

# Altistart 22 & Enclosed Altistart 22 soft starters

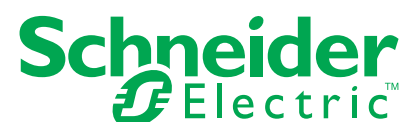
for three-phase asynchronous motors

eCatalog

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# Altistart 22

## soft starters for asynchronous motors

## Introduction



## Introduction

The **Altistart™ 22 soft start - soft stop unit** supports the controlled starting and stopping, through voltage and torque control, of 3 HP to 500 HP (4 HP to 400 kW) three-phase asynchronous motors. It comes ready to use for standard applications with class 10 motor protection.

The Altistart 22 has been designed to satisfy the performance requirements of applications where ruggedness, the safety of personnel and equipment, and easy commissioning are at a premium.

The starting and stopping cycle is controlled by silicon-controlled rectifiers (SCRs) that manage the voltage to the motor. This limits the current during the starting and stopping cycle. The bypass function (based on a bypass contactor) has been made easier by integrating it into the starter. This bypasses the SCRs at the end of the starting process in order to limit the starter's heat dissipation and improve efficiency.

The unit also features thermal protection for motors as well as a monitoring capability for machines. SoMove PC software enables configuration files to be created and stored off-line and quickly commissions an installation. SoMove PC software can also be used for monitoring and diagnostics purposes.

The Altistart 22 contains an integrated display terminal which allows the user to change both the programming and the adjustment or monitoring parameters in order to adapt and customize the application in line with customer needs.



## Applications

The integrated functions of the Altistart 22 are compatible with the more common types of applications found in the buildings, infrastructure or industrial sectors:

- Centrifugal pumps
- Piston pumps
- Fans
- Turbine blowers
- Refrigerant compressors
- Screw compressors
- Centrifugal compressors
- Material handling (conveyors, etc.)
- Specialist machines (agitators, mixers, centrifugal machines)

The Altistart 22 represents a truly cost-effective solution, as it supports:

- A reduction in installation costs by optimizing product sizes, integrating the bypass function and reducing wiring time
- A reduction in the stress associated with electrical distribution by reducing the current peaks and line voltage drops caused by motors starting up
- A reduction in maintenance costs for machines by reducing mechanical stress



### Applications (continued)

#### Typical application areas

Examples of functions performed by the Altistart 22 depending on the application.

Type of machine	Functions performed by the Altistart 22
<b>Centrifugal pump</b>	<ul style="list-style-type: none"> <li>Controlled slowing-down and stopping</li> <li>Protection against underload or reversal of phase rotation direction</li> </ul>
<b>Piston pump</b>	<ul style="list-style-type: none"> <li>Control of pump priming and the pump's direction of rotation</li> </ul>
<b>Fan</b>	<ul style="list-style-type: none"> <li>Detection of overloads and underloads</li> <li>Braking torque on stopping</li> </ul>
<b>Turbine</b>	<ul style="list-style-type: none"> <li>Thermal monitoring of motor via electrically isolated PTC probe</li> </ul>
<b>Refrigeration compressor</b>	<ul style="list-style-type: none"> <li>Control of starting characteristics</li> </ul>
<b>Screw compressor</b>	<ul style="list-style-type: none"> <li>Protection against reversal of phase rotation direction</li> </ul>
<b>Centrifugal compressor</b>	<ul style="list-style-type: none"> <li>Protection against reversal of phase rotation direction</li> </ul>
<b>Conveyor</b>	<ul style="list-style-type: none"> <li>Monitoring of overloads for incident detection or underloads for break detection</li> </ul>
<b>Conveyor belt</b>	<ul style="list-style-type: none"> <li>Second set of motor parameters depending on the load transported</li> </ul>
<b>Lifting screw</b>	<ul style="list-style-type: none"> <li>Monitoring of overloads for hard spot detection or underloads for break detection</li> </ul>
<b>Agitator</b>	<ul style="list-style-type: none"> <li>Displaying the current indicates the density of the material.</li> </ul>
<b>Mixer</b>	<ul style="list-style-type: none"> <li>Displaying the current indicates the density of the material.</li> <li>Boost on start-up</li> </ul>
<b>Refiner</b>	<ul style="list-style-type: none"> <li>Torque control on starting and stopping</li> </ul>

#### Dedicated applications

The ATS 22 can be used for applications outside the standard characteristics, but this could involve derating to at least the next lowest level.

#### Examples of applications outside the standard characteristics:

- Greater number of starts
- Motor thermal protection higher than class 10
- Excess current required at time of start
- Certain ambient temperatures:
  - For ambient temperatures between 104 °F (40 °C) and 140 °F (60 °C), derate the nominal current of the Altistart 22 by 2.2% for each additional degree.
- Certain altitudes:
  - For altitudes between 3,300 ft (1000 m) and 6,600 ft (2000 m), derate the nominal current of the Altistart 22 by 2% for each additional 330 ft (100 m).

# Altistart 22

## soft starters for asynchronous motors

## Introduction



Integrated keypad display

## Product

The Altistart 22 is offered in 2 voltage ranges:

- **ATS22●●●S6U** or **ATS22●●●S6** for three-phase motors, 208 V to 600 V @ 50/60 Hz
- **ATS22●●●Q** for three-phase motors, 230 V to 440 V @ 50/60 Hz

### Simplify installation

- Integrated bypass reduces the number of external components: power wiring, contactor and control wiring for coil
- Wiring 6 terminals instead of 12 saves time and cost
- Fewer components and wiring points reduces heat dissipation allowing for a smaller enclosure
- Fewer components improves the reliability of the installation and decreases maintenance cost

### Decrease operating costs

- Reduces operating costs of your machine by controlling motor current in-rush and reducing mechanical stress from motor starting and stopping
- Conformal coated printed circuit boards provide enhanced resistance to harsh environments, increasing the service life of your installation and reducing maintenance cost.

### Improve machine performance

- True three-phase control and other protection functions monitor and protect your machine to sustain up-time
- Soft starting and soft stopping reduces mechanical stress on your machine, increasing productivity while protecting your delicate goods

### Enhance communication

The Altistart 22 offers the following communication features to make programming and communicating simple:

- The integrated keypad display features:
  - A 4 x 7 segment display to provide useful real-time visual feedback
  - A 4 button keypad for simple navigation through configuration menus
  - 4 LED indicators (Ready, Communication, Run, & Trip)
- The easy start menu guides you through the basic parameters to get you up and running quickly
- The multi-function integrated Modbus™ port allows connection to either:
  - A remote-mount keypad to allow access from outside of an enclosure
  - Connection to a Modbus network for remote communication
  - SoMove™ PC software for configuration and diagnostics
  - Altistart 22 iPad App for creating, saving, and transferring configurations from an iPad to the Altivar 22



ATS22 iPad app



Additional fans

### Options

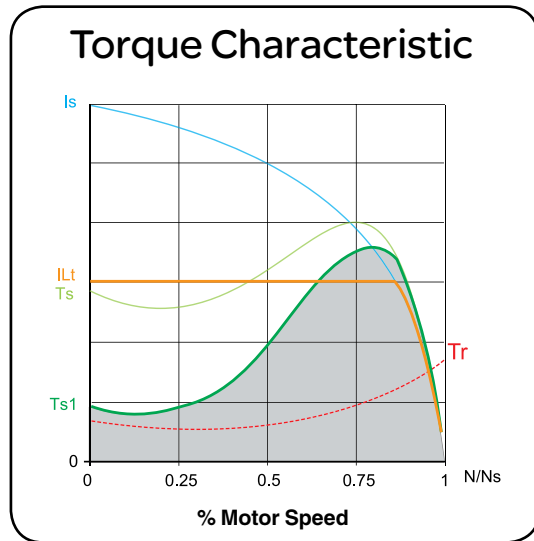
The Altistart 22 range also offers a number of options:

- Additional fans to support a greater number of starts
- A remote terminal unit can be installed on the front face of a floor-standing enclosure with IP 54/NEMA 12 or IP 65 protection (depending on the model).
- Protection shrouds for terminals to ensure compliance with IP 20 degree of protection

# Altistart 22

## soft starters for asynchronous motors

# Introduction



### Asynchronous motor

**Ts:** Across the line starting torque

**Is:** Across the line starting current

### Altistart 22

**Ts1:** Total torque range available with an Altistart 22, which is dependent on the current limit (**ILt**) setting.

### Load

**Tr:** Resistive torque must always be less than the Ts1 torque, or the motor will not start.

## Product (continued)

### Selection criteria

The Altistart 22 has been designed for normal duty applications requiring up to 350% of rated current (IcL). Heavy duty applications will require selecting a larger starter.

**For a chosen application, the choice of starter will depend on the following criteria:**

- The power and nominal current (In) on the motor name plate
- Duty cycle
- Starting current capacity
- Number of starts per hour
- Motor thermal protection class

### Duty cycle

**S1 motor duty:** Duty cycle of starting followed by operation at constant load enabling the thermal stability to be reached.

**S4 motor duty:** Duty cycle of starting, operation at constant load, and an idle period. This cycle is characterized by a load factor.

These motor duties are described in more detail in IEC 60034-1.

### Starting current capacity

**The standard starting current capacity for a class 10 motor is:**

- **S1 motor duty:** 3.5 In for 40 seconds with a cold motor
- **S4 motor duty:** With a load factor of 90% of full load and *n* starts per hour (see table "Starts per hour"), 3.5 In for 20 seconds or an equivalent thermal cycle. In this case, the motor thermal protection must conform to protection class 10.

The Altistart 22 rated current is limited to 3.5 IcL. IcL is the nominal current of the Altistart 22. If the application requires a higher rated starting current (> 3.5 IcL), the soft starter must be oversized. Use the button above to navigate to the Altistart 22 selection tables on page 14 to select a part number.

### Number of starts per hour

The table to the left defines the maximum number of starts per hour for S4 motor duty. The number of starts per hour can be increased by adding a fan.

The following units can be fitted with an additional fan:

- ATS22D17S6U...C17S6U
- ATS22D17S6...C17S6
- ATS22D17Q...C17Q
- Units ATS22C21S6U...C59S6U, ATS22C21S6...C59S6, and ATS22C21Q...C59Q, come with a fan as standard.

### Motor thermal protection class

Soft starter	Number of starts per hour (S4 duty)	
	Without additional fan	With additional fan
ATS22D17●...D88●	6	10
ATS22C11●...C17●	4	10
ATS22C21●...C59● (fan comes as standard)	-	4

Possible number of starts per hour based on a starting capacity of 3.5 In for 20 seconds (S4 motor duty) after adding a fan.

Starting current	Protection class		
	Class 10	Class 20	Class 30
≤ 3.5 In maximum starting time	Nominal <sup>(1)</sup> 16 s	Nominal + 1 <sup>(2)</sup> 32 s	Nominal + 2 <sup>(3)</sup> 48 s

(1) Nominal = nominal size of the soft starter according to the nominal motor current (Motor FLA).

(2) Nominal + 1 = oversize the soft starter by one rating compared to the nominal motor current (Motor FLA).

(3) Nominal + 2 = oversize the soft starter by 2 ratings compared to the nominal motor current (Motor FLA).



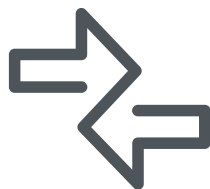
### Adjustment



### Performance



### Protection



### Integration

## Functions

### *Adjustment functions*

- Adjustment of the Altistart 22 soft start - soft stop unit's current in line with the motor's nominal current
- Limiting current
- Selection of the type of stop (freewheel or deceleration)

### *Soft starter performance functions*

- Management of the three supply phases
- Management of the ramp and torque supplied to the motor throughout the acceleration and deceleration period (significantly less jerk)
- Variety of control profiles to suit different applications
- Integrated and automated management of the bypass function at the end of the starting process (based on a bypass contactor), while preserving electronic protection features
- Option of connecting the starter in the motor delta connection in series with each winding. This supports the use of a soft start - soft stop unit with a lower rating. (only applies to the ATS 22●●●Q range)

### *Protection functions for the motor and machine*

- Integration of configurable motor thermal protection
- Thermal protection for the Altistart 22 soft start - soft stop unit
- Integrated processing of the PTC thermal probe with electrical isolation for optimum management for motor protection
- Monitoring of the duration and number of starts for better installation protection
- Management of stopping time before restart
- Protection against underloads and overcurrents in transient or steady state
- Automatic adjustment to the line frequency
- Detection of phase sequence
- Detection of phase loss
- Detection of imbalances between phases and of leakage currents (for the ATS 22●●●S6 and S6U ranges)

### *Functions to ease integration into control systems*

- 3 programmable logic inputs
- 2 programmable N/C / N/O relay outputs
- Pluggable connectors for I/O
- Second set of parameters for motor operation
- Modbus serial link via RJ45 connector
- Display of soft start - soft stop unit and machine states
- Display of I/O currents and states
- Error log, diagnostics for soft start - soft stop unit
- Return to factory settings
- 4 LEDs on the front face (Ready, Communication, Run and Trip)



