

SMARTSTART[®]

AC MOTOR SOFT STARTER
6000 SERIES



Designed &
Manufactured in Australia



SMARTSTART®

6000 SERIES

The **SMART** solution to starting & **PROTECTING** electric motors

The SMARTSTART® 6000 Soft Starter is an electronic motor starter offering the latest technology in motor control and protection.

With SMART-TORQ®, a sophisticated Torque Control System that provides optimum control of the motor acceleration and deceleration for a wide variety of applications and load types.

The SMARTSTART® 6000 controls the torque in the motor to produce linear acceleration and deceleration of the motor shaft speed for variable and constant torque loads.

The SMARTSTART 6000® is a robust design suitable for all types of loads, applications and starting conditions.

SMARTSTART® 6000 features:

- SMART-TORQ® Torque Control System
- Linear Motor Acceleration & Deceleration
- Solution to Water Hammer Problems
- Comprehensive Operator 'Dash Board' Display
- Advanced protection for Motor and Load
- Extensive Input/Output capability
- Designed and Manufactured in Australia

SMARTSTART®

6000 SERIES



AC Motor Soft Starter 3.0 - 800kW

Product Overview



Designed & Manufactured
in Australia



200 - 460VAC

6R15 - 6R80

Internal Bypass Contactor
380-415VAC 3 Phase
IP20 enclosure
3 Wire Connection only
Suitable for all load types

R15/R30 : 335mm(h) x 162mm(w) x 172mm(d)
R60/R80 : 440mm(h) x 162mm(w) x 172mm(d)

6R100 - 6R220

200-460VAC 3 Phase
IP00 enclosure
3 Wire or 6 Wire Connection
Continuous or Bypass operation
Suitable for all load types

R100-R220 : 430mm(h) x 248mm(w) x 232mm(d)

6R360 - 6R830

200-460VAC 3 Phase
IP00 enclosure
3 Wire or 6 Wire Connection
Continuous or Bypass operation
Suitable for all load types

R360-R830 : 670mm(h) x 375mm(w) x 285mm(d)

Contact your Zener Distributor for Selection Advice
www.zener.com.au

600 - 1100VAC

6V Series

600-1100VAC 3 Phase
IP00 enclosure
3 Wire or 6 Wire Connection
Continuous or Bypass operation
Suitable for all load types

41.5VAC

Educational (Low Voltage)

41.5V 3 Phase
Operates 41.5V 3 Phase motor
Standard or custom enclosure packaging

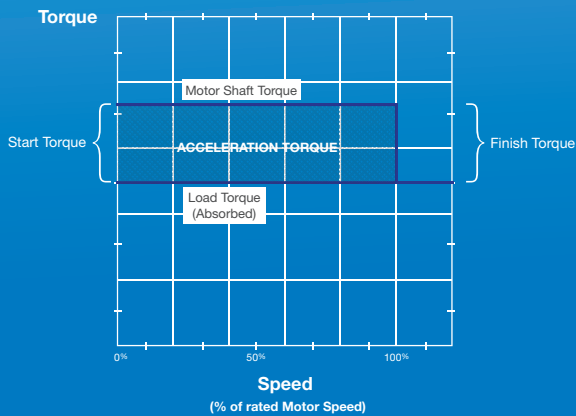


ZENER SMART-TORQ®

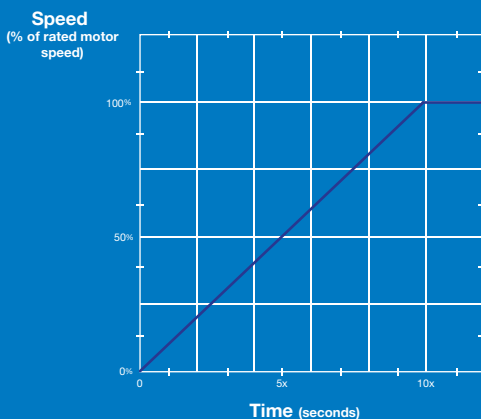
Torque Control System

SMART-TORQ® is a Torque Control System developed by ZENER to provide greater control over the torque generated in the motor during acceleration and deceleration. The torque available in the motor is controlled to achieve a linear acceleration in motor shaft speed. This control system is also active during the deceleration phase to provide a soft stop to overcome problems associated with water hammer in pumping applications. Following a profile that matches the load, the SMARTSTART® 6000 achieves a linear rate of acceleration.

Constant acceleration torque applied;



Linear acceleration of Motor Shaft Speed



A selectable ramp profile ensures the ramp matches the type of load.

An adjustable start & finish torque allows even greater control over the acceleration and torque curve.

Why SMARTSTART® 6000 Soft Starter?

The SMARTSTART® 6000 combines a superior Torque Control System with a robust design to suit all types of loads and applications. A substantial heatsink mass with temperature controlled force ventilation is a standard feature to accommodate the more severe (heavy) duty applications & higher starts per hour.

