sri Lanka</b>	■ Schneider Electric Industries SA	Liaison office SRI Lanka Level 3B Valiant towers 46/7 Nawam Mawatha-Colombo 2	Tel.: +94 77 48 54 89	<a href="http://www.schneiderelectric-in.com">www.schneiderelectric-in.com</a>
<b>St Helena</b>	Contacts are assured by	<b>Schneider Electric Italy</b>		
<b>St Kitts &amp; Nevis</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>St Lucia</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>St Pierre et Miquelon</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>St Vincent &amp; Grenadines</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Sudan</b>	Contacts are assured by	<b>Schneider Electric Egypt</b>		
<b>Suriname</b>	Contacts are assured by	<b>Schneider Electric United States</b>		
<b>Svalbard &amp; Jan Mayen isl.</b>	Contacts are assured by	<b>Schneider Electric Denmark</b>		
<b>Swaziland</b>	Contacts are assured by	<b>Schneider Electric South Africa</b>		
<b>Sweden</b>	■ Schneider Electric AB	Djupdalsvägen 17/19 19129 Sollentuna	Tel.: +46 8 623 84 00 Fax: +46 8 623 84 85	<a href="http://www.schneider-electric.se">www.schneider-electric.se</a>
<b>Switzerland</b>	■ Schneider Electric (Switzerland) S.A.	Schermenwaldstrasse 11 CH - 3063 Ittigen	Tel.: +41 31 917 3333 Fax: +41 31 917 3355	<a href="http://www.schneider-electric.ch">www.schneider-electric.ch</a>