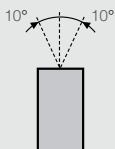
# Altistart 22

## soft starters for asynchronous motors

# Specifications

## Environmental & Electrical

### Environmental specifications

<b>Type of starter</b>		ATS22D17S6U...ATS22C59S6U ATS22D17S6...ATS22C59S6 ATS22D17Q...ATS22C59Q
<b>Conforming to standards</b>		Altistart 22 soft starters conform to the strictest international standards and recommendations relating to electrical industrial control devices, in particular the standard IEC 60947-4-2 and the RoHS Directive.
<b>Electromagnetic compatibility EMC</b>	Conducted and radiated emissions	IEC 60947-4-2, class A
	Electrostatic discharge	IEC 61000-4-2 level 3
	Immunity to radiated radio-frequency electromagnetic field	IEC 61000-4-3 level 3
	Immunity to electrical transients	IEC 61000-4-4 level 4
	Surge immunity	IEC 61000-4-5 level 3
	Damped oscillating waves	IEC 61000-4-12 level 3
<b>CE marking</b>		The soft starts are CE marked on the basis of European directives governing low voltage (72/73/EEC) and EMC (89/336/EEC).
<b>Product certifications</b>		CCC, CSA, C-Tick, GHOST, UL
<b>Degree of protection</b>	For ATS22D17...C11	IP 20 (IP 00 if no connections)
	For ATS22C14...C59	IP 00
<b>Maximum ambient pollution</b>		Level 2 Conforming to IEC/EN 60664-1
<b>Vibration resistance</b>		1.5 mm from 2 to 13 Hz, 1 gn from 13 to 200 Hz Conforming to IEC/EN 60068-2-6
<b>Shock resistance</b>		15 gn for 11 ms Conforming to IEC 60068-2-27
<b>Relative humidity</b>		95% non-condensing, no dripping water Conforming to IEC/EN 60068-2-3
<b>Ambient air temperature around the device</b>	Storage	°F -13...158 °F (-25...70 °C) conforming to IEC/EN 60947-4-2
	Operation	°F 14 °F (-10 °C) to 104 °F (40 °C) without derating, up to 140 °F (60 °C) with current derating of 2.2% per degree above 104°F (40 °C)
<b>Maximum operating altitude</b>		3300 ft (1000 m) without derating Above this, derate the nominal current by 2.2% per additional 330 ft (100 m) to a maximum of 6600 ft (2000 m)
<b>Operating position</b> Maximum permanent angle in relation to the normal vertical mounting position		

# Altistart 22

## soft starters for asynchronous motors

# Specifications

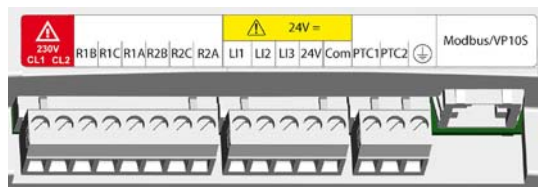
## I/O & Control

### Electrical specifications

Shorting contactor	Embedded
Three-phase supply voltage	208 V -15% to 600 V +10%
Input frequency	Automatic sensing: 50 Hz to 60 Hz frequency (-5% to +5%)
Current range	17 A to 590 A
Control voltage power requirements	ATS22...S6U = 110 V ac (-15% to +10%) or ATS22...S6 = 220 V ac (-15% to +10%)
Logic input voltage	ATS22...S6U = 110 V ac (-15% to +10%) or ATS22...S6 = 24 V dc ( $\pm 6$ V dc)
1 PTC probe input	750 $\Omega$ at 77 °F (25 °C), tripping between 2600 $\Omega$ and 3100 $\Omega$
Logic inputs	3; "LI1" = run enable, "LI2" and "LI3" are prorammmable ATS22...S6U = 110 V ac or ATS22...S6 = 24 V dc
Relay outputs	2 programmable Form C relays Normally Open/Normally Closed (N.O./N.C.), maximum switching = 8 A under 230 V ac or V dc
I/O connectors	Removable plug

### I/O & Control specifications

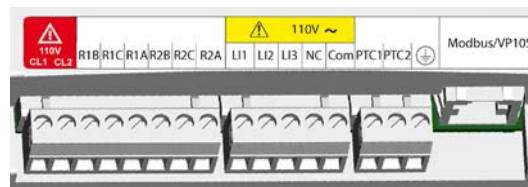
#### ATS22●●●S6U control terminals



110 V ac with 110 V ac logic inputs

Terminal	Function	Characteristics
CL1	ATS22 control power supply	110 V ac +10% 110 V ac -15%
CL2		
R1B	Relay 1 normally closed	<b>Max switching capability:</b> 5 A- 250 V ac or 30 V dc on resistive load ( p.f. =1) 2 A-250 V ac or 30 V dc on inductive load ( p.f.=0.4)  <b>Minimal commutation capability:</b> 100 mA 12 V dc
R1C	Relay 1 common	
R1A	Relay 1 normally open	
R2B	Relay 2 normally closed	
R2C	Relay 2 common	
R2A	Relay 2 normally open	
LI1	Logic input 1	3 x 110 V logic inputs with 20 k $\Omega$ impedance U <sub>max</sub> = 121 Vac, I <sub>max</sub> = 5 mA State 1: U>79 V - I>2 mA State 0: U<20 V - I<15 mA
LI2	Logic input 2	
LI3	Logic input 3	
NC	Not connected	<b>Turn on/off time delay:</b> ■ Hardware: <15 ms ■ Software: <70-85 ms (anti bounce)
COM	Common 110 Vac	
PTC1	PTC (+)	<b>PTC probe connection:</b> Total PTC22 PTC (-) resistance of the probe circuit: 750 $\Omega$ at 77 °F (25 °C)
PTC22	PTC (-)	
⊥	Ground (shield)	

#### ATS22●●●S6 & ATS22●●●Q control terminals



230 V ac with 24 V dc logic input

Terminal	Function	Characteristics
CL1	ATS22 control power supply	230 V ac +10% 220 V ac -15%
CL2		
R1B	Relay 1 normally closed	<b>Max switching capability:</b> 5 A- 250 V ac or 30 V dc on resistive load ( p.f. =1) 2 A-250 V ac or 30 V dc on inductive load ( p.f.=0.4)  <b>Minimal commutation capability:</b> 100 mA 12 V dc
R1C	Relay 1 common	
R1A	Relay 1 normally open	
R2B	Relay 2 normally closed	
R2C	Relay 2 common	
R2A	Relay 2 normally open	
LI1	Logic input 1	3 x 24 V logic inputs with 4.3 k $\Omega$ impedance U <sub>max</sub> = 30 V, I <sub>max</sub> = 8 mA State 1: U>11 V - I>5 mA State 0: U<5 V - I<2 mA The 24 V power supply is limited to 42 mA (for both internal and external use). 24 V dc accuracy: 24 V $\pm 6$ V dc
LI2	Logic input 2	
LI3	Logic input 3	
+24 V dc	Float 24 Vdc(+) (1)	<b>Turn on/off time delay:</b> ■ Hardware: <15 ms ■ Software: <70-85 ms (anti bounce)
COM	Float 24 Vdc(-)	
PTC1	PTC (+)	<b>PTC probe connection:</b> PTC2 PTC (-) Total resistance of the probe circuit: 750 $\Omega$ at 77 °F (25 °C)
PTC2	PTC (-)	
⊥	Ground (shield)	

(1) 24 Vdc current is limited to 42 mA  $\pm 10$  %.

(2) The voltage is 11.8 V  $\pm 0.5$  V when the communication is running, but not loaded externally.  
Maximum output current is 100 mA.

# Altistart 22

## soft starters for asynchronous motors

# Short Circuit Current Ratings

## ATS22●●●S6U, 208/230 V

Altistart 22			Short Circuit Current Ratings <sup>(5)</sup>						TeSys Contactor <sup>(8)</sup>	Minimum Enclosure Volume	
Power indicated on rating plate (HP)	Reference	NEC Full Load Current (A)	With Circuit Breaker			With Fuses <sup>(6)</sup>				No TeSys Contactor <sup>(4)</sup> (in <sup>3</sup> )	With TeSys Contactor <sup>(4)</sup> (in <sup>3</sup> )
			PowerPact <sup>(1,2)</sup> (InverseTime) C1, C2 <sup>(4)</sup>	PowerPact <sup>(1,2)</sup> (Instantaneous-Trip) C1, C2 <sup>(4)</sup>	SCCR (kA) B <sup>(4)</sup>	Molded Case Switches	Fuse (A) C1, C2 <sup>(4)</sup>	SCCR (kA) B <sup>(4)</sup>			
<b>208 V A<sup>(4)</sup></b>											
3	ATS22D17S6U	10.6	HLL36040	HLL36030M71	100	HLL36000S15	15	100	LC●D18	2310	4158
7.5	ATS22D32S6U	24.2	HLL36070	HLL36050M72	100	HLL36000S15	40	100	LC●D32	2310	4158
10	ATS22D47S6U	30.8	HLL36100	HLL36100M73	100	HLL36000S15	50	100	LC●D40A	2310	4158
15	ATS22D62S6U	46.2	HLL36125	HLL36100M73	100	HLL36000S15	80	100	LC●D50A	2772	4620
20	ATS22D75S6U	59.4	HLL36150	HLL36150M74	100	HLL36000S15	100	100	LC●D80	2772	4620
25	ATS22D88S6U	74.8	HLL36150	HLL36150M74	100	HLL36000S15	125	100	LC●D80	2772	4620
30	ATS22C11S6U	88	JLL36250	HLL36150M74	100	HLL36000S15	150	100	LC●D115	3696	6468
40	ATS22C14S6U	114	JLL36250	JLL36250M75	100	HLL36000S15	200	100	LC●D150	3696	6468
50	ATS22C17S6U	143	JLL36250	JLL36250M75	100	JLL36000S25	250	100	LC●F185	3696	6468
60	ATS22C21S6U	169	LLL36400	JLL36250M75	100	JLL36000S25 LLL36600S60X	250	100	LC●F265	11267	45000
			LHL36350	LHL3640031M							
75	ATS22C25S6U	211	LHL36400	LHL3640032M	42	LLL36600S60X	350	100	LC●F330	11267	45000
			LLL36400	LLL36400M37X	100						
100	ATS22C32S6U	273	LLL36600	LLL36600M37X	100	LLL36600S60X	450	100	LC●F400	11267	45000
125	ATS22C41S6U	343	LLL36600	LLL36600M37X	100	LLL36600S60X	600	100	LC●F500	11267	45000
150	ATS22C48S6U	396	MJL36800	PLL34080M68	100	PLL34000S60	700	100	LC●F500	10584	34272
			PLL34080								
<b>230 V A<sup>(4)</sup></b>											
3	ATS22D17S6U	10.6	HLL36040	HLL36030M71	100	HLL36000S15	15	100	LC●D18	2310	4158
5	ATS22D17S6U	15.2	HLL36040	HLL36030M71	100	HLL36000S15	30	100	LC●D25	2310	4158
10	ATS22D32S6U	28	HLL36070	HLL36050M72	100	HLL36000S15	45	100	LC●D32	2310	4158
15	ATS22D47S6U	42	HLL36100	HLL36100M73	100	HLL36000S15	70	100	LC●D50A	2310	4158
20	ATS22D62S6U	54	HLL36125	HLL36100M73	100	HLL36000S15	90	100	LC●D65A	2772	4620
25	ATS22D75S6U	68	HLL36150	HLL36150M74	100	HLL36000S15	110	100	LC●D80	2772	4620
30	ATS22D88S6U	80	HLL36150	HLL36150M74	100	HLL36000S15	125	100	LC●D115	2772	4620
40	ATS22C11S6U	104	JLL36250	HLL36150M74	100	HLL36000S15	175	100	LC●D150	3696	6468
50	ATS22C14S6U	130	JLL36250	JLL36250M75	100	JLL36000S17 <sup>(7)</sup>	225	100	LC●D150	3696	6468
60	ATS22C17S6U	154	JLL36250	JLL36250M75	100	JLL36000S25	250	100	LC●F185	3696	6468
75	ATS22C21S6U	192	LLL36400	JLL36250M75	100	JLL36000S25 LLL36600S60X	300	100	LC●F330	11267	45000
			LHL36350	LHL3640031M							
100	ATS22C25S6U	248	LHL36400	LHL3640032M	42	LLL36600S60X	400	100	LC●F330	11267	45000
			LLL36400	LLL36400M37X	100						
125	ATS22C32S6U	312	LLL36600	LLL36600M37X	100	LLL36600S60X	500	100	LC●F400	11267	45000
150	ATS22C41S6U	360	LLL36600	LLL36600M37X	100	LLL36600S60X	600	100	LC●F500	11267	45000
200	ATS22C59S6U	480	MJL36800	PLL34080M68	100	PLL34000S80	800	100	LC●F630	10584	34272
			PLL34080								

(1) Square D PowerPact circuit breakers. Maximum breaker size for SCCR is shown. The third character of the breaker catalog number may be an "L", an "F", an "M" or a "P". The following types of Square D breakers with lower interrupting ratings may be substituted for the breakers shown: HD, HG, HJ, JD, JG, JJ, LG, LJ, MG, PG, PJ, PK.  
(2) A smaller ampacity breaker within the same product family may be substituted for the one described.  
(3) Short circuit rating of the combination exceeds the rating of the circuit breaker. Combinations including F500 contactor are rated 35 kA at 600V.  
(4) Suitable for use on a circuit capable of delivering not more than **B** rms symmetrical kiloAmperes, **A** Volts maximum, when protected by **C1** with a maximum rating of **C2**.  
(5) For all models, rating indicates standard use conditions. For heavy duty condition, the user manual must be referred to.  
(6) Molded case switches provide the disconnecting means, and fuses provide the short circuit protection. The molded case switch part numbers are only suggestions. Customer may choose to use similar approved disconnecting means.  
(7) JLL36000S17 may be replaced by JLL36000S25.  
(8) Contactor may be LC1 or LC2 type. The next larger contactor may be substituted for the one shown. Contactors may be used in conjunction with circuit breaker protection and ATS22 soft starter for line and load isolation applications.

