SOLCON™ POWERED

MOTOR CONTROL IS OUR NATURE

PRODUCT GUIDE

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COMPANY PROFILE

Solcon Industries Ltd.

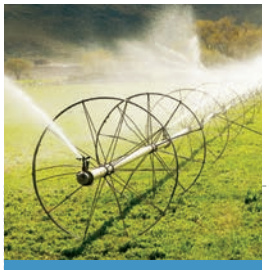
Solcon is a dynamic, high-tech power-electronics company that has been at the forefront of design, development and manufacturing of industrial electronic motor-starting and control systems for over 35 years.

Solcon offers a complete range of Low and Medium Voltage Soft Starter products for a wide range of standard and heavy duty applications, as well as Motor Protection Relays, and Control Products. By using advanced technology, based on continuous field research, Solcon implements the highest quality criteria, guaranteeing long-term reliability to its customers. We take pride in providing custom made solutions for the toughest applications including the Mining, Marine, Water, and Oil & Gas Industries.

Solcon's consistent investment in Research and Development, and a strong relationship with its global partner network and worldwide customer base, have been keys to its success.
A deep understanding of the market needs and application requirements have enabled Solcon to upgrade existing product lines and introduce brand new, innovative solutions to the market making us a market leader.

Solcon is accredited with ISO 9001:2000.
Our products are designed to meet international standards such as CE, UL, cUL, Ex, EAC, Lloyds, Germanischer Lloyds, DNV, BV, ABS, RINA, KR, NK-Class, RMRS, CCS and other approvals are also available.

Meeting your needs across Industries


WATER


OIL & GAS


INDUSTRY


MINING


MARINE

DYNAMIC, HIGH-TECH POWER-ELECTRONICS

COMPLETE RANGE OF LOW AND MEDIUM VOLTAGE SOFT STARTERS, MOTOR PROTECTION RELAYS AND CONTROL PRODUCTS

Standards

UL · cUL · GL Germanischer Lloyd · LR Lloyd's Register Marine · Bureau Veritas · DNV · RINA · CCS · Ex · CE · KR Korean Register · ABS · EAC · ClassNK

HRVS-DN

Digital, Heavy Duty, Medium Voltage Soft Starter
2.3-15kV, up to 48MW

The HRVS-DN is heavy duty Medium Voltage Soft Starter, designed for Medium Voltage AC induction motors including Marine and Mining applications. The HRVS-DN's sophisticated motor control technology ensures smooth acceleration and deceleration as it minimizes the effect of high in-rush current and mechanical torque shock. Advanced features including customizable starting curves, unique voltage measurements, flexible design and enhanced motor protection as well as a global track record make the HRVS-DN the starting solution of choice for Medium Voltage applications even under the most demanding conditions.

The HRVS-DN's flexible configuration is designed to meet requirements of new applications, retrofits and OEM customization. It is available with Marine approvals and with ProGear, a fully Type Tested Arc Resistant switchgear.

ADVANCED FEATURES

- Configurable starting & stopping characteristics
- Enhanced motor protection package
- User friendly setup and operation
- Multi-soft start and multi-soft stop
- Unique synchronous motor starting module
- Dedicated generator starting curve
- Pump and load control
- Advanced Electronic Potential Transformer (EPT) utilizing fiber optics
- Partial Discharge test according to EN50178/625.1
- Direct Power Factor Capacitor connection
- 45-65Hz Auto-tracking frequency range
- Easy to conduct Low Voltage test
- EMC design and test
- Communication options: Modbus, Profibus, DeviceNet
- Compact 2-phase control configuration (optional)
- Data Logger - A turnkey current and voltage wave recorder at a sampling rate of up to 50kHz with advanced graphic software interface for remote waveform monitoring (optional)
- Multi-voltage and multi-current starting

Integral Protections

- Bypass open
- Under Voltage
- Under current
- Current unbalance
- Phase sequence
- Maximum start time
- Electronic overload
- Instantaneous over current 100-850%
- Time over current
- Ground fault
- Over Voltage
- Number of starts
- Under/over frequency
- External fault
- Power ON no start
- Thermal modeling
- Phase loss
- Shorted SCR
- Over load class trip

Type Tested ProGear POWERED BY SOLCON

Fully Type Tested, Arc Resistant, Medium Voltage Soft Starter Switchgear

Metal enclosed cabinets manufactured according to IEC standard 62271-200. Adhering to the highest safety standards, Solcon's ProGear is designed for uncompromising protection and performance.

