

THREE PHASE SOFT START TECHNICAL SPECIFICATION

High Specification Electronic Soft Start for Motors from 5.5 to 800kW at 400V.

- Compact and efficient design
- Adjustable initial pedestal voltage
- Kick start capability with adjustable time and level for stall-load, (high torque), starting
- Ramp-start time adjustable from 0.5 to 240 seconds
- Ramp-down time, adjustable from 1 to 120 seconds
- Soft-stop for reducing water-hammer in pumping applications run
- System Ready, Run / Fault and Top-of-Ramp relays fitted
- Full system status LED display
- PCB selectable voltage for 400/220V or 400/690V operation
- IP43 rated enclosure



Technical Data for Three Phase EnviroStart Soft Start Units

| MODEL | CONTINUOUS CURRENT @ +20°C | kW @ 400V ¹ | kW @ 690V ¹ | kW @ 220V ¹ | WEIGHT kg | FANS 110V or 240V | REPETITIVE STARTS Per Hour ² | POWER DISSIPATION Watts ³ | HEIGHT/ WIDTH/DEPTH mm |
|--------------|----------------------------|------------------------|------------------------|------------------------|-----------|-------------------|---|--------------------------------------|------------------------|
| 400-TPSS-5.5 | 12 | 5.5 | 7.5 | 2.2 | 10 | N/A | 15 | 18W | 220/145/155 |
| 400-TPSS-7 | 16 | 7.5 | 11 | 4 | 10 | N/A | 15 | 40W | 220/145/155 |
| 400-TPSS-11 | 23 | 11 | 15 | 5.5 | 10 | N/A | 15 | 140W | 220/145/175 |
| 400-TPSS-15 | 30 | 15 | 22 | 7.5 | 10 | N/A | 15 | 170W | 220/145/175 |
| 400-TPSS-22 | 45 | 22 | 30 | 11 | 15 | N/A | 15 | 100W | 220/145/175 |
| 400-TPSS-30 | 60 | 30 | 45 | 15 | 15 | 1x120mm | 15 | 150W | 330/145/175 |
| 400-TPSS-37 | 75 | 37 | 55 | 22 | 15 | 1x120mm | 15 | 170W | 330/145/175 |
| 400-TPSS-55 | 105 | 55 | 75 | 30 | 15 | 2x120mm | 15 | 525W | 430/254/280 |
| 400-TPSS-63 | 120 | 63 | 90 | 37 | 15 | 2x120mm | 15 | 640W | 430/254/280 |
| 400-TPSS-75 | 145 | 75 | 110 | 45 | 15 | 2x120mm | 15 | 520W | 430/254/280 |
| 400-TPSS-90 | 170 | 90 | 132 | 55 | 16 | 2x120mm | 12 | 490W | 430/254/280 |
| 400-TPSS-110 | 205 | 110 | 150 | 63 | 16 | 2x120mm | 12 | 530W | 430/254/280 |
| 400-TPSS-132 | 255 | 132 | 186 | 75 | 28 | 3x120mm | 12 | 650W | 580/368/228 |
| 400-TPSS-150 | 290 | 150 | 225 | 90 | 28 | 3x120mm | 12 | 750W | 580/368/228 |
| 400-TPSS-186 | 340 | 186 | 260 | 110 | 28 | 3x120mm | 12 | 1020W | 580/368/228 |
| 400-TPSS-225 | 410 | 225 | 315 | 132 | 28 | 3x120mm | 12 | 1100W | 580/368/228 |
| 400-TPSS-260 | 475 | 260 | 375 | 150 | 45 | 3x150mm | 12 | 1250W | 720/462/253 |
| 400-TPSS-315 | 580 | 315 | 450 | 186 | 45 | 3x150mm | 12 | 1500W | 720/462/253 |
| 400-TPSS-375 | 670 | 375 | 500 | 215 | 45 | 3x150mm | 12 | 2000W | 720/462/253 |
| 400-TPSS-450 | 800 | 450 | 630 | 260 | 120 | 2x220mm | 12 | 2400W | 910/650/340 |
| 400-TPSS-500 | 900 | 500 | 750 | 315 | 120 | 2x220mm | 10 | 3000W | 910/650/340 |
| 400-TPSS-630 | 1100 | 630 | 900 | 375 | 120 | 2x220mm | 10 | 3500W | 910/650/340 |
| 400-TPSS-800 | 1400 | 800 | 1200 | 450 | 120 | 2x220mm | 10 | 4000W | 910/650/340 |

1. The kW ratings given are all derived from calculations based on a standard four pole motor operating at a nominal ambient of +20°C at sea level. All units should be selected based on the current rating of the motor to which it is to be fitted.