# Altistart 22

soft starters for asynchronous motors

## Short Circuit Current Ratings

ATS22●●●S6U, 460/575 V

Altistart 22			Short Circuit Current Ratings <sup>(5)</sup>						TeSys Contactor <sup>(6)</sup>	Minimum Enclosure Volume	
Power indicated on rating plate (HP)	Reference	NEC Full Load Current (A)	With Circuit Breaker			With Fuses <sup>(6)</sup>				No TeSys Contactor <sup>(4)</sup> (in <sup>3</sup> )	With TeSys Contactor <sup>(4)</sup> (in <sup>3</sup> )
			PowerPact <sup>(1,2)</sup> (InverseTime) C1, C2 <sup>(4)</sup>	PowerPact <sup>(1,2)</sup> (Instantaneous-Trip) C1, C2 <sup>(4)</sup>	SCCR (kA) B <sup>(4)</sup>	Molded Case Switches	Fuse (A) C1, C2 <sup>(4)</sup>	SCCR (kA) B <sup>(4)</sup>			
<b>460 V A<sup>(4)</sup></b>											
10	ATS22D17S6U	14	HLL36040	HLL36030M71	100	HLL36000S15	20	100	LC●D18	2310	4158
20	ATS22D32S6U	27	HLL36070	HLL36050M72	100	HLL36000S15	35	100	LC●D32	2310	4158
30	ATS22D47S6U	40	HLL36100	HLL36100M73	100	HLL36000S15	70	100	LC●D50A	2310	4158
40	ATS22D62S6U	52	HLL36125	HLL36100M73	100	HLL36000S15	90	100	LC●D65A	2772	4620
50	ATS22D75S6U	65	HLL36150	HLL36150M74	100	HLL36000S15	110	100	LC●D80	2772	4620
60	ATS22D88S6U	77	HLL36150	HLL36150M74	100	HLL36000S15	125	100	LC●D115	2772	4620
75	ATS22C11S6U	96	JLL36250	HLL36150M74	100	HLL36000S15	150	100	LC●D115	3696	6468
100	ATS22C14S6U	124	JLL36250	JLL36250M75	100	JLL36000S17 <sup>(7)</sup>	200	100	LC●D150	3696	6468
125	ATS22C17S6U	156	JLL36250	JLL36250M75	100	JLL36000S25	250	100	LC●F185	3696	6468
150	ATS22C21S6U	180	LLL36400	JLL36250M75	100	JLL36000S25 LLL36600S60X	300	100	LC●F265	11267	45000
			LIL36350	LLL36400M37X							
			LHL36350	LHL3640031M							
200	ATS22C25S6U	240	LHL36400	LHL3640032M	100	LLL36600S60X	400	100	LC●F330	11267	45000
			LLL36400	LLL36400M37X							
			LIL36400								
250	ATS22C32S6U	302	LLL36600	LLL36600M37X	100	LLL36600S60X	500	100	LC●F400	11267	45000
			LIL36500								
300	ATS22C41S6U	361	LLL36600	LLL36600M37X	100	LLL36600S60X	600	100	LC●F500	11267	45000
			LIL36600								
350	ATS22C48S6U	414	MJL36800	-	65	PLL34000S60	700	100	LC●F500	10584	34272
			PLL34080	PLL34080M68	100						
400	ATS22C59S6U	477	MJL36800	-	65	PLL34000S80	800	100	LC●F360	10584	34272
			PLL34080	PLL34080M68	100						
<b>575 V A<sup>(4)</sup></b>											
15	ATS22D17S6U	17	HLL36040	HLL36030M71	50	HLL36000S15	25	100	LC●D40A	2310	4158
25	ATS22D32S6U	27	HLL36070	HLL36050M72	50	HLL36000S15	45	100	LC●D40A	2310	4158
40	ATS22D47S6U	41	HLL36100	HLL36100M73	50	HLL36000S15	70	100	LC●D50A	2310	4158
50	ATS22D62S6U	52	HLL36125	HLL36100M73	50	HLL36000S15	90	100	LC●D80	2772	4620
60	ATS22D75S6U	62	HLL36150	HLL36150M74	50	HLL36000S15	100	100	LC●D80	2772	4620
75	ATS22D88S6U	77	HLL36150	HLL36150M74	50	HLL36000S15	125	100	LC●D115	2772	4620
100	ATS22C11S6U	99	JLL36250	HLL36150M74	50	HLL36000S15	150	100	LC●D115	3696	6468
125	ATS22C14S6U	125	JLL36250	JLL36250M75	50	JLL36000S17 <sup>(7)</sup>	200	100	LC●D150	3696	6468
150	ATS22C17S6U	144	JLL36250	JLL36250M75	50	JLL36000S25	250	100	LC●F185	3696	6468
200	ATS22C21S6U	192	LLL36400 <sup>(3)</sup>	JLL36250M75	50	JLL36000S25 LLL36600S60X	300	100	LC●F330	11267	45000
			LIL36350	LLL36400M37X <sup>(3)</sup>							
			LHL36350	LHL3640031M							
250	ATS22C25S6U	242	LLL36400 <sup>(3)</sup>	LLL36400M37X <sup>(3)</sup>	50	LLL36600S60X	400	100	LC●F330	11267	45000
			LIL36400	LHL3640032M							
			LHL36400								
300	ATS22C32S6U	289	LLL36600 <sup>(3)</sup>	LLL36600M37X <sup>(3)</sup>	50	LLL36600S60X	500	100	LC●F400	11267	45000
			LIL36500								
350	ATS22C41S6U	336	LLL36600 <sup>(3)</sup>	LLL36600M37X <sup>(3)</sup>	50	LLL36600S60X	500	100	LC●F500	11267	45000
			LIL36600								
400	ATS22C48S6U	382	MJL36800	-	25	PKL36000S60	600	100	LC●F500	10584	34272
			PKL36080	PKL36080M68	50						
500	ATS22C59S6U	472	MJL36800	-	25	PKL36000S80	800	100	LC●F630	10584	34272
			PKL36080	PKL36080M68	50						

<sup>(7)</sup>See footnotes on page 11

# Altistart 22

## soft starters for asynchronous motors

# Short Circuit Current Ratings

ATS22●●●S6 & ATS22●●●Q,  
208/600 V

The table below shows recommended combination ratings with fuse or circuit breaker protective device for ATS22●●●Q & ATS22●●●S6.

Soft starter 208/600 V- 60 Hz (+10%-15%) - Standard rating.

Suitable for use on a circuit capable of delivering not more than **X** rms symmetrical Amperes, 575 Volts maximum, when protected by **Z1** with a maximum rating of **Z2**.

Altistart 22	Max. short circuit current rating (SCCR)	Branch circuit protection	Rating
	X	Z1 <sup>(1)</sup>	Z2
ATS22D17Q, ATS22D17S6	5 kA	AJT40	40 A
ATS22D32Q, ATS22D32S6		AJT70	70 A
ATS22D47Q, ATS22D47S6		AJT100	100 A
ATS22D62Q, ATS22D62S6	10 kA	AJT125	125 A
ATS22D75Q, ATS22D75S6		AJT175	175 A
ATS22D88Q, ATS22D88S6		AJT200	200 A
ATS22C11Q, ATS22C11S6		AJT250	250 A
ATS22C14Q, ATS22C14S6		AJT300	300 A
ATS22C17Q, ATS22C17S6		AJT400	400 A
ATS22C21Q, ATS22C21S6	18 kA	AJT500	500 A
ATS22C25Q, ATS22C25S6		AJT600	600
ATS22C32Q, ATS22C32S6		2 x AJT350	2 x 350 A
ATS22C41Q, ATS22C41S6		2 x AJT400	2 x 400 A
ATS22C48Q, ATS22C48S6		2 x AJT500	2 x 500 A
ATS22C59Q, ATS22C59S6	30 kA	2 x AJT600	2 x 600 A

(1) Ferraz Shawmut manufacturer

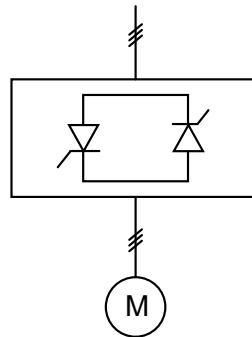
# Altistart 22

## soft starters for asynchronous motors

# Selection Tables

## ATS22●●●S6U & ATS22●●●S6

### Connection to the motor's power supply line



Example of connection to motor's power supply line

Motor								Soft start - soft stop unit, 208...600 V, 50/60 Hz														
Power indicated on rating plate								Motor nominal current <sup>(1)</sup> (Motor FLA)	Soft starter rated current	Dissipated power at nominal current	Part number	Frame size	Weight									
208 V		230 V		400 V		440 V									460 V		500 V		575 V			
HP	kW	HP	kW	HP	kW	HP	kW	HP	kW	HP	kW	HP	kW	HP	kW	A	A	W	lbs	kg		
3	2.2	5	4	10	7.5	10	7.5	10	7.5	-	9	15	11			14	17	39	ATS22D17S6U ATS22D17S6	A	15.4	7
7.5	5.5	10	7.5	20	15	20	15	20	15	25	18.5	25	18.5			27	32	44	ATS22D32S6U ATS22D32S6	A	15.4	7
-	-	15	11	30	22	30	22	30	22	40	30	40	30			40	47	48	ATS22D47S6U ATS22D47S6	A	15.4	7
15	11	20	15	40	30	40	30	40	30	50	37	50	37			52	62	59	ATS22D62S6U ATS22D62S6	B	26.5	12
20	15	25	18.5	50	37	50	37	50	37	60	45	60	45			65	75	63	ATS22D75S6U ATS22D75S6	B	26.5	12
25	18.5	30	22	60	45	60	45	60	45	75	55	75	55			77	88	66	ATS22D88S6U ATS22D88S6	B	26.5	12
30	22	40	30	75	55	75	55	75	55	100	75	100	75			96	110	73	ATS22C11S6U ATS22C11S6	C	39.7	18
40	30	50	37	100	75	100	75	100	75	125	90	125	90			124	140	82	ATS22C14S6U ATS22C14S6	C	39.7	18
50	37	60	45	125	90	125	90	125	90	150	110	150	110			156	170	91	ATS22C17S6U ATS22C17S6	C	39.7	18
60	45	75	55	150	110	150	110	150	110	-	132	200	160			180	210	117	ATS22C21S6U ATS22C21S6	D	72.8	33
75	55	100	75	-	132	-	132	200	160	200	160	250	-			240	250	129	ATS22C25S6U ATS22C25S6	D	72.8	33
100	75	125	90	200	160	200	160	250	-	300	220	300	220			302	320	150	ATS22C32S6U ATS22C32S6	D	72.8	33
125	90	150	110	300	220	300	220	300	220	350	250	350	250			361	410	177	ATS22C41S6U ATS22C41S6	D	72.8	33
150	110	-	132	350	250	350	250	350	250	400	315	400	315			414	480	218	ATS22C48S6U ATS22C48S6	E	110.2	50
-	132	200	160	400	315	450	355	400	315	500	400	500	400			477	590	251	ATS22C59S6U ATS22C59S6	E	110.2	50

(1) Maximum continuous current for class 10. It equates to the nominal current of a standard 4-pole, 400 V, class 10 motor (standard application).

(2) Motor current /  $\sqrt{3}$ .

(4) Soft starters, when connected in an inside delta configuration, allow the use of motors of a larger size relative to the soft starters. In this configuration, the motor's nominal current can be up to 1.5 times the soft starter full load amps.

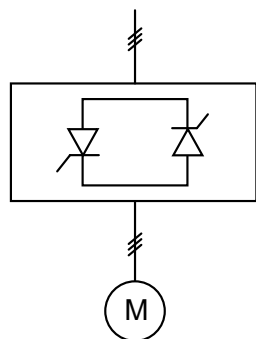
# Altistart 22

## soft starters for asynchronous motors

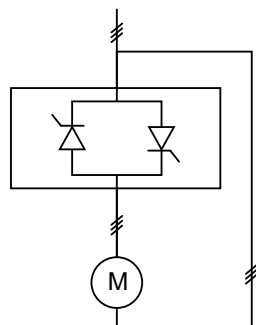
# Selection Tables

## ATS22●●●Q

### Connection to the motor's power supply line



Example of connection to motor's power supply line



Example of connection to motor's inside delta connection

#### 220 V control power supply on CL1, CL2

Motor						Soft start - soft stop unit, 230...440 V, 50/60 Hz						
Power indicated on rating plate						Motor nominal current <sup>(1)</sup> (Motor FLA) <b>I<sub>n</sub></b>	Soft starter rated current <b>I<sub>cL</sub></b>	Dissipated power at nominal current <b>W</b>	Part number	Frame size	Weight	
230 V		400 V		440 V							lbs	kg
HP	kW	HP	kW	HP	kW	A	A	W				
5	4	10	7.5	10	7.5	14.8	17	39	ATS22D17Q	A	15.4	7
10	7.5	20	15	20	15	28.5	32	44	ATS22D32Q	A	15.4	7
15	11	30	22	30	22	42	47	48	ATS22D47Q	A	15.4	7
20	15	40	30	40	30	57	62	59	ATS22D62Q	B	26.5	12
25	18.5	50	37	50	37	69	75	63	ATS22D75Q	B	26.5	12
30	22	60	45	60	45	81	88	66	ATS22D88Q	B	26.5	12
40	30	75	55	75	55	100	110	73	ATS22C11Q	C	39.7	18
50	37	100	75	100	75	131	140	82	ATS22C14Q	C	39.7	18
60	45	125	90	125	90	162	170	91	ATS22C17Q	C	39.7	18
75	55	150	110	150	110	195	210	117	ATS22C21Q	D	72.8	33
100	75	-	132	-	132	233	250	129	ATS22C25Q	D	72.8	33
125	90	200	160	200	160	285	320	150	ATS22C32Q	D	72.8	33
150	110	300	220	300	220	388	410	177	ATS22C41Q	D	72.8	33
-	132	350	250	350	250	437	480	218	ATS22C48Q	E	110.2	50
200	160	400	315	450	355	560	590	251	ATS22C59Q	E	110.2	50

### Connection to the motor's inside delta connection

#### 220 V control power supply

Motor						Soft start - soft stop unit, 230...440 V - 50/60 Hz						
Power indicated on rating plate <sup>(4)</sup>						Motor nominal current <sup>(1),(2)</sup> (Motor FLA) <b>I<sub>n</sub></b>	Soft starter rated current <sup>(2)</sup> <b>I<sub>cL</sub></b>	Part number	Frame size	Weight		
230 V		400 V		440 V						lbs	kg	
HP	kW	HP	kW	HP	kW	A	A					
7.5	5.5	15	11	20	15	25	14.4		ATS22D17Q	A	15.4	7
15	11	30	22	30	22	48	27.7		ATS22D32Q	A	15.4	7
25	18.5	60	45	60	45	70	40.4		ATS22D47Q	A	15.4	7
30	22	75	55	75	55	93	53.7		ATS22D62Q	B	26.5	12
40	30	75	55	100	75	112	64.7		ATS22D75Q	B	26.5	12
50	37	100	75	100	75	132	76.2		ATS22D88Q	B	26.5	12
60	45	125	90	125	90	165	95.3		ATS22C11Q	C	39.7	18
75	55	150	110	150	110	210	121.2		ATS22C14Q	C	39.7	18
100	75	200	132	200	132	255	147.2		ATS22C17Q	C	39.7	18
125	90	250	160	250	160	315	181.9		ATS22C21Q	D	72.8	33
150	110	300	220	300	220	375	216.5		ATS22C25Q	D	72.8	33
200	132	350	250	350	250	480	277.1		ATS22C32Q	D	72.8	33
250	160	400	315	-	355	615	355.1		ATS22C41Q	D	72.8	33
300	220	450	355	500	400	720	415.7		ATS22C48Q	E	110.2	50
350	250	500	400	700	500	885	511		ATS22C59Q	E	110.2	50

