

Soft starters Altistart 01

for asynchronous motors

Catalog

October 2014



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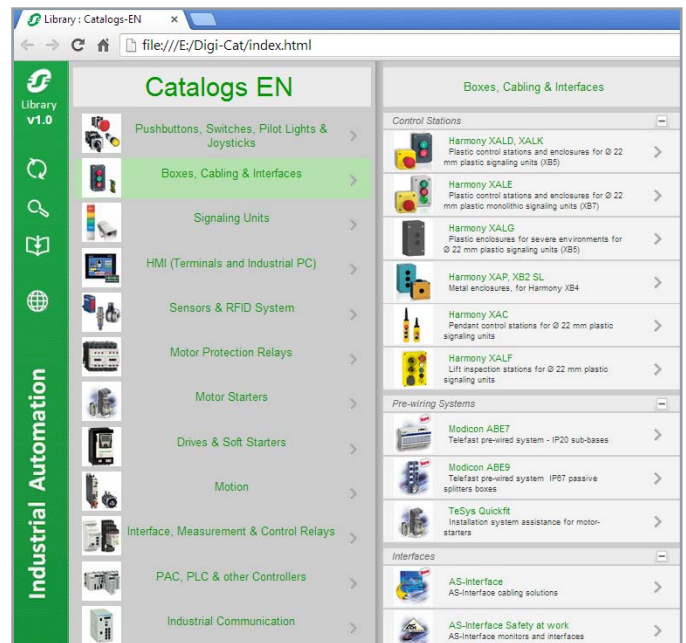
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Soft starters for asynchronous motors

Applications

Starting simple machines

Controlled starting and deceleration of simple machines



Power range for 50...60 Hz line supply (kW/HP) (connection to the motor power supply line)	
Single-phase 110...230 V (kW)	0.37...2.2
Three-phase 200...240 V (kW/HP)	–
Three-phase 200...480 V (kW/HP)	0.37...11/0.5...15
Three-phase 208...600 V (kW/HP)	–
Three-phase 208...690 V (kW/HP)	–
Three-phase 230...415 V (kW)	–
Three-phase 230...440 V (kW)	–
Three-phase 380...415 V (kW)	–
Three-phase 440...480 V (HP)	–

0.37...11/0.5...15	0.75...15/1...20
0.37...2.2	–
–	0.75...7.5/1...10
0.37...11/0.5...15	–
–	–
–	–
–	–
–	–
–	1.5...15
–	2...20

Drive	Number of controlled phases
Type of control	–
Operating cycle	–

1	2
–	–
–	–

Functions	Integrated
Bypass	–
Number of I/Os	–
Analog inputs	–
Logic inputs	–
Analog outputs	–
Logic outputs	–
Relay outputs	–

–
–
–
–
–
–

Communication	Integrated
Available as an option	–

–
–

Standards and certifications
IEC/EN 60947-4-2, CE, UL, CSA, C-Tick, and CCC

IEC/EN 60947-4-2, CE, UL, CSA, C-Tick, and CCC
--

References
ATS01N1●●●●
ATS01N2●●●●

ATS01N1●●●●
ATS01N2●●●●

Pages
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Controlled starting and deceleration of simple and complex machines



4...400/3...500	3...900	3...900/3...1,200
–	–	–
–	–	–
–	–	–
4...400/3...500	–	3...900/3...1,200
–	–	–
–	3...630	–
4...355	–	–
–	–	–
–	–	–

3	TCS (Torque Control System)
Configurable voltage ramp	Standard and severe
Standard	Standard and severe

Integrated	Available as an option
1 PTC probe	–
3	4
–	1
–	2
2 (CO)	3

Modbus	Fipio, PROFIBUS DP, DeviceNet, Modbus TCP
–	–

IEC/EN 60947-4-2, EMC class A	IEC/EN 60947-4-2, EMC class A and B
CE, UL, CSA, C-Tick, GOST, CCC	CE, UL, CSA, DNV, C-Tick, GOST, CCC, NOM, SEPRO, and TCF

ATS22●●●●	ATS48●●●Q	ATS48●●●Y
–	–	–

Please refer to the Altistart 22 catalog.	Please refer to the Altistart 48 catalog.
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Soft starters for asynchronous motors

Altistart 01

1



ATS01N1●●●

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 them to start gradually, smoothly, and in a controlled manner. It helps to prevent mechanical shocks, which cause wear and tear, and subsequent maintenance work and production downtime.