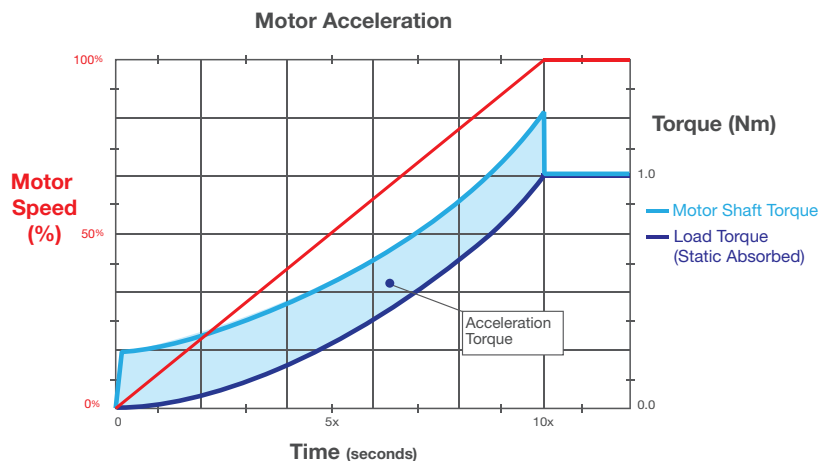
Benefits Include;

- Linear Acceleration of the Motor & Load
- Reduced mechanical stress on the motor shaft, load and drive train
- Ramp profiling to better match the type of load
- Reduce or limit motor starting currents
- Eliminate voltage dips on supply during motor starting.
- Reduce maintenance costs with reduced stress on gears, belts and chains
- Eliminate belt squeal starting fans
- Provide better control of pump motors to eliminate water hammer related problems
- Increased motor efficiency during acceleration and deceleration
- No instability issues due to changing power factor
- No Tachometers or external speed feedback devices required
- Reduce high starting currents & current peaks which often make it necessary to increase supply capacity
- Greater protection for the motor, load and soft starter

SMART-TORQ® on Pumps

The SMARTSTART® 6000's unique torque control overcomes the non-linear torque requirements of pumps. SMART-TORQ® provides a torque ramp which is matched to the load resulting in a linear rate of acceleration and deceleration.

Greater control of the pump speed through the critical regions of deceleration eliminates problems associated with water hammer.



EASE OF OPERATION & PROGRAMMING

The SMARTSTART® 6000 includes a Plain English LCD display and simple menu structure making operation and programming easy for all.

COMPREHENSIVE DASHBOARD SCREENS

The SMARTSTART® 6000 'Dashboard' provides comprehensive monitoring of the soft starter, motor and load.

The SMARTSTART® 6000 console provides a plain English readout of various operational data, including;

Off 0V
.....|.....|.. 0%

Operating status with user selectable variables

145 SCR %Thermal
12.1 Mtr Capacity

Thermal overload capacity of Motor & Starter

0V 0hz 0.0A
0.0kW

Electrical status; Voltage / Freq. / Current / Power / Phase rotation

0% Torq 0.00PF
0% Pwr 0.0kW

Power Status; Torque / Power Factor / Power

Volt Imbal 0 %
0 0 0

Voltage imbalance; Phase voltages & % imbalance

Curr Imbal 0 %
0.0 0.0 0.0 A

Current imbalance; Phase currents & % imbalance

11 Starts
11 Trips

Counters; Starts / Trips

0.1 RunHrs
1.8 kW.Hrs

Meters; Run Hrs / KW.Hrs

Last Trip
T15 MOTOR LOSS

Last trip

ADVANCED PROTECTION

Adjustable Voltage and Current Imbalance Protection
Motor Overload Protection with selectable Class; 5, 10, 10A, 15, 20, 25, 30 or disable
Motor Thermistor or Thermal Switch Protection
Electronic Shear Pin : Over Torque Protection
Over Current Protection
Under Current / Under Torque Protection
External/Remote Trip input with timer
Incorrect Phase Rotation Protection
Acceleration Over Time Protection
Starter Over Temperature Protection
Starter Over Current Protection
Motor Stall Protection

CONTROL & I/O CAPABILITIES

4x Programmable Relays
2x Programmable Inputs with delay function
1x Enable Input
1x Programmable Analogue Output
1x Thermistor Input
Low Voltage Control
MODBUS Communications
Ethernet Communications
Local Console
Remote Mountable Console (IP66)
Selection of Control Supply Voltage options
Essential Services Over-ride capability

SMARTSTART® 6000 OPTIONS

IP66 Remote Console

An IP66 Remote Mount kit is available with ribbon cable or Cat-5 cable.

Modbus RS485 & Ethernet Communications

Modbus RS485 communications.
An Option Board is available for Ethernet Modbus TCP Communications.

Data Logger & SD card memory slot

A plug-in Option Card that logs parameters and operation to an SD card. Data is recorded at a rate of 1/10second during ramping and every 10seconds during running.

Semiconductor Fuse kits

Convenient to fit semiconductor fuse kits to provide additional protection of SCR devices in the event of an output short circuit.



SMARTSTART® 6000 SERIES

Manufactured by:
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Zener reserves the right to alter the specifications, the functionality or the appearance of the product without notice. Contact Zener Electric should you have any questions regarding this product, its specification or its suitability for your application.

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