\*Footnotes on page 14

# Altistart 22

## soft starters for asynchronous motors

# Dimensions

## Frame sizes A & B

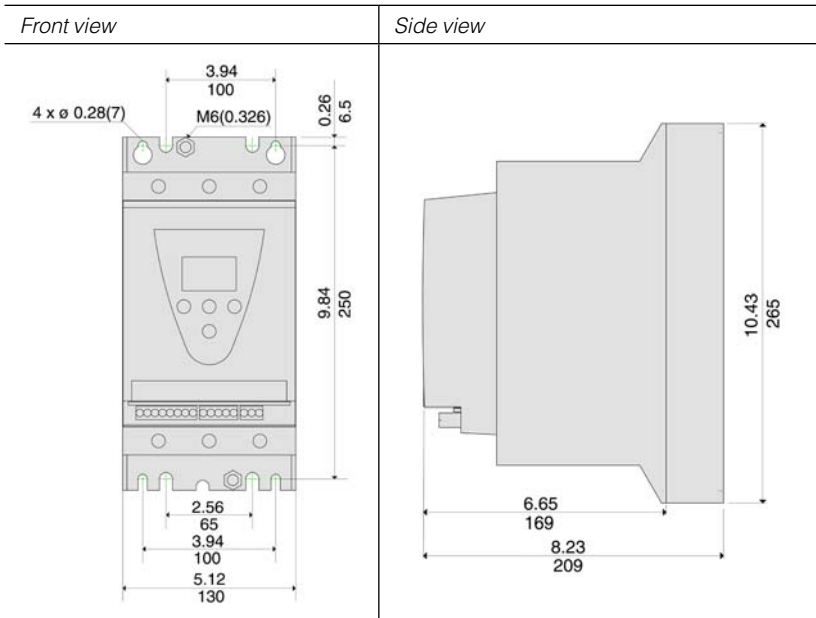


ATS22D17...  
ATS22D47...

### Dimensions

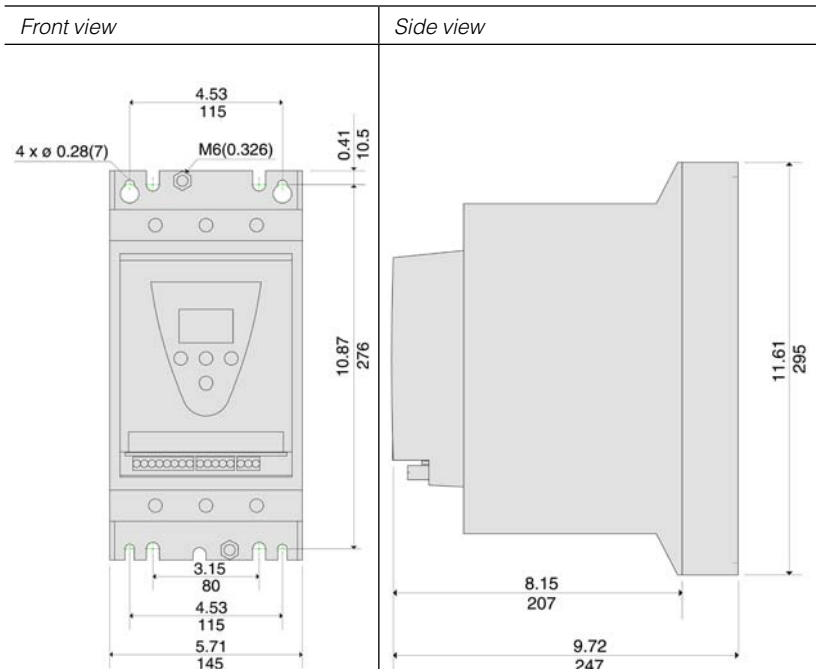
Frame size	ATS22 unit	(W x D x H)	
		in	mm
A	ATS22D17... ATS22D47...	5.1 x 6.6 x 10.4	130 x 169 x 265
B	ATS22D62... ATS22D88...	5.7 x 8.1 x 11.6	145 x 207 x 295

#### Frame size A



ATS22D62...  
ATS22D88...

#### Frame size B



Dimensions:  $\frac{\text{in.}}{\text{mm}}$



# Altistart 22

## soft starters for asynchronous motors

## Dimensions

### Frame size C

### Dimensions

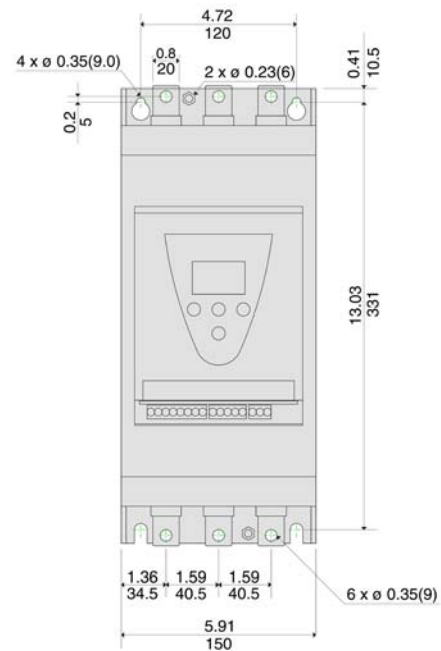
Frame size	ATS22 unit	(W x D x H)	
		in	mm
C	ATS22C11●●●●, ATS22C17●●●●	5.9 x 9 x 14	150 x 229.5 x 356

Frame size C

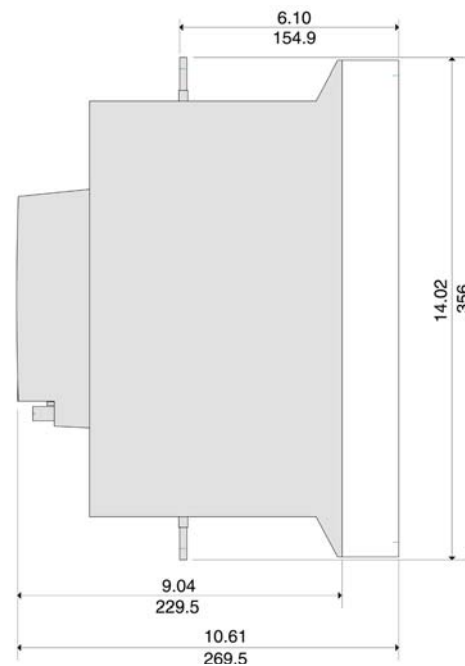
Front view



ATS22C11●●●●  
ATS22C17●●●●



Side view



Dimensions:  $\frac{\text{in.}}{\text{mm}}$

# Altistart 22

## soft starters for asynchronous motors

## Dimensions

### Frame size D

### Dimensions

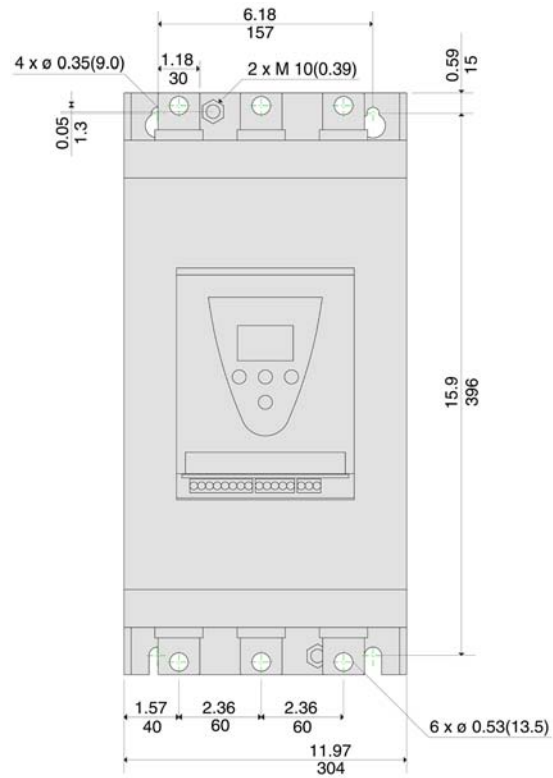
Frame size	ATS22 unit	(W x D x H)	
		in	mm
D	ATS22C21 ATS22C41	8.1 x 11.8 x 16.7	206 x 299 x 425



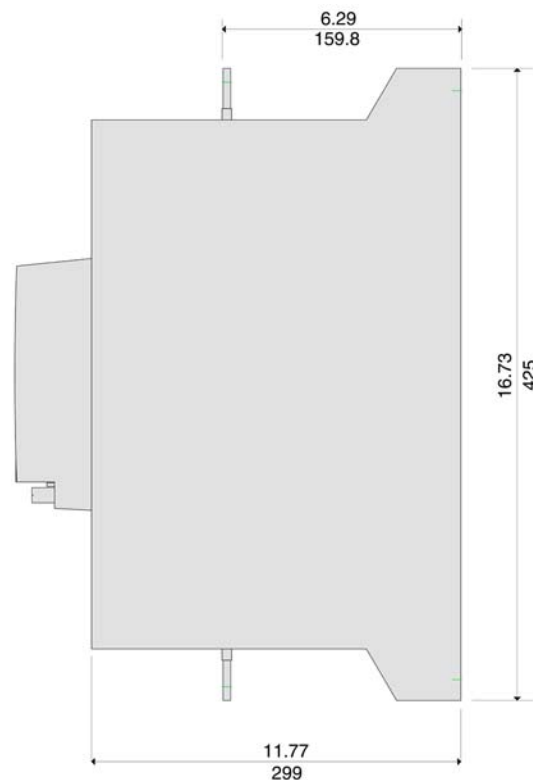
ATS22C21...  
ATS22C41...

### Frame size D

#### Front view



#### Side view



Dimensions:  $\frac{\text{in.}}{\text{mm}}$

# Altistart 22

## soft starters for asynchronous motors

## Dimensions

### Frame size E

### Dimensions

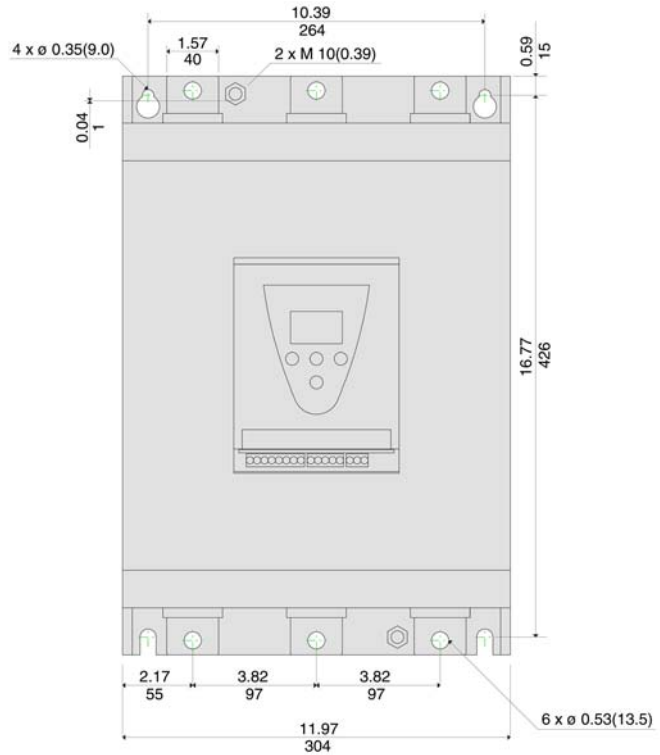
Frame size	ATS22 unit	(W x D x H)	
		in	mm
E	ATS22C48●●●● ATS22C59●●●●	11.9 x 13.4 x 17.9	304 x 339.7 x 455



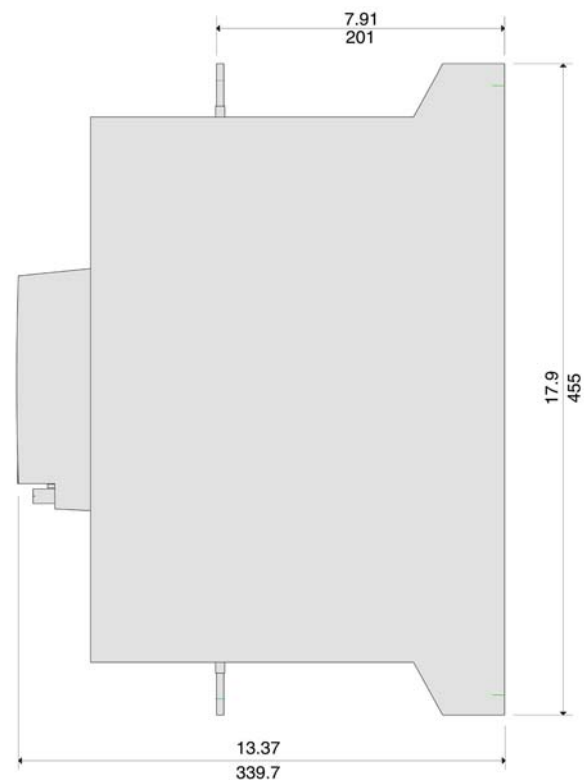
ATS22C48●●●●  
ATS22C59●●●●

### Frame size E

#### Front view



#### Side view



Dimensions:  $\frac{\text{in.}}{\text{mm}}$

# Altistart 22 soft starters for asynchronous motors

## Accessories & Options Configuration tools



### Configuration tools

#### SoMove setup software

This software enables the user to configure, set, debug and organize maintenance tasks for the Altistart 22. It can also be used to customize the integrated display terminal menus.