The Altistart U01 limits the starting torque and current peaks on starting on machines that do not require a high starting torque.

It is designed for the following simple applications:

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

The Altistart 01 is compact, easy to install, and can be mounted side-by-side. It complies with standards IEC/EN 60947-4-2, and carries UL, CSA, C-Tick, and CCC certifications, and CE marking.

The Altistart 01 soft start/soft stop unit offer comprises 3 ranges:

- **ATS01N1●●●** soft starters
 - These control one phase of the motor power supply (single-phase or three-phase) to limit the starting torque.
 - They feature an internal bypass relay.
 - Motor power ratings range from 0.37 kW to 11 kW.
 - Motor supply voltages range from 110 V to 480 V, 50/60 Hz. An external power supply is required for controlling the starter.

A contactor is always required to shut off power to the motor.

- **ATS01N2●●●** soft start/soft stop units
 - These control two phases of the motor power supply to limit the starting current and for deceleration.
 - They feature an internal bypass relay.
 - Motor power ratings range from 0.75 kW to 15 kW.
 - The motor supply voltages are as follows: 230 V, 400 V, and 480 V, 50/60 Hz.

The use of a line contactor is not necessary on machines where electrical isolation is not required.

- **ATSU01N2●●●** soft start/soft stop units

See page 2/2.



ATS01N2●●●

Description

- Altistart 01 soft starters (ATS01N1●●●) are equipped with:
 - a potentiometer **1** for setting the starting time
 - a potentiometer **2** for adjusting the starting voltage threshold according to the motor load
 - 2 inputs **3**:
 - 1 x 24 V $\overline{\text{DC}}$ input or 1 x 110...240 V \sim input for powering the control part that controls the motor

- Altistart 01 soft start/soft stop units (ATS01N2●●●) are equipped with:
 - a potentiometer **6** for setting the starting time
 - a potentiometer **8** for setting the deceleration time
 - a potentiometer **7** for adjusting the starting voltage threshold according to the motor load
 - 1 green LED **4** to indicate that the unit is powered up
 - 1 yellow LED **5** to indicate that the motor is powered at nominal voltage, if it is connected to the starter
 - a connector **9** for:
 - 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 motor has reached a standstill at the end of the deceleration stage

Soft starters for asynchronous motors

Altistart 01

Description (continued)

Equivalence table for contact references

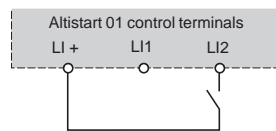
Functions	ATS01N2●●LU/QN/RT
Relay outputs	R1A R1C
External power supply 0 V	C0M
Stop command	LI1
Run command	LI2
Control section power supply	LI + (+ 24 V positive logic)
BOOST	BOOST
End of starting	LO1
115 V external power supply	-

Functions

■ 2-wire control

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

ATS01N2●●LU/QN/RT

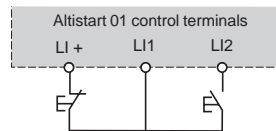


Wiring diagram for 2-wire control

■ 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

■ Starting time

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

■ Voltage boost function via logic input

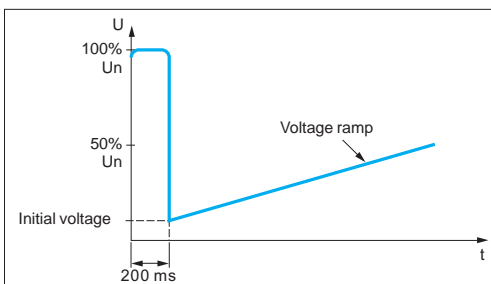
Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction.

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

■ End of starting

□ Application function via logic output LO1

ATS01N206●● to ATS01N232●● 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.



