

# Altistart 22 soft start - soft stop units



The Altistart 22 soft start - soft stop unit offer

## Presentation

The Altistart 22 soft start - soft stop unit supports the controlled starting and stopping, via voltage and torque, of three-phase squirrel cage asynchronous motors for power ratings between 4 and 400 kW.

It comes ready to use for standard applications with class 10 motor protection.

The Altistart 22 soft start - soft stop unit 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 bypass function (based on a bypass contactor) has been made easier to use by integrating it into the starter. This approach suits applications where it may be necessary to bypass the starter at the end of the starting process in order, for example, to limit the starter's heat dissipation.

The Altistart 22 soft start - soft stop unit 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.

The unit also features thermal protection for motors as well as a monitoring facility for machines and, thanks to the SoMove setup software, enables the installation to be commissioned immediately.

## Applications

The integrated functions of the Altistart 22 soft start - soft stop unit are compatible with the more common types of application found in the construction, infrastructure or industrial sectors:

- Centrifugal pumps, piston pumps
- Fans
- Screw compressors, etc.
- Material handling (conveyors, etc.)
- Specialist machines (agitators, mixers, centrifugal machines)

The Altistart 22 soft start - soft stop unit 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 running costs for machines by reducing mechanical stress

Controlling the three phases of the motor windings ensures that performance remains satisfactory, whatever the situation (with or without a load, all voltage and power ranges, etc.).

## Conformity to standards

Type		Performance
<b>Conducted and radiated emissions</b>	Conforming to IEC 60947-4-2	Class A
<b>Vibration resistance</b>	Conforming to IEC 60068-2-6	1.5 mm from 2 to 13 Hz, 1 gn from 13 to 200 Hz
<b>Shock resistance</b>	Conforming to IEC 60068-2-27	15 gn for 11 ms
<b>Maximum ambient pollution</b>	Conforming to IEC 60664-1	Step 2
<b>Relative humidity</b>	Conforming to IEC 60068-2-3	95% non-condensing, no dripping water
<b>Degree of protection</b>	For ATS 22D17...C11	IP 20 (IP 00 if no connections)
	For ATS 22C14...C59	IP 00

The Altistart 22 soft start - soft stop unit conforms to the RoHS Directive.

## Functions

The main functions integrated in the drive are as follows:

### 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)

### Drive performance functions

- Management of the three supply phases
- 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)
- 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), whilst preserving electronic protection features

### 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 (optimum management of motor protection)
- Monitoring of the duration and number of starts (better installation safety)
- Management of stopping time before restart
- Automatic 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 start - soft stop units



Commissioning the ATS 22 soft start - soft stop unit with SoMove lite setup software

## The offer

The Altistart 22 soft start - soft stop unit offer comprises 2 voltage ranges for motor power ratings from 4 to 400 kW:

- Three-phase power supply voltage from 230 V to 440 V, 50/60 Hz (ATS 22●●●Q)
- Three-phase power supply voltage from 208 V to 600 V, 50/60 Hz (ATS 22●●●S6 and ATS 22●●●S6U)

## Options

The Altistart 22 soft start - soft stop unit range also offers a number of options:

- 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). It offers the same functions as an integrated display terminal.

- Additional fans to support a greater number of starts
- SoMove lite setup software
- Protection shrouds for terminals to ensure compliance with IP 20 degree of protection

## Selection criteria

The Altistart 22 soft start - soft stop unit has been designed for standard control system applications.

In addition to the chosen application, the choice of starter will depend on the following main criteria:

- The power and nominal current on the motor rating plate
- The load factor for the application

The starting capacity also needs to be considered when selecting an Altistart 22 soft start - soft stop unit:

## Starting capacity

The standard starting capacity for a class 10 motor is:

- 3.5 In for 40 seconds from cold with S1 motor duty
- 3.5 In for 20 seconds with S4 motor duty, based on a load factor of 95%

### Note:

S1 motor duty is based on a start followed by operation at constant load, making it possible to achieve thermal equilibrium.

S4 motor duty is based on a cycle consisting of a start, operation at constant load and an idle period.

## Number of starts per hour

Assuming the starting capacity remains the same, the number of starts per hour can be increased by adding a fan.

The ATS 22D17Q...C17Q, ATS 22D17S6...C17S6 and ATS 22D17S6U...C17S6U soft start - soft stop units can be fitted with an additional fan. Page 60462/5 has details of this option.

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

Soft start - soft stop units	Number of starts per hour	
	Without fan	With additional fan
ATS 22D17●...D47●	6	10
ATS 22D62●...D88●	6	10
ATS 22C11●...C17●	4	10

### Note:

The ATS 22C21Q...C59Q, ATS 22C21S6...C59S6 and ATS 22C21S6U...C59S6U soft start - soft stop units come with a fan as standard.

The standard number of starts per hour for S4 motor duty is 4. Anything more would require the next lowest rating.

# Altistart 22 soft start - soft stop units



Example of pumping application using the Altistart 22 soft start - soft stop unit

## Standard application areas

Examples of functions performed by the Altistart 22 soft start - soft stop unit depending on the application chosen

Type of machine	Functions performed by the Altistart 22
Centrifugal pump	Controlled slowing-down and stopping (fewer hammer blows) Protection against underload or reversal of phase rotation direction
Piston pump	Control of pump priming and the pump's direction of rotation
Fan	Detection of overloads and underloads (motor/fan transmission broken) Braking torque on stopping
Turbine	Thermal monitoring of motor via electrically isolated PTC probe
Refrigeration compressor	Control of starting characteristics Management of automatic restart
Screw compressor	Protection against reversal of phase rotation direction Contact for automatic emptying on stopping
Centrifugal compressor	Protection against reversal of phase rotation direction Contact for automatic emptying on stopping
Conveyor	Monitoring of overloads for incident detection or underloads for break detection
Conveyor belt	Second set of motor parameters depending on the load transported
Lifting screw	Monitoring of overloads for hard spot detection or underloads for break detection
Agitator	Displaying the current indicates the density of the material.
Mixer	Displaying the current indicates the density of the material. Boost on start-up
Refiner	Torque control on starting and stopping

## Dedicated applications

The ATS 22 soft start - soft stop unit 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 +40°C and +60°C, derate the nominal current of the Altistart by 2.2% for each additional degree.

- Certain altitudes:

For altitudes between 1000 and 2000 metres, derate the nominal current of the Altistart by 2% for each additional 100 metres.

- Etc.