Description	Part number	Weight	
		lbs	kg
<b>SoMove setup software</b>	<b>Free Download</b>	-	-
<b>USB/RJ45 cordset</b> equipped with a USB connector and an RJ45 connector	<b>TCSMCNAM3M002P</b>	0.2	0.1

For connecting a PC to the Altistart 22.  
Length: 8 ft (2.5 m)



#### Altistart 22 iPad app

The iPad application can perform the following programming actions:

- Create parameter files
- Validate soft starter configurations
- Upload, download or clone soft starter settings
- Retain digital file copies of soft starter settings
- Links to product information embedded in app

Description	Part number	Weight	
		lbs	kg
<b>Altistart 22 iPad app</b>	<b>Available for free on iTunes</b>	-	-
<b>30-pin mobile / RS485 with RJ45 connector</b> equipped with a 30-pin mobile connector (iPad side) and an RJ45 connector (Altistart 22 side)	<b>VW3A8151R20U</b>	0.2	0.1

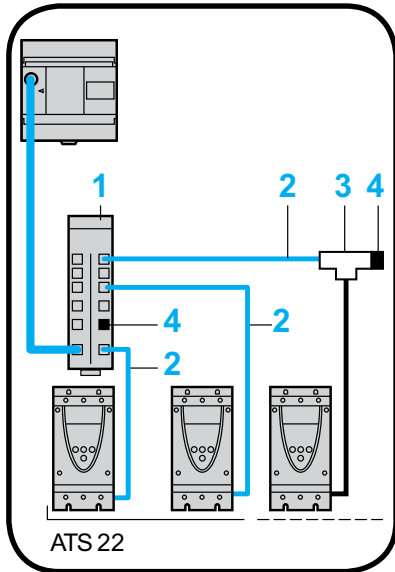
For connecting an iPad to the Altistart 22.

# Altistart 22

## soft starters for asynchronous motors

## Accessories & Options

### Accessories



Example of a connection using a Modbus serial link <sup>(1)</sup> via a splitter box with RJ45 connectors

### Configuration tools (continued)

#### Modbus serial link

Connection via splitter box and RJ45 connectors

Description	Number	Length		Part number	Weight	
		ft	m		lbs	kg
<b>Modbus splitter box</b> with 10 RJ45 connectors	<b>1</b>	-	-	<b>LU9GC3</b>	1.1	0.5
<b>Cordsets for Modbus serial link</b> with 2 RJ45 connectors	<b>2</b>	1	0.3	<b>VW3A8306R03</b>	0.06	0.03
		3	1	<b>VW3A8306R10</b>	0.2	0.1
		10	3	<b>VW3A8306R30</b>	0.22	0.1
<b>Modbus T-junction boxes</b> (with integrated cable)	<b>3</b>	1	0.3	<b>VW3A8306TF03</b>	0.4	0.2
		3	1	<b>VW3A8306TF10</b>	0.4	0.2
<b>Line terminators</b> <sup>(2) (3)</sup> R = 120 Ω C = 1 nF	<b>4</b>	-	-	<b>VW3A8306RC</b>	0.02	0.01
		R = 120 Ω	-	-	<b>VW3A8306R</b>	0.02

(1) Cable depends on the type of controller or PLC

(2) Sold in lots of 2

(3) Depends on the bus architecture

#### Remote display terminal

This terminal enables the human machine interface of the Altistart 22 to be positioned remotely on the door of a floor-standing enclosure. It has IP 54/NEMA 12 or IP 65 degree of protection depending on the model. Maximum operating temperature is 122 °F (50 °C).

##### It is used to:

- Set and configure the Altistart 22 remotely
- Display the status and detected faults of the Altistart 22 remotely



Remote display terminal

Description	Degree of protection	Length		Dimensions		Part number	Weight	
		ft	m	in	mm		lbs	kg
<b>Remote display terminals</b> Remote-mounting cordset required	IP 54/ NEMA 12	-	-	2 x 0.6 x 2.8	50 x 15 x 70	<b>VW3G22101</b>	0.7	0.3
	IP 65	-	-	2.6 x 0.7 x 4.2	66 x 19 x 106	<b>VW3G22102</b>	0.7	0.3
<b>Remote-mounting cordsets</b> equipped with 2 RJ45 connectors	-	3.3	1	-	-	<b>VW3A1104R10</b>	0.2	0.1
	-	9.8	3	-	-	<b>VW3A1104R30</b>	0.4	0.2

### Accessories

#### Fans

The ATS22C21...C59 units come with an integrated fan.  
The ATS22D17...C17 units are ventilated by means of natural convection.

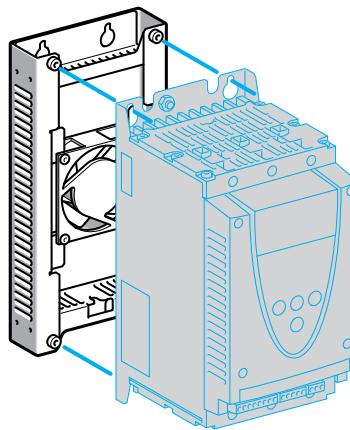
For more demanding applications, such as those with a greater number of starts, the Altistart 22 range offers fans as an option. These are driven by the soft start - soft stop unit and attached to the back of the device.

The fan's noise level is less than 60 dBA.

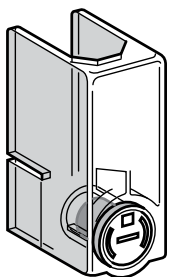


VW3G2240

Description	Power supply voltage for control V	For soft start - soft stop units	Dimensions W x D x H		Reference	Weight	
			in	mm		lbs	kg
Fans	110	ATS22D17S6U...D47S6U	5.1 x 1.6 x 10.4	130 x 40 x 265	VW3G22U400	2.6	1.2
		ATS22D62S6U...D88S6U	5.7 x 1.6 x 11.6	145 x 40 x 295	VW3G22U401	3.1	1.4
		ATS22C11S6U...C17S6U	5.9 x 1.6 x 13.8	150 x 40 x 350	VW3G22U402	3.5	1.6
	220	ATS22D17S6...D47S6, ATS22D17Q...D47Q	5.1 x 1.6 x 10.4	130 x 40 x 265	VW3G22400	2.6	1.2
		ATS22D62S6...D88S6, ATS22D62Q...D88Q	5.7 x 1.6 x 11.6	145 x 40 x 295	VW3G22401	3.1	1.4
		ATS22C11S6...C17S6 ATS22C11Q...C17Q,	5.9 x 1.6 x 13.8	150 x 40 x 350	VW3G22402	3.5	1.6



Demonstration of mounting an additional fan to an ATS22 device



Drawing of a protection shroud

#### Protection shrouds for power terminals

The ATS22C11S6U...C59S6U, ATS22C11S6...C59S6 and ATS22C11Q...C59Q units have 6 unprotected power terminals. These terminals can be fitted with protection shrouds. The protection shrouds are to be used with eyelet connections.

Description	For soft start - soft stop units	Part number	Weight	
			lbs	kg
Set of 6 power terminal protection shrouds	ATS22C11S6U...C17S6U, ATS22C11S6...C17S6, ATS22C11Q...C17Q	LA9F702	0.7	0.3
	ATS22C21S6U...C59S6U, ATS22C21S6...C59S6, ATS22C21Q...C59Q	LA9F703 <sup>(1)</sup>	0.7	0.3

(1) To be used with M10 x 35 mm screws, not supplied.

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# Altistart 22

## soft starters for asynchronous motors

## Introduction



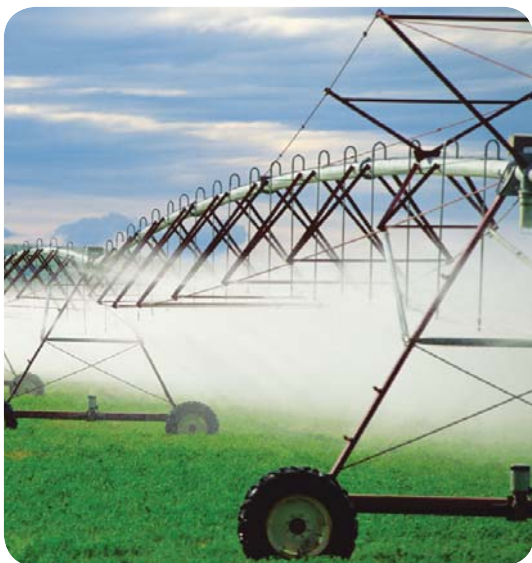
### Introduction

The **Enclosed Altistart 22 solid-state combination motor controller** provides a pre-engineered, integrated solution for reduced voltage starting and soft stopping of standard three-phase asynchronous induction motors up to 500 HP at 575 V.

The controllers enclosed in this offer improve your machine's performance and reliability while cutting installation costs by integrating an Altistart 22 soft start - soft stop unit and a circuit breaker disconnect in a stand-alone enclosure.

The Enclosed Altistart 22 controller provides the benefits of reduced current inrush (and resulting voltage sag) and reduced mechanical shocks that can result from starting a motor across the line. A six thyristor (SCR) solid-state power configuration provides smooth acceleration and deceleration control of three-phase asynchronous motors. Control algorithms are integrated to help ensure smooth rotation throughout the starting ramp without mechanical instability at the end of starting. The ATS22 soft starter also features an integral shorting contactor to reduce steady state motor operational losses.

The Enclosed Altistart 22 can even replace traditional low HP starters in commercial/ industrial applications.



### Applications

The Enclosed Altistart 22 offers many functions that are compatible with these common types of applications found in the construction, infrastructure, or industrial sectors:

- Centrifugal pumps
- Piston pumps
- Fans
- Turbine blowers
- Refrigerant compressors
- Screw compressors
- Centrifugal compressors
- Material handling (conveyors, etc.)
- Specialist machines (agitators, mixers, centrifugal machines)

The compatibility between the Altistart 22 soft starter and these applications are discussed in more detail on pages 4 and 5 of the Altistart 22 section of this catalog.



# Altistart 22

## soft starters for asynchronous motors

## Introduction



### Product

The Enclosed Altistart 22 is offered in 3 different enclosure types; UL Type 1, UL Type 12/12K, and 3R. The horsepower ratings for enclosure UL Types 1 and 12/12K are:

- 3–150 HP @ 208 V
- 5–200 HP @ 230 V
- 10–400 HP @ 460 V
- 15–500 HP @ 575 V

The horsepower ratings for enclosure UL Type 3R are:

- 3–125 HP @ 208 V
- 5–150 HP @ 230 V
- 10–350 HP @ 460 V
- 15–400 HP @ 575 V

The features added by integrating an Enclosed Altistart 22 into your existing system include:

- A low cost and space-saving design with integrated bypass
- Easy start-up
- Integrated controls within the enclosure
- UL listed combination motor controller (UL 508)
- Coordinated short circuit current rating of 100 kA at 480 V and 50 kA at 600 V
- Service entrance rating
- Automatic remote starting

### *Less wiring, more saving*

- Integrated bypass reduces the number of external components: power wiring, contactor, and control wiring for coil
- Wiring six terminals instead of twelve saves time and money
- Integrated bypass contactor decreases heat dissipation, allowing for a smaller enclosure
- Conformal coated printed circuit boards provide enhanced resistance to harsh environments, increasing the service life of your installation and reducing maintenance costs

### *Improve performance, protect the motor, and reduce down time*

- True three-phase control combined with other protection functions allow you to monitor and protect your machine to improve up time
- The soft start and soft stop control reduces mechanical stress on the motor and machine components to increase its productive life:
  - For the motor – delivers thermal protection by calculation, with phase loss detection and protection from excessive starts
  - For the machine – provides both overload and underload protection and guards against stalled impellers, rotation direction, and excessive acceleration time

### *Easy communication & programming features*

- The integrated keypad display provides access to configuration menus enabling real-time visual feedback
- The “simply start” menu allows you to set up basic parameters to get you up and running quickly
- The multi-function integrated Modbus port allows connection to either:
  - A remote-mount keypad for access outside of the enclosure
  - Connection to a Modbus network for remote communication
  - SoMove™ PC software for configuration and diagnostics



# Altistart 22

## soft starters for asynchronous motors

## Introduction



### Product (continued)

#### Outside of the enclosure

The enclosure used for the Enclosed Altistart 22 is optimized to enhance functionality and communication while protecting the valuable components inside. It is offered in UL Type 1, 12/12K, or 3R enclosure ratings to ensure the components are protected from harsh environments. The outside of the Enclosed Altistart 22 features:

#### (1) Remote display terminal

- Mounted on the outside of the enclosure to control the Altistart 22 unit inside
  - 4 x 7 segment display for useful real-time visual feedback
  - 4 button keypad for simple navigation through configuration menus

#### (2) Disconnect handle

#### (3) Pilot light cluster

#### (4) Pushbutton cluster

#### (5) Selector switch

#### Inside of the enclosure

The components featured inside of the Enclosed Altistart 22 work together to offer improved machine performance and protection, simplified integration, and enhanced communication and device programming. These components include:

#### (1) Soft starter control fuse

#### (2) User terminal block TB1

#### (3) A circuit breaker

#### (4) Control power transformer

#### (5) Control Fuses FU6, FU7, and FU8

#### (6) Altistart 22 soft-start/soft-stop unit

#### (7) Space for field-mounted control option

#### (8) Service entrance lug (Z10)

#### (9) Ground bar



### Environmental specifications

<b>Storage temperature</b>	-13 to 158 °F (-25 to 70 °C)
<b>Operating Temperature</b>	UL Type 1 and Type 12/12K: 14 to 104 °F (-10 to 40 °C)
	UL Type 3R and Mod X10: 14 to 122 °F (-10 to 50 °C)
<b>Humidity</b>	95% with no condensation or dripping water, conforming to IEC 60068-2-3
<b>Altitude</b>	3280 ft. (1000 m), derated by 2.2% for each additional 328 ft. (100 m) up to 6560 ft. (2000 m) maximum
<b>Enclosure</b>	UL Type 1: General Purpose
	UL Type 12/12K: Industrial Use, dust-tight/drip-tight
	UL Type 3R: Outdoor Use
<b>Pollution Degree</b>	Pollution degree 2 (UL Type 1 and Type 3R) and pollution degree 3 (UL Type 12/12K) per NEMA ICS-1 and IEC 60664-1
<b>Resistance to Vibration (Soft Starter Only)</b>	According to IEC 60068-2-6: 1.5 mm peak to peak from 3 to 13 Hz 1 gn from 13 to 150 Hz
<b>Resistance to Shocks</b>	According to IEC 60068-2
<b>Codes and Standards</b>	UL Listed per UL 508 under category NKJH Conforms to applicable NEMA ICS, NFPA, and IEC standards Manufactured under ISO 9001 standards Factory modification E10 provides Canadian cUL certification per C22.2 No.14. Seismic Certification: <ul style="list-style-type: none"> <li>■ 2003 IBC, NFPA 5000, and ASCE7</li> <li>■ ICC ES AC 156 <sup>(1)</sup></li> </ul>

(1) Acceptance criteria test protocol with an importance factor of 1.5.