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

Soft starters for asynchronous motors

Altistart 01

1



ATS01N103FT



ATS01N212QN

Soft starters for 0.37 to 11 kW motors

Motor		Starter			
Motor power (1)		Nominal current	Dimensions W x D x H	Reference (2)	Weight
Single-phase Three-phase		A	mm/ in.		kg/ lb
230 V	110 V 230 V 230 V 400 V 460 V				
kW	HP kW HP kW HP				
Single-phase 110...230 V or three-phase 110...480 V supply voltage, 50/60 Hz					
0.37	– 0.37 0.5 1.1 0.5	3	22.5 x 100.4 x 100/ 0.89 x 3.95 x 3.94	ATS01N103FT	0.160/ 0.353
0.75	– 0.5 0.75 1 1.1 1.5 2.2 2	6	22.5 x 100.4 x 100/ 0.89 x 3.95 x 3.94	ATS01N106FT	0.160/ 0.353
1.1	1 1.5 2 4 5	9	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N109FT	0.280/ 0.617
1.5	1.5 2.2 3 5.5 7.5	12	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N112FT	0.280/ 0.617
2.2	2 3 5 7.5 10	25	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N125FT	0.350/ 0.772
	3 4 5.5 7.5 11				

Accessories

Description	For use with starter	Reference	Weight kg/ lb
Adapter for mounting on □ DZ5 MB rail	ATS01N103FT, ATS01N106FT	RHZ66	0.005/ 0.011

Soft start/soft stop units for 0.75 to 15 kW motors (3)

Motor		Starter			
Motor power (1)		Nominal current	Dimensions W x D x H	Reference (2)	Weight
kW	HP	A	mm/ in.		kg/ lb
Three-phase supply voltage: 200...240 V 50/60 Hz					
0.75/1.1	1/1.5	6	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N206LU	0.420/ 0.926
1.5	2	9	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N209LU	0.420/ 0.926
2.2/3	3/–	12	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N212LU	0.420/ 0.926
4/5.5	5/7.5	22	45 x 130.7 x 154/ 1.77 x 5.15 x 6.06	ATS01N222LU	0.560/ 1.235
7.5	10	32	45 x 130.7 x 154/ 1.77 x 5.15 x 6.06	ATS01N232LU	0.560/ 1.235
Three-phase supply voltage: 380...415 V 50/60 Hz					
1.5/2.2/3	–	6	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N206QN	0.420/ 0.926
4	–	9	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N209QN	0.420/ 0.926
5.5	–	12	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N212QN	0.420/ 0.926
7.5/11	–	22	45 x 130.7 x 154/ 1.77 x 5.15 x 6.06	ATS01N222QN	0.560/ 1.235
15	–	32	45 x 130.7 x 154/ 1.77 x 5.15 x 6.06	ATS01N232QN	0.560/ 1.235
Three-phase supply voltage: 440...480 V 50/60 Hz					
–	2/3	6	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N206RT	0.420/ 0.926
–	5	9	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N209RT	0.420/ 0.926
–	7.5	12	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATS01N212RT	0.420/ 0.926
–	10/15	22	45 x 130.7 x 154/ 1.77 x 5.15 x 6.06	ATS01N222RT	0.560/ 1.235
–	20	32	45 x 130.7 x 154/ 1.77 x 5.15 x 6.06	ATS01N232RT	0.560/ 1.235

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

(2) For motor thermal protection, use a GVME thermal-magnetic motor circuit breaker (see combinations page 1/7).

(3) Control power supply built into the starter.

Soft starters for asynchronous motors

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400 V power supply, type 1 coordination



Compatible components according to IEC 60947-4-1 and IEC 60947-4-2

Combine either circuit breaker (light green columns), contactor, and starter, or switch/fuse (dark green columns), contactor, and starter

