
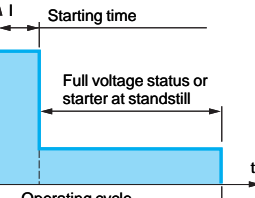


Soft starters for asynchronous motors

Environment characteristics			
Type of starter		ATS 01N1●●FT, ATS 01N2●●LU, ATS 01N2●●QN, ATS 01N2●●RT	ATS 01N2●●LY and ATS 01N2●●Q
Conforming 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	Conducted and radiated emissions	CISPR 11 level B, IEC 60947-4-2, level B	CISPR 11 level B (only with Bypass), 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		Bear CE marking in accordance with the European low voltage directives IEC/EN 60947-4-2	
Product certifications		UL, CSA, C-Tick and CCC 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)
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	110 - 10% to 480 + 10%		200 - 10% to 240 + 10%		380 - 10% to 415 + 10%		440 - 10% 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...25		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			01N1●●FT		01N206●● to 01N222●●			01N232●●			01N2●●LY, 01N2●●Q			
Use																
 <p>Starting time</p> <p>Full voltage status or starter at standstill</p> <p>Operating cycle</p>		Starting time		s	1	5	1	5	10	1	5	10	1	12		
		Maximum number of cycles per hour			100	20	100	20	10	50	10	5	360	30		

Soft starters for asynchronous motors

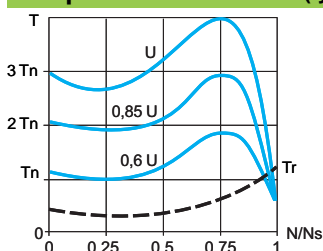
Altistart 01

Electrical characteristics (continued)								
Type of starter		ATS 01N1	03FT	06FT	09FT	12FT	25FT	
Control power supply consumption			≈ 24 V, 25 mA, ~ 110 V, 30 mA ~ 240 V, 65 mA		≈ 24 V, 30 mA, ~ 110 V, 35 mA, ~ 240 V, 80 mA			
Power dissipated	At full load at end of starting	W	4	1	1	1	1	
	In transient state	W	19	31	46	61	126	
Current at nominal load (1)			A	15	30	45	60	125
Type of starter		ATS 01N2	06LU/QN/RT	09LU/QN/RT	12LU/QN/RT	22LU/QN/RT	32LU/QN/RT	
Power dissipated	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	
Current at nominal load (1)			A	30	45	60	110	160
Type of starter		ATS 01N2	30LY/Q	44LY/Q	72LY/Q	85LY/Q		
Power dissipated	At full load at end of starting	W	22	22	23	23		
	In transient state	W	184	268	436	514		
Current at nominal load (1)			A	90	132	216	255	
Type of starter		ATS 01N2	●●LU/QN/RT			●●LY/Q		
Logic input power supply: For LI1, LI2 and BOOST only (electrically isolated between power and control) LI +, COM			24 V power supply Max. current available 10 mA. No short-circuit and overload protection			–		
Logic inputs LI1, LI2, BOOST (01, 02, 03 for ATS 01N2●●LY/Q) Stop, run and boost on start-up functions			Logic inputs with impedance 27 kΩ 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		
Logic output LO1 End of starting signal			Open collector logic output External 24 V power supply (min. 6 V, max. 30 V) Max. current 200 mA			–		
Relay outputs R1A R1C (04, 05 for ATS 01N2●●LY/Q)			Normally open (N/O) contact 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		
LED signalling	Green LED		Starter powered up					
	Yellow LED		Nominal voltage reached					

(1) Acceleration current complying with the maximum conditions of use (see page 60541/2).

Connections (Maximum connection capacity and tightening torque)						
Type of starter		ATS		01N103FT, 01N106FT	01N109FT, 01N112FT, 01N125FT, 01N206●● to 01N232●●	01N2●●LY and 01N2●●Q
Power circuit				Cage type connector	Connection via Ø 4 mm screw clamp	
Flexible wire without cable end	1 conductor		mm ²	2.5 14 AWG	1.5...10 8 AWG	6...25
	2 conductors		mm ²	1 17 AWG	1.5...6 10 AWG	6...25
Flexible wire with cable end	1 conductor		mm ²	2.5 14 AWG	1...6 10 AWG	4...25
	2 conductors		mm ²	0.75 18 AWG	1...6 10 AWG	4...16
Rigid wire	1 conductor		mm ²	2.5 14 AWG	1...10 8 AWG	6...35
	2 conductors		mm ²	1 17 AWG	1...6 10 AWG	6...25
Tightening torque			N.m	0.8	1.9...2.5	5
Control circuit				Cage type connector	Screw connector	
Flexible wire without cable end	1 conductor		mm ²	2.5 14 AWG	0.5...2.5 14 AWG	0.75...1.5
	2 conductors		mm ²	1 17 AWG	0.5...1.5 16 AWG	0.75...1.5
Flexible wire with cable end	1 conductor		mm ²	2.5 14 AWG	0.5...1.5 16 AWG	0.75...1.5
	2 conductors		mm ²	0.75 18 AWG	0.5...1.5 16 AWG	0.75...1.5
Rigid wire	1 conductor		mm ²	2.5 14 AWG	0.5...2.5 14 AWG	0.75...1.5
	2 conductors		mm ²	1 17 AWG	0.5...1 17 AWG	0.75...1.5
Earth connection				—	—	Tinned connector. Fixed using Ø 6 screws
Tightening torque			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.