### Electrical specifications

<b>Supply Voltage</b>	208 V ac -15%/+10%; 230 V ac -15%/+10%; 460 V ac -15%/+10%; 575 V ac -15%/+10%
<b>Control Voltage</b>	115 V ac -15%/+10% (control power transformer included)
<b>Frequency</b>	50/60 Hz +/- 5%
<b>Rated Current</b>	Full load current (FLA) per NFPA 70 / NEC Table 430-250
<b>Motor Power</b>	<b>Type 1 and Type 12/12K:</b> 3–150 hp @ 208 V 5–200 hp @ 230 V 10–400 hp @ 460 V 15–500 hp @ 575 V
	<b>Type 3R or 122 °F (50 °C) Rated:</b> 3–125 hp @ 208 V 5–150 hp @ 230 V 10–350 hp @ 460 V 15–400 hp @ 575 V
<b>Motor Voltage</b>	208, 230, 460, 575 V
<b>Starting Duty (Standard Duty)</b>	S1: Starting at 350% of $I_n^{(1)}$ for 40 s from a cold state
	S3: Starting at 300% of $I_n^{(1)}$ for 20 s, or 200% of $I_n$ for 40 s, with a load factor of 95% and 3 starts per hour, or an equivalent thermal cycling

(1)  $I_n$  is the controller full load current listed on the nameplate.

## Operation specifications

Methods of Starting	
<b>Torque Ramp</b>	Adjustable from 1 to 60 s by keypad
<b>Current Limitation</b>	Adjustable from 150% to 350% of controller rated current (In) as indicated on nameplate
<b>Booster Start-up Pulse</b>	Pulse start at 80% of full voltage for 0.1 to 1 s (bSt) for breaking free high-friction loads or starting 2-pole motors
Methods of Stopping	
<b>Freewheel</b>	Coast to stop on stop command
<b>Torque Deceleration Ramp</b>	Adjustable from 1 to 60 s by keypad
<b>Status and Diagnostics:</b>	Digital display of motor and controller status, including: <ul style="list-style-type: none"> <li>■ Ready/Run</li> <li>■ Motor Current</li> </ul>

## Protection specifications

Motor	
<b>Thermal Overload</b>	Solid-state thermal overload relay, integral to the ATS22 soft starter. Overload class is selectable as 10, 20, or 30 by keypad. Range is 40% to 100% of ATS22 soft starter rated current. <sup>(1)</sup>
<b>Shunt-Trip Disconnect</b>	Removes power from the controller cabinet when the ATS22 soft starter detects a fault condition
Controller	
<b>Short-Circuit Current Ratings</b>	<ul style="list-style-type: none"> <li>■ PowerPact H, J, D, L, or P Circuit Breaker: 100 kA @ 480 V and 50 kA @ 600 V <sup>(2)</sup></li> <li>■ PowerPact M Circuit Breaker: 65 kA @ 480 V and 25 kA @ 600 V</li> <li>■ Fusible Disconnect: 100 kA @ 600 V (requires UL Class J time-delay fuses, not included).</li> </ul>
<b>Overcurrent Protection</b>	An overcurrent protection device (OCPD) provides Type 1 coordination to the short-circuit current ratings.
<b>Overtemperature Protection</b>	Protection if heatsink temperature exceeds 185 °F (85 °C)
<b>Shorting Contactor</b>	A shorting contactor is integral to the ATS22 soft starter and reduces temperature rise in the enclosure by eliminating the watts loss of the SCRs.
<b>Unbalanced Threshold Current</b>	Programmable, 10% to 100% of soft starter rated current (In)
<b>Ground Fault</b>	Programmable, 10% to 100% of soft starter rated current (In)
<b>Undervoltage/Overvoltage</b>	Programmable, undervoltage trip at 50% to 90% of line voltage (ULn), and overvoltage trip at 110% to 125% of line voltage

<sup>(1)</sup> Refer to the ATS22 User Manual for ATS22 soft starter maximum rated current. It may differ from the ratings of the Enclosed ATS22 controller.

<sup>(2)</sup> Short-circuit rating for power circuits N05, R05, and Y05 with an IEC contactor is 35,000 A @ 600 V for the following horsepower ratings:  
350 hp: Type 1 and 12  
300 hp: Type 3R or Mod X10

# Altistart 22

## soft starters for asynchronous motors

# Selection Table

## UL Type 1 & Type 12/12K

8639 22U C G 4 B A06 A07 B08 A10  
 - 1 2 3 4 5 6 7 8 9

### Class

- Controller class
- 8638 = Fusible disconnect
- 8639 = Circuit breaker disconnect

### Type

- Controller style
  - 22F = Altistart 22 with Molded Case Switch and Class J Fuse Block
  - 22T = Altistart 22 with PowerPact Motor Circuit Protector
  - 22U = Altistart 22 with PowerPact Thermal-magnetic Circuit Breaker

### 2 Horsepower rating

- |            |            |            |
|------------|------------|------------|
| A = 3 hp   | H = 30 hp  | Q = 150 hp |
| B = 5 hp   | J = 40 hp  | R = 200 hp |
| C = 7.5 hp | K = 50 hp  | S = 250 hp |
| D = 10 hp  | L = 60 hp  | T = 300 hp |
| E = 15 hp  | M = 75 hp  | U = 350 hp |
| F = 20 hp  | N = 100 hp | W = 400 hp |
| G = 25 hp  | P = 125 hp | X = 500 hp |

### 3 Enclosure type

- G = UL Type 1 general purpose
- A = UL Type 12K industrial use, dust/drip tight
- H = UL Type 3R outdoor use

### Voltage

- 2 = 208 V ac      4 = 460 V ac
- 3 = 230 V ac      5 = 575 V ac

### Mods

### 5 Power circuit options

- B = Basic shunt trip
- S = Full-featured shunt trip
- N = Non-reversing isolation
- R = Reversing isolation
- Y = Integral full-voltage bypass

### 6 Control options

- A06 = Start-stop pushbuttons
- B06 = Forward-off-reverse
- C06 = Hand-off-auto (HOA) selector switch
- D06 = Stop-run selector switch
- E06 = Hand-auto selector switch/ start-stop pushbuttons

### 7 Pilot device options

- A07 = Run light (red), off light (green)
- B07 = Push-to-test run light (red), push to-test off light (green)
- C07 = Run light (red), off light (green), tripped light/reset (yellow)
- D07 = PTT run light (red), PTT off light (green), tripped light/reset (yellow)

### 8 Metering options

- B08 = Elapsed run time meter

### 9 Miscellaneous options

- \* The complete list of Miscellaneous options is located on pages 32 & 33.

## UL Type 1 and Type 12/12K enclosures

### Standard duty ratings

Input Voltage 60 Hz V ac	Horsepower Rating	Enclosed 22 Catalog Number <sup>(1, 2, 3)</sup>	Full Load Current A	Maximum Total Dissipated Power at Rated Load <sup>(4, 5)</sup> W	Altistart 22 Catalog Number
	HP				
208 V	3	22+A●2■	10.6	65.7	ATS22D17S6U
	5	22+B●2■	16.7	71.8	ATS22D32S6U
	7.5	22+C●2■	24.2	75	ATS22D32S6U
	10	22+D●2■	30.8	81.8	ATS22D47S6U
	15	22+E●2■	46.2	95.4	ATS22D62S6U
	20	22+F●2■	59.4	106.7	ATS22D75S6U
	25	22+G●2■	74.8	112	ATS22D88S6U
	30	22+H●2■	88	149	ATS22C11S6U
	40	22+J●2■	114	182.8	ATS22C14S6U
	50	22+K●2■	143	221.3	ATS22C17S6U
	60	22+L●2■	169	252.6	ATS22C21S6U
	75	22+M●2■	211	307.1	ATS22C25S6U
	100	22+N●2■	273	418.3	ATS22C32S6U
	125	22+P●2■	343	533	ATS22C41S6U
	150	22+Q●2■	395	563	ATS22C48S6U
230 V	5	22+B●3■	15.2	66.5	ATS22D17S6U
	7.5	22+C●3■	22	74.2	ATS22D32S6U
	10	22+D●3■	28	76.5	ATS22D32S6U
	15	22+E●3■	42	94	ATS22D47S6U
	20	22+F●3■	54	101.4	ATS22D62S6U
	25	22+G●3■	68	112.8	ATS22D75S6U
	30	22+H●3■	80	115.6	ATS22D88S6U
	40	22+J●3■	104	163.7	ATS22C11S6U
	50	22+K●3■	130	199.9	ATS22C14S6U
	60	22+L●3■	154	232.9	ATS22C17S6U
	75	22+M●3■	192	273.1	ATS22C21S6U
	100	22+N●3■	248	354.4	ATS22C25S6U
	125	22+P●3■	312	481.6	ATS22C32S6U
	150	22+Q●3■	360	562.3	ATS22C41S6U
	200	22+R●3■	480	691.3	ATS22C59S6U

(1) ● may be F, T or U, describing the controller style. See Table 2 on page 32.

(2) ● may be G or A, describing the enclosure type. See Table 2 on page 32.

(3) ■ may be B, S, N, R, or Y describing the power circuit configuration.

(4) Dissipated power does not include losses of the customer-supplied power fuses.

(5) For btu/hr, multiply the values by 3.413.

# Altistart 22

## soft starters for asynchronous motors

# Selection Table

## UL Type 1 & Type 12/12K

8639 22U C G 4 B A06 A07 B08 A10  
 - 1 2 3 4 5 6 7 8 9

### Class

- Controller class
- 8638 = Fusible disconnect
- 8639 = Circuit breaker disconnect

### Type

- Controller style
  - 22F = Altistart 22 with Molded Case Switch and Class J Fuse Block
  - 22T = Altistart 22 with PowerPact Motor Circuit Protector
  - 22U = Altistart 22 with PowerPact Thermal-magnetic Circuit Breaker

### 2 Horsepower rating

- |            |            |            |
|------------|------------|------------|
| A = 3 hp   | H = 30 hp  | Q = 150 hp |
| B = 5 hp   | J = 40 hp  | R = 200 hp |
| C = 7.5 hp | K = 50 hp  | S = 250 hp |
| D = 10 hp  | L = 60 hp  | T = 300 hp |
| E = 15 hp  | M = 75 hp  | U = 350 hp |
| F = 20 hp  | N = 100 hp | W = 400 hp |
| G = 25 hp  | P = 125 hp | X = 500 hp |

### 3 Enclosure type

- G = UL Type 1 general purpose
- A = UL Type 12K industrial use, dust/drip tight
- H = UL Type 3R outdoor use

### Voltage

- 2 = 208 V ac      4 = 460 V ac
- 3 = 230 V ac      5 = 575 V ac

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### 5 Power circuit options

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- S = Full-featured shunt trip
- N = Non-reversing isolation
- R = Reversing isolation
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- A06 = Start-stop pushbuttons
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- B07 = Push-to-test run light (red), push to-test off light (green)
- C07 = Run light (red), off light (green), tripped light/reset (yellow)
- D07 = PTT run light (red), PTT off light (green), tripped light/reset (yellow)

### 8 Metering options

- B08 = Elapsed run time meter

### 9 Miscellaneous options

- \* The complete list of Miscellaneous options is located on pages 32 & 33.

## UL Type 1 and Type 12/12K enclosures

### Standard duty ratings

Input Voltage 60 Hz V ac	Horsepower Rating HP	Enclosed 22 Catalog Number <sup>(1, 2, 3)</sup>	Full Load Current A	Maximum Total Dissipated Power at Rated Load <sup>(4, 5)</sup>	Altistart 22 Catalog Number
				W	
460 V	10	22♦D♦4■	14	81.2	ATS22D17S6U
	15	22♦E♦4■	21	88.5	ATS22D32S6U
	20	22♦F♦4■	27	91.6	ATS22D32S6U
	25	22♦G♦4■	34	98.7	ATS22D47S6U
	30	22♦H♦4■	40	107.2	ATS22D47S6U
	40	22♦J♦4■	52	121.1	ATS22D62S6U
	50	22♦K♦4■	65	132	ATS22D75S6U
	60	22♦L♦4■	77	134.9	ATS22D88S6U
	75	22♦M♦4■	96	176.8	ATS22C11S6U
	100	22♦N♦4■	124	214.6	ATS22C14S6U
	125	22♦P♦4■	156	256.1	ATS22C17S6U
	150	22♦Q♦4■	180	263.6	ATS22C21S6U
	200	22♦R♦4■	240	343.5	ATS22C25S6U
	250	22♦S♦4■	302	464.5	ATS22C32S6U
	300	22♦T♦4■	361	564.1	ATS22C41S6U
	350	22♦U♦4■	414	589.6	ATS22C48S6U
400	22♦V♦4■	477	686.6	ATS22C59S6U	
575 V	15	22♦E♦5■	17	82	ATS22D17S6U
	20	22♦F♦5■	22	88.6	ATS22D32S6U
	25	22♦G♦5■	27	90.7	ATS22D32S6U
	30	22♦H♦5■	32	96.8	ATS22D47S6U
	40	22♦J♦5■	41	106.7	ATS22D47S6U
	50	22♦K♦5■	52	119.3	ATS22D62S6U
	60	22♦L♦5■	62	127.4	ATS22D75S6U
	75	22♦M♦5■	77	134.9	ATS22D88S6U
	100	22♦N♦5■	99	179.4	ATS22C11S6U
	125	22♦P♦5■	125	215.7	ATS22C14S6U
	150	22♦Q♦5■	144	243.3	ATS22C17S6U
	200	22♦R♦5■	192	273.1	ATS22C21S6U
	250	22♦S♦5■	242	346.2	ATS22C25S6U
	300	22♦T♦5■	289	443.2	ATS22C32S6U
	400	22♦W♦5■	382	543.1	ATS22C48S6U
	500	22♦X♦5■	472	678.8	ATS22C59S6U

(1) ♦ may be F, T or U, describing the controller style. See Table 2 on page 32.