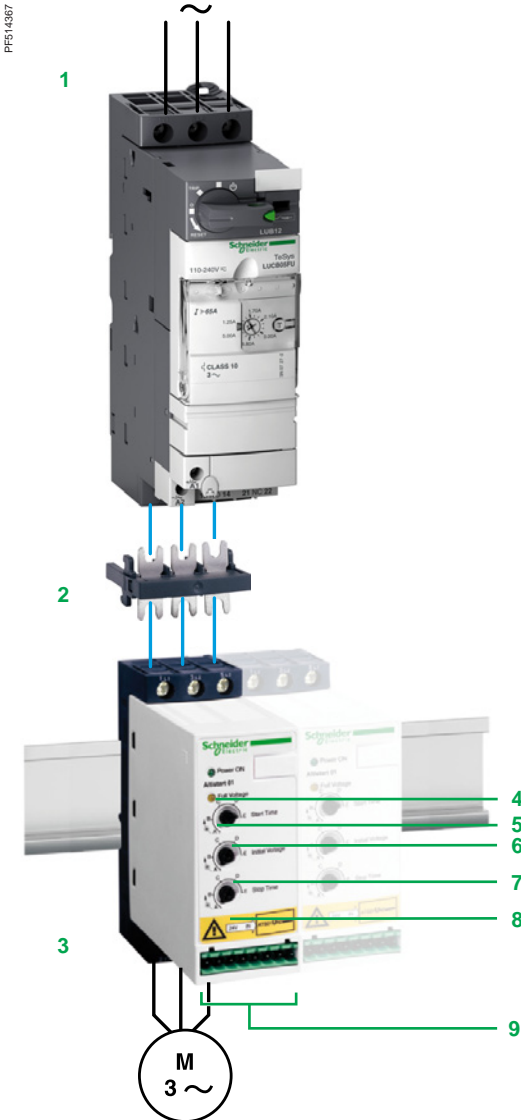
Motor		Starter Class 10	Circuit breaker	Rating	Contactor	Switch or disconnect switch (base unit)	aM fuses Reference	Rating	I ² t A ² s	Thermal overload relay
kW	A			A				A		
M1	A1		Q1		KM1, KM2, KM3	Q2			F4	
0.37	0.98	ATS01N103FT	GV2ME05	1	LC1K06 or LC1D09	LS1D2531	DF2CA02	2	265	LR2K0306 LRD05
0.55	1.5	ATS01N103FT	GV2ME06	1.6	LC1K06 or LC1D09	LS1D2531	DF2CA02	2	265	LR2K0307 LRD06
0.75	2	ATS01N103FT	GV2ME07	2.5	LC1K06 or LC1D09	LS1D2531	DF2CA02	2	265	LR2K0308 LRD07
1.1	2.5	ATS01N103FT	GV2ME08	4	LC1K06 or LC1D09	LS1D2531	DF2CA04	4	265	LR2K0308 LRD08
		ATS01N206QN	GV2ME08	4	LC1K06 or LC1D09	LS1D2531	DF2CA04	4	265	LR2K0308 LRD08
1.5	3.5	ATS01N106FT	GV2ME08	4	LC1K06 or LC1D09	LS1D2531	DF2CA06	6	265	LR2K0310 LRD08
		ATS01N206QN	GV2ME08	4	LC1K06 or LC1D09	LS1D2531	DF2CA06	6	265	LR2K0310 LRD08
2.2	5	ATS01N106FT	GV2ME10	6.3	LC1K06 or LC1D09	LS1D2531	DF2CA08	8	265	LR2K0312 LRD10
		ATS01N206QN	GV2ME10	6.3	LC1K09 or LC1D09	LS1D2531	DF2CA08	8	265	LR2K0312 LRD10
3	6.5	ATS01N106FT	GV2ME14	9	LC1K09 or LC1D09	LS1D2531	DF2CA12	12	265	LR2K0314 LRD12
		ATS01N206QN	GV2ME14	9	LC1K09 or LC1D09	LS1D2531	DF2CA12	12	265	LR2K0314 LRD12
4	8.4	ATS01N109FT	GV2ME14	9	LC1K09 or LC1D09	LS1D2531	DF2CA12	12	610	LR2K0316 LRD14
		ATS01N209QN	GV2ME14	9	LC1K09 or LC1D09	LS1D2531	DF2CA12	12	610	LR2K0316 LRD14
5.5	11	ATS01N112FT	GV2ME16	13	LC1K12 or LC1D12	LS1D2531	DF2CA16	16	610	LR2K0321 LRD16
		ATS01N212QN	GV2ME16	13	LC1K12 or LC1D12	LS1D2531	DF2CA16	16	610	LR2K0321 LRD16
7.5	14.8	ATS01N125FT	GV2ME20	17	LC1D18	LS1D2531	DF2CA20	20	6050	LRD21
		ATS01N222QN	GV2ME20	17	LC1D18	LS1D2531	DF2CA20	20	6050	LRD21
9	18.1	ATS01N125FT	GV2ME21	21	LC1D25	LS1D2531	DF2CA25	25	6050	LRD21
		ATS01N222QN	GV2ME21	21	LC1D25	LS1D2531	DF2CA25	25	6050	LRD21
11	21	ATS01N125FT	GV2ME22	23	LC1D25	LS1D2531	DF2CA25	25	6050	LRD22
		ATS01N222QN	GV2ME22	23	LC1D25	LS1D2531	DF2CA25	25	6050	LRD22
15	28.5	ATS01N232QN	GV2ME32	32	LC1D32	GK1EM	DF2EA40	40	7200	LRD3353