3



# Schneider Electric worldwide

Up-dated: 28-07-2003

<b>Syrian Arab Republic</b>	■ Schneider Electric Syria	Elba Street - Malki Gheibeh and Qassas bldg, 1st floor PO Box 33876-Damascus	Tel. : +963 11 37 49 88 00 Fax : +963 11 37 17 55 9	
<b>Taiwan, Republic of China</b>	■ Schneider Electric Taiwan Co Ltd	2Fl., N°37, Ji-Hu Road, Nei-Hu Dist., Taipei 114	Tel. : +886 2 8751 6388 Fax : +886 2 8751 6389	<a href="http://www.schneider-electric.com.tw">www.schneider-electric.com.tw</a>
<b>Tajikistan</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>		
<b>Tanzania, United Rep. of</b>	Contacts are assured by	<b>Schneider Electric Kenya</b>		
<b>Thailand</b>	■ Schneider (Thailand) Ltd	20th Floor Richmond Building 75 Sukhumvit 26 Road, Klongtoey Bangkok 10110	Tel.: +662 204 9888 Fax: +662 204 9816	<a href="http://www.schneider-electric.co.th">www.schneider-electric.co.th</a>
<b>Togo</b>	Contacts are assured by	<b>Schneider Electric Ivory Coast</b>		
<b>Tokelau</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Tonga</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Trinidad &amp; Tobago</b>	■ Schneider Electric	6, 1st Street West Ext. Beaulieu Avenue Trincity Trinidad West Indies	Tel.: 1868 640 42 04 Fax: 1868 640 42 04	
<b>Tunisia</b>	■ Schneider Electric Tunisia	Rue du Lac Oubeira 1053 Les Berges du Lac - Tunis	Tel.: +216 71 960 477 Fax: +216 71 960 342	
<b>Turkey</b>	■ Schneider Elektrik Sanayi Ve Ticaret A.S.	Tütüncü Mehmet Efendi Cad. N°:110 Kat 1-2 - 81080 Göztepe – Istanbul	Tel.: +90 21 63 86 95 70 Fax: +90 21 63 86 38 75	<a href="http://www.schneiderelectric.com.tr">www.schneiderelectric.com.tr</a>
<b>Turkmenistan</b>	■ Schneider Electric Turkmenistan Liaison Office	rue Neitralny Turkmenistan 28, off.326/327 74 000 Achgabad	Tel. : +993 12 46 29 52 Fax : +993 12 46 29 52	
<b>Turks &amp; Caicos islands</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Tuvalu</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Uganda</b>	Contacts are assured by	<b>Schneider Electric Kenya</b>		
<b>Ukraine</b>	■ Schneider Electric	Rue Krechtchalik 2 252601 Kiev	Tel.: +380 44 462 04 25 Fax: +380 44 462 04 24	<a href="http://www.schneider-electric.com.ua">www.schneider-electric.com.ua</a>
<b>United Arab Emirates</b>	■ Schneider Electric Abu Dhabi	PO Box 29580 Office Floor 2/Lulu Street Al Marina Plaza Tower Abu Dhabi	Tel.: +9712 6 339444 Fax: +9712 6 316606	
<b>United Kingdom</b>	■ Schneider Electric Ltd	Braywick House East Windsor Road - Maidenhead Berkshire SL6 1 DN	Tel.: +44 (0)1 628 508 500 Fax: +44 (0)1 628 508 508	<a href="http://www.schneider.co.uk">www.schneider.co.uk</a>
<b>United States</b>	■ Schneider Electric	North American Division 1415 Roselle Road Palatine - IL 60067	Tel.: +1 847 397 2600 Fax: +1 847 925 7500	<a href="http://www.squared.com">www.squared.com</a>
<b>Uruguay</b>	■ Schneider Electric Uruguay S.A.	Ramon Masini 3190 Montevideo	Tel. : +59 82 707 2392 Fax : +59 82 707 2184	
<b>Uzbekistan</b>	Contacts are assured by	<b>Schneider Electric Russian Fed.</b>		
<b>Vanuatu</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Vatican city St./Holy See</b>	Contacts are assured by	<b>Schneider Electric Italy</b>		
<b>Venezuela</b>	■ Schneider Mg SD TE, S.A	Calle 162/ Piso 2 Edificio Centro Cynamid La Urbina, 1070 - 75319 Caracas	Tel.: +58 2 241 13 44 Fax: +58 2 243 60 09	<a href="http://www.schneider-electric.com.ve">www.schneider-electric.com.ve</a>
<b>Viet Nam</b>	■ R.R.O. of Schneider Electric Industries S.A.S. in Viet Nam	Unit 2.9, 2nd Floor, e-Town Building 364 Cong Hoa Street Tan Binh District - Ho Chi Minh City	Tel.: +84 8 8103 103 Fax: +84 8 8120 477	
<b>Virgin islands</b>	Contacts are assured by	<b>Schneider Electric Dominican Rep.</b>		
<b>Wallis &amp; Futuna islands</b>	Contacts are assured by	<b>Schneider Electric Australia</b>		
<b>Western Sahara</b>	Contacts are assured by	<b>Schneider Electric Morocco</b>		
<b>Yemen</b>	Contacts are assured by	<b>Schneider Electric U.A.E.</b>		
<b>Yugoslavia</b>	■ Schneider Electric Jugoslavija d.o.o.	Ratarski put 27d 11186 Belgrade	Tel.: +381 11 192 414 Fax: +381 11 107 125	
<b>Zambia</b>	■ Schneider Zambia	Zambia Office c/o Matipi Craft Center Building Plot 1036 - Accra Road PO Box 22792 - Kitwe	Tel.: +260 222 22 52 Fax: +260 222 83 89	
<b>Zimbabwe</b>	■ Schneider Electric	Zimbabwe Liaison Office 75A Second Street (corner Livingstone Avenue) Harare	Tel.: +263 4 707 179/180 Fax: +263 4 707 176	

**Schneider Electric Industries SAS**

**Headquarters**

89, bd Franklin Roosevelt  
F - 92506 Rueil Malmaison Cedex

<http://www.schneider-electric.com>

Owing to changes in standards and equipment, the characteristics given in the text and images in this document are not binding until they have been confirmed with us.

Production : Schneider Electric Industries  
Photos : Schneider Electric Industries  
Printed by :