(2) ■ may be G or A, describing the enclosure type. See Table 2 on page 32.

(3) ■ may be B, S, N, R, or Y describing the power circuit configuration.

(4) Dissipated power does not include losses of the customer-supplied power fuses.

(5) For btu/hr, multiply the values by 3.413.

# Altistart 22

## soft starters for asynchronous motors

# Selection Table

## UL Type 3R

8639 22U C G 4 B A06 A07 B08 A10  
 - 1 2 3 4 5 6 7 8 9

### Class

- Controller class
- 8638 = Fusible disconnect
- 8639 = Circuit breaker disconnect

### Type

- 1 Controller style  
 22F = Altistart 22 with Molded Case Switch and Class J Fuse Block  
 22T = Altistart 22 with PowerPact Motor Circuit Protector  
 22U = Altistart 22 with PowerPact Thermal-magnetic Circuit Breaker

### 2 Horsepower rating

- |            |            |            |
|------------|------------|------------|
| A = 3 hp   | H = 30 hp  | Q = 150 hp |
| B = 5 hp   | J = 40 hp  | R = 200 hp |
| C = 7.5 hp | K = 50 hp  | S = 250 hp |
| D = 10 hp  | L = 60 hp  | T = 300 hp |
| E = 15 hp  | M = 75 hp  | U = 350 hp |
| F = 20 hp  | N = 100 hp | W = 400 hp |
| G = 25 hp  | P = 125 hp | X = 500 hp |

### 3 Enclosure type

- G = UL Type 1 general purpose
- A = UL Type 12K industrial use, dust/drip tight
- H = UL Type 3R outdoor use

### Voltage

- 4 2 = 208 V ac      4 = 460 V ac
- 3 = 230 V ac      5 = 575 V ac

### Mods

### 5 Power circuit options

- B = Basic shunt trip
- S = Full-featured shunt trip
- N = Non-reversing isolation
- R = Reversing isolation
- Y = Integral full-voltage bypass

### 6 Control options

- A06 = Start-stop pushbuttons
- B06 = Forward-off-reverse
- C06 = Hand-off-auto (HOA) selector switch
- D06 = Stop-run selector switch
- E06 = Hand-auto selector switch/ start-stop pushbuttons

### 7 Pilot device options

- A07 = Run light (red), off light (green)
- B07 = Push-to-test run light (red), push to-test off light (green)
- C07 = Run light (red), off light (green), tripped light/reset (yellow)
- D07 = PTT run light (red), PTT off light (green), tripped light/reset (yellow)

### 8 Metering options

- B08 = Elapsed run time meter

### 9 Miscellaneous options

- \* The complete list of Miscellaneous options is located on pages 32 & 33.

## UL Type 3R and 122 °F (50 °C) rated enclosures

### Standard duty ratings

Input Voltage 60 Hz V ac	Horsepower Rating	Enclosed 22 Catalog Number <sup>(1, 2, 3)</sup>	Full Load Current A	Maximum Total Dissipated Power at Rated Load <sup>(4, 5)</sup> W	Altistart 22 Catalog Number
	HP				
208 V	3	22+A●2■	10.6	50.4	ATS22D17S6U
	5	22+B●2■	16.7	53.3	ATS22D32S6U
	7.5	22+C●2■	24.2	60.1	ATS22D47S6U
	10	22+D●2■	30.8	70.2	ATS22D47S6U
	15	22+E●2■	46.2	74	ATS22D75S6U
	20	22+F●2■	59.4	83.2	ATS22D88S6U
	25	22+G●2■	74.8	118.5	ATS22C11S6U
	30	22+H●2■	88	140.3	ATS22C14S6U
	40	22+J●2■	114	164.1	ATS22C17S6U
	50	22+K●2■	143	197.8	ATS22C21S6U
	60	22+L●2■	169	236.3	ATS22C25S6U
	75	22+M●2■	211	297.8	ATS22C32S6U
	100	22+N●2■	273	376.1	ATS22C41S6U
	125	22+P●2■	343	434.8	ATS22C48S6U
	230 V	5	22+B●3■	15.2	55.1
7.5		22+C●3■	22	57.5	ATS22D32S6U
10		22+D●3■	28	68.8	ATS22D47S6U
15		22+E●3■	42	69.7	ATS22D62S6U
20		22+F●3■	54	85.3	ATS22D75S6U
25		22+G●3■	68	89.1	ATS22D88S6U
30		22+H●3■	80	127.4	ATS22C11S6U
40		22+J●3■	104	145.5	ATS22C14S6U
50		22+K●3■	130	181.2	ATS22C17S6U
60		22+L●3■	154	213.4	ATS22C21S6U
75		22+M●3■	192	250.7	ATS22C25S6U
100		22+N●3■	248	338.9	ATS22C32S6U
125		22+P●3■	312	438.1	ATS22C41S6U
150		22+Q●3■	360	506.6	ATS22C59S6U

(1) ● may be F, T or U, describing the controller style. See Table 2 on page 32.

(2) ● may be G or A, describing the enclosure type. See Table 2 on page 32.

(3) ■ may be B, S, N, R, or Y describing the power circuit configuration.

(4) Dissipated power does not include losses of the customer-supplied power fuses.

(5) For btu/hr, multiply the values by 3.413.



# Altistart 22

## soft starters for asynchronous motors

# Selection Table

## UL Type 3R

8639 22U C G 4 B A06 A07 B08 A10  
 - 1 2 3 4 5 6 7 8 9

### Class

- Controller class
- 8638 = Fusible disconnect
- 8639 = Circuit breaker disconnect

### Type

- Controller style
  - 22F = Altistart 22 with Molded Case Switch and Class J Fuse Block
  - 22T = Altistart 22 with PowerPact Motor Circuit Protector
  - 22U = Altistart 22 with PowerPact Thermal-magnetic Circuit Breaker

### 2 Horsepower rating

- |            |            |            |
|------------|------------|------------|
| A = 3 hp   | H = 30 hp  | Q = 150 hp |
| B = 5 hp   | J = 40 hp  | R = 200 hp |
| C = 7.5 hp | K = 50 hp  | S = 250 hp |
| D = 10 hp  | L = 60 hp  | T = 300 hp |
| E = 15 hp  | M = 75 hp  | U = 350 hp |
| F = 20 hp  | N = 100 hp | W = 400 hp |
| G = 25 hp  | P = 125 hp | X = 500 hp |

### 3 Enclosure type

- G = UL Type 1 general purpose
- A = UL Type 12K industrial use, dust/drip tight
- H = UL Type 3R outdoor use

### Voltage

- 2 = 208 V ac      4 = 460 V ac
- 3 = 230 V ac      5 = 575 V ac

### Mods

### 5 Power circuit options

- B = Basic shunt trip
- S = Full-featured shunt trip
- N = Non-reversing isolation
- R = Reversing isolation
- Y = Integral full-voltage bypass

### 6 Control options

- A06 = Start-stop pushbuttons
- B06 = Forward-off-reverse
- C06 = Hand-off-auto (HOA) selector switch
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### 7 Pilot device options

- A07 = Run light (red), off light (green)
- B07 = Push-to-test run light (red), push to-test off light (green)
- C07 = Run light (red), off light (green), tripped light/reset (yellow)
- D07 = PTT run light (red), PTT off light (green), tripped light/reset (yellow)

### 8 Metering options

- B08 = Elapsed run time meter

### 9 Miscellaneous options

- \* The complete list of Miscellaneous options is located on pages 32 & 33.

## UL Type 3R and 122 °F (50 °C) rated enclosures

### Standard duty ratings

Input Voltage 60 Hz V ac	Horsepower Rating HP	Enclosed 22 Catalog Number <sup>(1, 2, 3)</sup>	Full Load Current A	Maximum Total Dissipated Power at Rated Load <sup>(4, 5)</sup>		Altistart 22 Catalog Number
				W		
460 V	10	22♦D♦4■	14	60.4		ATS22D32S6U
	15	22♦E♦4■	21	63.5		ATS22D32S6U
	20	22♦F♦4■	27	75.3		ATS22D47S6U
	25	22♦G♦4■	34	83.3		ATS22D47S6U
	30	22♦H♦4■	40	95.1		ATS22D62S6U
	40	22♦J♦4■	52	96.6		ATS22D75S6U
	50	22♦K♦4■	65	101.9		ATS22D88S6U
	60	22♦L♦4■	77	139.9		ATS22C11S6U
	75	22♦M♦4■	96	155.9		ATS22C14S6U
	100	22♦N♦4■	124	170.4		ATS22C17S6U
	125	22♦P♦4■	156	208.6		ATS22C21S6U
	150	22♦Q♦4■	180	251.3		ATS22C25S6U
	200	22♦R♦4■	240	322.8		ATS22C32S6U
	250	22♦S♦4■	302	422.9		ATS22C41S6U
	300	22♦T♦4■	361	471.4		ATS22C48S6U
350	22♦U♦4■	414	557.3		ATS22C59S6U	
575 V	15	22♦E♦5■	17	68.3		ATS22D32S6U
	20	22♦F♦5■	22	70.2		ATS22D32S6U
	25	22♦G♦5■	27	77.7		ATS22D47S6U
	30	22♦H♦5■	32	84.9		ATS22D47S6U
	40	22♦J♦5■	41	89.4		ATS22D62S6U
	50	22♦K♦5■	52	96.8		ATS22D75S6U
	60	22♦L♦5■	62	104.5		ATS22D88S6U
	75	22♦M♦5■	77	135.1		ATS22C11S6U
	100	22♦N♦5■	99	155.2		ATS22C14S6U
	125	22♦P♦5■	125	173.4		ATS22C17S6U
	150	22♦Q♦5■	144	209.5		ATS22C21S6U
	200	22♦R♦5■	192	240.9		ATS22C25S6U
250	22♦S♦5■	242	335		ATS22C32S6U	
300	22♦T♦5■	289	447.7		ATS22C48S6U	
400	22♦W♦5■	382	541.8		ATS22C59S6U	

(1) ♦ may be F, T or U, describing the controller style. See Table 2 on page 32.

(2) ■ may be G or A, describing the enclosure type. See Table 2 on page 32.

(3) ■ may be B, S, N, R, or Y describing the power circuit configuration.

(4) Dissipated power does not include losses of the customer-supplied power fuses.

(5) For btu/hr, multiply the values by 3.413.

# Altistart 22

## soft starters for asynchronous motors

## Options

8639 22U C G 4 B A06 A07 B08 A10  
 - 1 2 3 4 5 6 7 8 9

### Class

- Controller class
- 8638 = Fusible disconnect
- 8639 = Circuit breaker disconnect

### Type

#### 1 Controller style

- 22F = Altistart 22 with Molded Case Switch and Class J Fuse Block
- 22T = Altistart 22 with PowerPact Motor Circuit Protector
- 22U = Altistart 22 with PowerPact Thermal-magnetic Circuit Breaker

#### 2 Horsepower rating

- |            |            |            |
|------------|------------|------------|
| A = 3 hp   | H = 30 hp  | Q = 150 hp |
| B = 5 hp   | J = 40 hp  | R = 200 hp |
| C = 7.5 hp | K = 50 hp  | S = 250 hp |
| D = 10 hp  | L = 60 hp  | T = 300 hp |
| E = 15 hp  | M = 75 hp  | U = 350 hp |
| F = 20 hp  | N = 100 hp | W = 400 hp |
| G = 25 hp  | P = 125 hp | X = 500 hp |

#### 3 Enclosure type

- G = UL Type 1 general purpose
- A = UL Type 12K industrial use, dust/drip tight
- H = UL Type 3R outdoor use

#### Voltage

- |                |              |
|----------------|--------------|
| 4 2 = 208 V ac | 4 = 460 V ac |
| 3 = 230 V ac   | 5 = 575 V ac |

### Mods

#### 5 Power circuit options

- B = Basic shunt trip
- S = Full-featured shunt trip
- N = Non-reversing isolation
- R = Reversing isolation
- Y = Integral full-voltage bypass

#### 6 Control options

- A06 = Start-stop pushbuttons
- B06 = Forward-off-reverse
- C06 = Hand-off-auto (HOA) selector switch
- D06 = Stop-run selector switch
- E06 = Hand-auto selector switch/ start-stop pushbuttons

#### 7 Pilot device options

- A07 = Run light (red), off light (green)
- B07 = Push-to-test run light (red), push to-test off light (green)
- C07 = Run light (red), off light (green), tripped light/reset (yellow)
- D07 = PTT run light (red), PTT off light (green), tripped light/reset (yellow)

#### 8 Metering options

- B08 = Elapsed run time meter

#### 9 Miscellaneous options

- \* The complete list of Miscellaneous options is located on pages 32 & 33.

### Control options

<b>A06</b>	<b>Start/Stop push buttons</b> Provides black start and red stop push buttons (3-wire control scheme).
<b>B06</b>	<b>Forward-Off-Reverse selector switch</b> Provides three-position selector switch to select between forward, off and reverse. Uses 2-wire control.
<b>C06</b>	<b>Hand-Off-Auto selector switch</b> Provides a three-position selector switch, 2-wire control scheme.
<b>D06</b>	<b>Stop-Run selector switch</b> Provides a two-position selector switch.
<b>E06</b>	<b>Hand-Auto selector switch and Start/Stop push buttons</b> Provides a two-position selector switch and start/stop push buttons (3-wire control).

### Pilot light cluster options

<b>A07</b>	<b>Pilot light cluster #1</b> Consists of red "RUN" and green "OFF" pilot lights. Provides standard red "RUN (ON)" and green "OFF" pilot lights for status annunciation.
<b>B07</b>	<b>Pilot light cluster #2</b> Consists of red "RUN" (push-to-test) and green "OFF" (push-to-test) pilot lights. Provides push-to-test type red "RUN (ON)" and standard green "OFF" pilot lights for status annunciation.
<b>C07</b>	<b>Pilot light cluster #3</b> Consists of red "RUN", green "OFF" and yellow "FAULT" pilot lights. Provides standard red "RUN (ON)", green "OFF" and yellow "FAULT" pilot lights for status annunciation.
<b>D07</b>	<b>Pilot light cluster #4</b> Consists of red "RUN (ON)" (push-to-test), green "OFF" (push-to-test) and yellow "FAULT" (push-to-reset) pilot lights. Provides push-to-test type red "RUN (ON)", standard green "OFF", and push-to-reset type yellow "FAULT" for status annunciation.