2 - Altistart U01 soft starters and TeSys U starter controllers

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■ References.....	page 2/4
■ Accessories.....	page 2/4
■ TeSys U starter and soft start unit combinations.....	page 2/5

Soft starters for asynchronous motors

Altistart U01 and TeSys U



Presentation

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

When used in combination with a **TeSys U 1** controller by means of a connector **2**, the Altistart U01 **3** is a power option that 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 them to start gradually, smoothly, and in a controlled manner. It helps to prevent mechanical shocks, which cause wear and tear, and subsequently limits the amount of maintenance work and production downtime. The Altistart U01 limits the starting torque and current peaks on starting on machines that 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 and gates
- small cranes
- belt-driven machinery

The Altistart U01 is compact and easy to install. It complies with standards IEC/EN 60947-4-2, and carries UL, CSA, C-Tick, and CCC certifications, and CE marking.

■ ATSU01N2●●LT soft start/soft stop units

- These control two phases of the motor power supply to limit the starting current and for deceleration.
 - They feature an internal bypass relay.
 - 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 setting the starting time **6**
 - a potentiometer for setting the deceleration time **8**
 - a potentiometer for adjusting the starting voltage threshold according to the motor load **7**
 - 1 green LED **4** to indicate that the unit is powered up
 - 1 yellow LED **5** to indicate that the motor is powered at nominal voltage, if it is connected to the starter
 - a connector **9** for:
 - 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 that an error has been detected on the starter power supply or that the motor has reached a standstill at the end of the deceleration stage

Soft starters for asynchronous motors

Altistart U01 and TeSys U

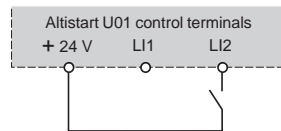
Description of a TeSys U starter-controller

Please refer to the "TeSys U starters - open version" catalog.

ATSU01N2●●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 starting and state 0 controls stopping.



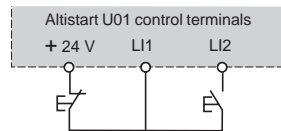
Wiring diagram for 2-wire control

■ 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

■ Starting time:

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

■ Voltage boost function via logic input

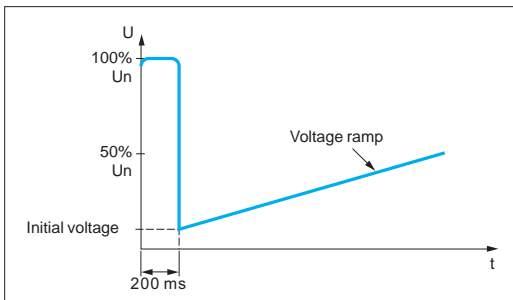
Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction.

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

■ End of starting

□ Application function for logic output LO1

ATSU01N2●●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.