2. The indicated maximum repetitive start count is calculated based on maximum valid ambient of +40°C and with the motor running at full load current. Reducing either of these conditions will increase the start repetition capability of the unit.

3. Power dissipation is calculated for when the unit is running at full power output as defined by maximum continuous current at +20°C.

ELECTRICAL SPECIFICATION

| | |
|---------------------------|--|
| SUPPLY VOLTAGE | 220V or 400V selected on PCB (690V Units Available) -10% - +15% |
| FREQUENCY | 50 or 60Hz selected on PCB |
| START DUTY AT | 5.5 to 37kW units |
| 12 STARTS PER HOUR | 4x unit rating in Amps for 5s 3x unit rating in Amps for 20s 2x unit rating in Amps for 40s 45 to 800kW units 5x unit rating in Amps for 5s 3x unit rating in Amps for 30s 2x unit rating in Amps for 60s |
| STARTS PER HOUR | 12 evenly spaced starts per hour (average) |

CONTROL SPECIFICATION

| | |
|-------------------------------------|--|
| PEDESTAL RANGE | 25 -100% of supply voltage (6% -100% DOL Torque) |
| RAMP UP TIME | 0.5 - 240s |
| RAMP DOWN TIME | 1 to 120s (Independent of Ramp-up) |
| CURRENT LIMIT RANGE | 1.5 - 4.5 x FLC (Normal ramp hold time 30s) |
| CURRENT LIMIT TIME | Current limit time extendable to 240s |
| KICK START SETTING | Switchable |
| KICK START LEVEL | 70% to 90% Volts |
| KICK START TIME | 0.25 to 2s |
| POWER SWITCHING | Fully base-isolated thyristor Paks or independent Puks |
| CONTROL CIRCUITRY | High frequency MPU with full internal watch keeping and protocol management systems |
| CONTROL BOARD | Multi layer PCB with high voltage tracking and optional high RH environmental protection |
| CONTROL SUPPLY | Derived from three phase input or external supply, (user selectable) |
| STALLED ROTOR PROTECTION | Fault trip in case of detected extended asynchronous rotor speed |
| FAULT DETECTION | Shut Down and Lockout on: Phase Loss, Supply Loss, Motor Fault, Thyristor or PCB Fault, Asynchronous Motor Rotation |
| RESET | Onboard switch or through power off to ensure safe fault condition shut down |
| LED INDICATIONS | Ramp Up / Power On / Run / In Current Limit / Top of Ramp |
| ON PCB RELAYS | System Ready, Fault Condition / Run, (switch selectable), and Top of Ramp. - (All 2 pole changeover with two N/O and N/C contacts) |
| RELAY CONTACT RATING | 2.2kVA, 250V AC maximum |
| MECHANICAL PROTECTION | IP43, NEMA 1 Sheet Metal Enclosure or High Impact ABS cover on Heatsink Backplane (Dependant on kW rating) |

ENVIRONMENTAL SPECIFICATION

| | |
|-----------------------|--|
| OPERATING TEMP | 0°C - +40°C @ < 95%RH (De-rate 20%/10°C above +40°C) |
| STORAGE TEMP | -10°C - +60°C |
| ALTITUDE | Nominal 2000m above sea level. De-rate Amps by 1%/100m above 2000m |
| EU DIRECTIVES | Meets all EMC and Low Voltage Directives. (including G5/4) |
| UL LISTING | Listed for US and Canadian use File E192379 (45 to 800kW units) |

COOLING

| | |
|------------------------|---|
| COOLING | Naturally cooled isolated heatsink up to 22kW. Fan cooled for 30kW and above (240/110V supply required for fans) |
| THERMAL CUT OUT | Automatically cuts out in event of over-temperature on heatsink |

All details relate to units operating with a 400V synchronous three phase sinusoidal supply.



ems
European Ltd

Unit 1, 67 Nairn Road, Bloxwich, Walsall WS3 3XB. England
Tel: +44 (0)1922 491063 Fax: +44 (0)1922 491064

E-mail: info@EnviroStart.com

www.EnviroStart.com

Manufactured & Distributed Worldwide by EMS European Ltd.