### Meter display options

<b>B08</b>	<b>Elapsed time meter</b> Provides a seven-digit analog, non-resettable elapsed run time meter. Not available on Type 3R Enclosures
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### Miscellaneous options

<b>Mod A10</b>	<b>Floor mounting kit</b> Only available for size D enclosures. <b>Rule:</b> Available for power options S05, N05, R05, Y05.
<b>B10</b>	<b>150 VA additional control power capacity</b> Provides 150 VA additional control VA capacity for customer use.
<b>C10</b>	<b>Power up on delay (start relay)</b> Provides an electronic time delay relay adjustable from 0.1 to 60 seconds. Relay is pre-wired to inhibit start for users to set delay time upon power-up of control.
<b>D10</b>	<b>Emergency stop push button</b> Provides a push-button for immediate removal of power.
<b>E10</b>	<b>"cUL" label</b> Provides a Canadian Underwriters Laboratories label when required by local code requirements.

\*Miscellaneous options continued on next page

# Altistart 22

## soft starters for asynchronous motors

## Options

8639 22U C G 4 B A06 A07 B08 A10  
 - 1 2 3 4 5 6 7 8 9

### Class

- Controller class
  - 8638 = Fusible disconnect
  - 8639 = Circuit breaker disconnect

### Type

- 1 Controller style**
    - 22F = Altistart 22 with Molded Case Switch and Class J Fuse Block
    - 22T = Altistart 22 with PowerPact Motor Circuit Protector
    - 22U = Altistart 22 with PowerPact Thermal-magnetic Circuit Breaker
  - 2 Horsepower rating**

A = 3 hp	H = 30 hp	Q = 150 hp
B = 5 hp	J = 40 hp	R = 200 hp
C = 7.5 hp	K = 50 hp	S = 250 hp
D = 10 hp	L = 60 hp	T = 300 hp
E = 15 hp	M = 75 hp	U = 350 hp
F = 20 hp	N = 100 hp	W = 400 hp
G = 25 hp	P = 125 hp	X = 500 hp
  - 3 Enclosure type**
    - G = UL Type 1 general purpose
    - A = UL Type 12K industrial use, dust/drip tight
    - H = UL Type 3R outdoor use
- Voltage**
- 4**

2 = 208 V ac	4 = 460 V ac
3 = 230 V ac	5 = 575 V ac

### Mods

- 5 Power circuit options**
  - B = Basic shunt trip
  - S = Full-featured shunt trip
  - N = Non-reversing isolation
  - R = Reversing isolation
  - Y = Integral full-voltage bypass
- 6 Control options**
  - A06 = Start-stop pushbuttons
  - B06 = Forward-off-reverse
  - C06 = Hand-off-auto (HOA) selector switch
  - D06 = Stop-run selector switch
  - E06 = Hand-auto selector switch/ start-stop pushbuttons
- 7 Pilot device options**
  - A07 = Run light (red), off light (green)
  - B07 = Push-to-test run light (red), push to-test off light (green)
  - C07 = Run light (red), off light (green), tripped light/reset (yellow)
  - D07 = PTT run light (red), PTT off light (green), tripped light/reset (yellow)
- 8 Metering options**
  - B08 = Elapsed run time meter
- 9 Miscellaneous options**
  - \* The complete list of Miscellaneous options is located on pages 32 & 33.

### Miscellaneous options (continued)

<b>F10</b>	<b>Auxiliary contacts for run mode</b> Provides one Form A, normally open (N.O.) contact rated 5 A at 120 Vac to the terminal blocks for customer use. The contact closes when the controller is applying power to the motor.
<b>G10</b>	<b>Auxiliary contacts for full voltage bypass run mode</b> Provides 1 Form C contact rated 5 A @ 120 Vac (8501 Type R relay or equivalent) wired to terminal blocks for customer use. Contacts change state when motor is operated across the line with full voltage by bypass starter. <b>Rule:</b> Must use Power Circuit N or R (line isolation) contactor combination.
<b>H10</b>	<b>Auxiliary contacts for auto mode</b> Provides one Form A, normally open (N.O.) contact rated 5 A @120 Vac to the terminal blocks for user use. The contact closes when the controller is placed in Auto (remote) mode. <b>Rule:</b> MOD C06 (Hand-Off-Auto selector switch) or E06 (Hand-Auto selector switch) must be specified.
<b>J10</b>	<b>Auxiliary contacts for trip status</b> Provides one Form A, normally open (N.O.) contact rated 5 A @120 Vac to the terminal blocks for user use. The contact closes when the controller has tripped.
<b>L10</b>	<b>ID engraved nameplates</b> Provides a lamacoid nameplate, engraved with equipment designation.
<b>M10</b>	<b>Spare terminal blocks</b> Provides up to 10 spare terminal blocks unwired for customer use. Since Phoenix style terminal blocks will be used, extra terminal points will be provided as standard 20 terminal points are available as standard for control wiring (including any additional customer spare terminal points).
<b>P10</b>	<b>Permanent wire markers</b> Provides a permanent sleeve type wire marker on control wiring assemblies
<b>R10</b>	<b>MOV/Surge arrestor (custom engineered option)</b> Provides supplementary MOV protection using a Class 6671 SDSA3650 Surgebreaker Secondary Surge Arrestor hardwired and factory mounted.
<b>U10</b>	<b>Omit door mounted keypad display</b> Omits the door-mounted keypad display. A keypad closing plate and gasket are provided on the door. <b>Rule:</b> To program or control the ATS22 soft starter with Modbus communication, refer to the ATS22 User Manual, BBV51330.
<b>Y10</b>	<b>Seismic qualification label</b> Provides a self-certified identification label with compliance to 2000 IBC, NFPA 5000, 2001 CBC, 1997 UBC, 1999 NBC, 1999SBC, ASCE-7 02 seismic qualification certification. The label criteria will be uniform for the enclosed products. Enclosures shall contain additional bracing as defined by the seismic qualification certification criteria.
<b>V10</b>	<b>OSHPD Seismic Certification</b> This option provides special labels and documents to comply with the seismic requirements of the California Office of Statewide Planning and Development (OSHPD). Refer to 30072-454-87, Seismic Qualification of Enclosed Drives and Soft Starters, for additional information. <b>Rule:</b> Not available for wall mounted enclosures.
<b>Z10</b>	<b>Service Entrance Rating</b> Provides a UL869A approved insulated ground neutral lug assembly, mounting bracket with bonded enclosure ground wire suitable for use as service entrance equipment. <b>Rule:</b> Service Entrance Rating is not available with the Mod E10 (cUL Label).



## Quality Assurance Procedures

This document provides information regarding the quality assurance processes and procedures that are in place for the manufacturing of Altistart 22 (ATS22) soft-start/soft-stop units. Schneider Electric utilizes quality assurance processes and procedures to verify the integrity of components and the assembly process. This document provides a summary of these processes and procedures.



### *Outline of Test Process and Procedures*

Data is gathered on each unit and tracked via the unique serial number of each unit. Test during production validates all electrical and software parameters. Final verification sample testing is conducted at various points in the manufacturing process for each soft starter. Test sampling size is 1 commercial reference per size per week.

In addition to the processes and procedures detailed above, the ISO certified manufacturing facility test stations have instructions for visual quality checks and electrical inspection. The visual quality check list includes a physical inspection for proper connections, proper assembly torques, mechanical integrity and proper documentation.

The quality assurance procedures detailed above are in place for the manufacturing of Altistart 22. These procedures are established to monitor and confirm the quality of the product line that has been designed in from the outset.

- ☑ Individual unit data tracked by unique serial number
- ☑ Electrical parameters
- ☑ Software parameters
- ☑ Final verification sample testing
- ☑ ISO certified visual quality checks
  - ☑ Proper connections
  - ☑ Proper assembly torques
  - ☑ Mechanical integrity
  - ☑ Proper documentation

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## Solutions for every stage of your equipment's life cycle

Schneider Electric™ provides services far beyond meeting your immediate needs for application or equipment repair. We take a long-term, holistic approach to determine your facility and operational needs and develop a strategy for improving the performance of your people, systems, and processes.

Schneider Electric provides services from system design and consulting, to maintenance support, modernization of your installation, and project delivery. Schneider Electric provides the people, tools, and processes to help maximize your business's infrastructure.

Our expertise enables you to cut costs, reduce energy consumption, and keep your systems up and running through routine maintenance, added enhancements, and migrations to new state-of-the-art functionality.

### > Start-up and commissioning

Expert installation support to provide assistance in the start-up of your new system. Service includes a comprehensive power-up and diagnostic check on system components to minimize risk and optimize operation.

### > Technical training

Training offered on-site, off-site, or online for Schneider Electric automation products taught by professional instructors with up-to-date knowledge of our latest hardware and software.

### > Remote technical support

Comprehensive online and phone support from experts specially trained on Schneider Electric drive products, helping to reduce downtime and costs and optimize your system's life cycle.

### > On-site technical support

Support service to perform regular maintenance, upgrades, and conversion assistance, small application and programming assistance, on-the-job training, equipment repair, support and troubleshooting, even in emergency situations.

### > Preventative maintenance

Maintenance programs to scan for, and proactively detect, potential issues or problems with your automation system to help you avoid the costs of unscheduled downtime and short equipment service life. Also serves to extend the life of your installed base by using our services to properly maintain your equipment.

### > Industrial repair services

Repair capabilities for over 400,000 part numbers from more than 2,500 manufacturers at our Greensboro, NC repair facility. Repair is available for both Schneider Electric and non-Schneider Electric equipment.

### > Spare parts management

Save money and reduce downtime through our parts management program. An on-site assessment is performed to determine parts and inventory levels needed to ensure proper system operation and reduce downtime and inventory costs.

### > Migration and modernization

Realize the productivity benefits of the latest Schneider Electric automation technology by using our assessment tools to identify and implement replacement of your legacy automation products, regardless of brand. We make extensive use of existing hardware and wiring for a cost-effective solution with minimal downtime.

### > Software renewals

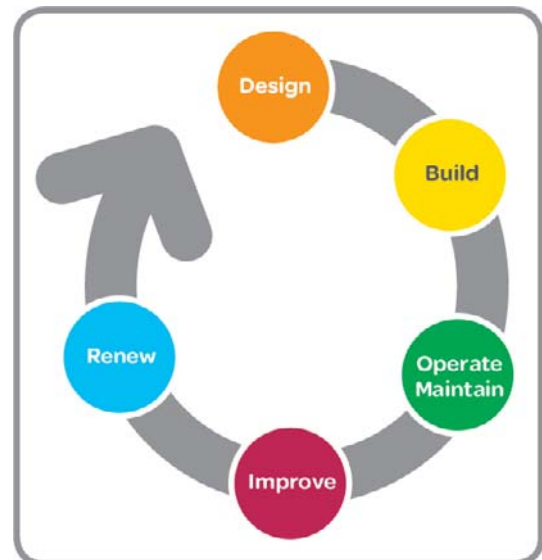
Access the latest software, firmware, and custom options to ensure you always have the latest functionality available to optimize your system's life cycle.

### > Extended warranty

Extend your Schneider Electric standard manufacturer warranty from one year to five years. Protection plans are tailored to your needs reducing costs and out-of-service time.

### > When it comes to your automation equipment, we can help you

- Increase productivity
- Improve reliability and safety
- Mitigate risk and limit downtime
- Keep equipment up to date
- Extend the life of your installed base
- Cut costs and increase savings
- Improve your return on investment



## Talk to someone you can trust

The Altivar family of variable speed AC drives and the Altistart family of soft starts presents the most advanced and user-friendly solutions in the marketplace. Featuring proprietary motor control algorithms to achieve optimal reaction times and complete scalability to match your application requirements for speed, size, and protection, the complete line of Altivar and Altistart products provides the flexibility and performance to:

- Meet the needs of a broad range of industries, including HVAC, pump, material handling, hoisting, packaging and many more.
- Reduce your energy costs using proprietary energy-saving technologies available only from Schneider Electric.
- Improve your up-time by simplifying installation, commissioning and maintenance by providing advanced diagnostics, industry-leading voltage ride thru capability and seismic qualified products.

We also work with you to deliver the benefits of a global service and support of a global service and support organization to further increase the value of working with Schneider Electric. Our product specialists, industry experts, distributors, partners, and the countless other members of the Schneider Electric family are dedicated to helping you make the most of your energy everyday. Contact your local sales representative today to learn how Schneider Electric can improve operational performance and help your business to achieve a competitive advantage. Or visit [www.schneider-electric.com](http://www.schneider-electric.com)

### >Drive Product Support Group

For support and assistance, contact the Drive Product Support Group. The Drive Product Support Group is staffed from 8:00 am until 6:00 pm Eastern time to assist with product selection, start-up, and diagnosis of product or application problems.

EMERGENCY Technical phone support is available 24 hours a day, 365 days a year.

Toll Free **1-888-778-2733**

E-mail **[drive.products.support@us.schneider-electric.com](mailto:drive.products.support@us.schneider-electric.com)**

Fax **919-217-6508**

### >Schneider Electric Service (On-Site)

The Schneider Electric Services division is committed to providing quality on-site service that consistently meets customer expectations. Services responds to your requests, seven days a week, 24 hours a day.

Phone **1-888-778-2733**

### >Schneider Electric Customer Training

Schneider Electric offers a variety of instructor-led skill enhancing and technical product training programs for customers. For a complete list of drives/soft start training with dates, locations, and pricing please call:

Phone **978-975-9306**

Fax **978-975-2821**

### >Customer Care Center

(Assist with stock checks, assist with claims, and assist with order management issues)

To provide additional support, Schneider Electric has rolled out new Technical Service Representatives in local offices which have the strongest needs.

Due to time zone changes and different time operation requirements business operation times vary.

Phone **888-778-2733**

Fax **888-329-9773**



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