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

Soft starters for asynchronous motors

Altistart U01 and TeSys U

DF504015



ATSU01N222LT

2

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

Motor				Starter		Reference	Weight
Motor power (1)				Nominal current	Dimensions W x D x H		
230 V	230 V	400 V	460 V	A	mm/ in.		kg/ lb
Three-phase supply voltage: 200...480 V 50/60 Hz							
0.75	1	1.5	2	6	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATSU01N206LT	0.340/ 0.750
1.1	1.5	2.2	3				
		3					
1.5	2	–	5	9	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATSU01N209LT	0.340/ 0.750
–	–	4	–				
2.2	3	5.5	7.5	12	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATSU01N212LT	0.340/ 0.750
3	–	–	–				
4	5	7.5	10	22	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATSU01N222LT	0.490/ 1.080
5.5	7.5	11	15				
7.5	10	15	20	32	45 x 130.7 x 124/ 1.77 x 5.15 x 4.88	ATSU01N232LT	0.490/ 1.080

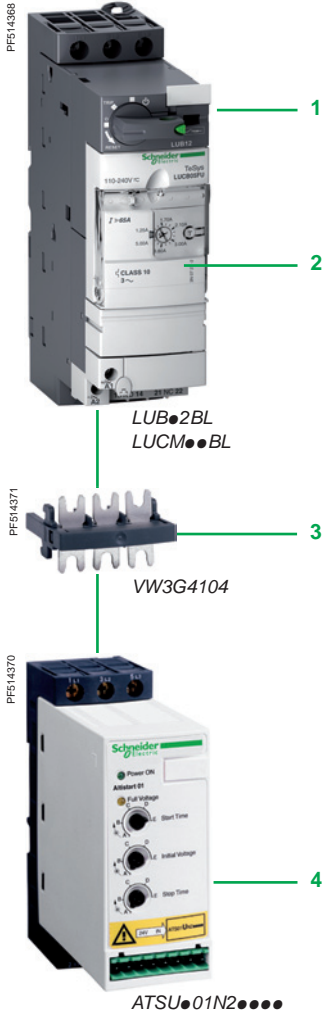
Accessory

Description	For use with starter	Reference	Weight kg/ lb
Power connector between ATSU01N2●●LT and TeSys U	ATSU01N2●●LT	VW3G4104	0.020/ 0.044

(1) Standard motor power ratings, HP power ratings indicated according to standard UL508.

Soft starters for asynchronous motors

Altistart U01 and TeSys U



TeSys U starter and soft start unit combinations

Numerous possibilities for combinations and options are offered. Please refer to the "TeSys U starters - open version" catalog.

Motor power			Soft start unit	TeSys U	
230 V	400 V	460 V		Power base	Control unit (1)
kW/HP	kW	HP			
0.75/1	1.5	2	ATSU01N206LT	LUB12	LUC●05BL
1.1/1.5	2.2/3	3	ATSU01N206LT	LUB12	LUC●12BL
1.5/2	–	–	ATSU01N209LT	LUB12	LUC●12BL
–	4	5	ATSU01N209LT	LUB12	LUC●12BL
2.2/3	–	–	ATSU01N212LT	LUB12	LUC●12BL
3/–	5.5	7.5	ATSU01N212LT	LUB32	LUC●18BL
4/5	7.5	10	ATSU01N222LT	LUB32	LUC●18BL
5.5/7.5	11	15	ATSU01N222LT	LUB32	LUC●32BL
7.5/10	15	20	ATSU01N232LT	LUB32	LUC●32BL

Example of combining a motor-starter with:

- 1 power base for non-reversing DOL starting (LUB●2BL)
- 2 control unit (LUCM●●BL)
- 3 power connector (VW3G4104)
- 4 Altistart U01 (ATSU01N2●●●LT) soft start/soft stop unit

(1) Depending on the configuration required for the TeSys U starter, replace the ● with A for standard, B for advanced, and M for multifunction.

A	
ATS01N103FT	1/6
ATS01N106FT	1/6
ATS01N109FT	1/6
ATS01N112FT	1/6
ATS01N125FT	1/6
ATS01N206LU	1/6
ATS01N206QN	1/6
ATS01N206RT	1/6
ATS01N209LU	1/6
ATS01N209QN	1/6
ATS01N209RT	1/6
ATS01N212LU	1/6
ATS01N212QN	1/6
ATS01N212RT	1/6
ATS01N222LU	1/6
ATS01N222QN	1/6
ATS01N222RT	1/6
ATS01N232LU	1/6
ATS01N232QN	1/6
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