- Rated: up to 12kV, 1250A
- Internal Arc Test 31.5kV/1sec, IAC: A-FLR Short-time
- withstand current 31.5kA/3sec
- Dielectric Test - Power Frequency 28kV 60sec /75kV BIL
- Temperature Rise Test
- IP54 Protection Degree

MODELS | 2.3-15kV, 60-1,800A

Mains Voltage (kV)	Rated Current (A)	Moto kW (kW)
2.3	60	200
	110	360
	200	660
	320	1,060
	400	1,330
	500	1,660
	600	2,000
	700	2,300
	800	2,660
	1,000	3,330
3.3	60	280
	110	520
	200	950
	320	1,530
	400	1,910
	500	2,390
	600	2,850
	700	3,325
	800	3,820
	1,000	4,780

Mains Voltage (kV)	Rated Current (A)	Moto kW (kW)
4.16	60	360
	110	660
	200	1,200
	320	1,930
	400	2,410
	500	3,010
	600	3,610
	700	4,210
	800	4,820
	1,000	6,030
6.6	70	670
	140	1,340
	250	2,390
	300	2,870
	400	3,820
	500	4,780
	600	5,736
	700	6,740
	800	7,650
	1,000	9,570
	1,200	11,500
	1,400	14,000
	1,600	16,000
	1,800	18,000

Mains Voltage (kV)	Starter Current (A)	Motor kW (kW)
10	70	1,020
	140	2,040
	250	3,650
	300	4,300
	400	5,800
	500	7,250
	600	8,700
	700	10,150
	800	11,600
	1,000	14,500
	1,200	17,400
	1,400	22,000
	1,600	25,000
	1,800	28,000

Mains Voltage (kV)	Starter Current (A)	Motor kW (kW)
11	70	1,100
	140	2,200
	250	4,000
	300	4,800
	400	6,400
	500	8,000
	600	9,600
	700	11,200
	800	12,800
	1,000	16,000
	1,200	19,200
	1,400	22,400
	1,600	25,600
	1,800	28,800
13.8	70	1,400
	140	2,800
	250	5,000
	300	6,000
	400	8,000
	500	10,000
	600	12,000
	700	14,000
	800	16,000
	1,000	20,000
	1,200	24,000
	1,000	20,000
	1,200	24,000

How To Order

Example:

HRVS-DN - 1000A - 3.3kV - 230V - 230V - 3P

1000A — Rated Current

3.3kV — Mains Voltage

230V — Control Voltage
115VAC, 230VAC
24VDC, 110VDC
125VDC, 220VDC

230V — Control Input Voltage
115VAC, 230VAC
110VDC, 125VDC
220VDC, 24V AC/DC

3P — Options

2P -	2-phase control
3M -	Modbus
3P -	Profibus
3D -	DeviceNet
4 -	Insulation test
5 -	Analog output
M -	Marine standard
NLR -	Multi motor soft-stop
SDL -	Solcon Data Logger
U -	UL & CUL standard

DriveStart | IGBT BASED MEDIUM VOLTAGE SOFT STARTER UP TO 6.6KV, 500A

The first of its kind IGBT based Medium Voltage Soft Starter

Optimized for applications that require a low starting current and/or a high starting torque

- Provides full torque start
- Starts at nominal motor current or lower
- Enables motor starting from weak electrical networks
- Reduces motor heat at start enabling use of standard motors

Saving costs, energy and space while meeting top performance requirements

- More economical than a Medium Voltage VFD, yet providing similar soft start and soft stop features
- Integrated bypass ensures no energy loss during operation, reducing energy waste and operational costs
- Peak demand reduction
- Streamlined design translating to at least 50% reduction in space requirements vs. a VFD with comparable performance

Technical Specifications

- Input voltage - Up to 6.6kV 50/60Hz +10% -15
- Power range - Up to 6.6kV, 5MW
- Mains starting current – 10% to 120% of motor rated current
- Starting capacity of 100% of FLC at 50°C, numerous number of starts
- Starting torque - Up to 160% of motor rated torque
- Internal synchronization system (bypass), from DriveStart to mains and back
- Soft Start and Soft Stop
- Multi-start capabilities
- Electronic Potential Current Transformer (EPCT) voltage and current measurements via fiber optics
- Integrated Data Logger and wave form capture for all major system signals including current and voltage for remote diagnostics and failure analysis

Models | Up to 6.6KV, 500A

Mains Voltage (kV)	Rated Current (A)	Unit Dimensions (cm)			Weight (kg)
		H	W	D	
3.3	300	230	200	125	2,000
	400				
4.16	300				
	400				
6.6	300	230	400	125	2,800
	400				

How To Order

Example:

DriveStart - 300A - 6.6kV - 230V - 24V - SDL

- 300A: Rated Current
- 6.6kV: Mains Voltage
- 230V: Control Voltage — 110 VAC, 230
- 24V: Control Input Voltage — 24VDC, 24VAC, 115VAC, 230VAC, 110VDC, 125VDC, 220VDC
- SDL: Options
  - 3M - Modbus
  - MSS - Multi soft stop/start
  - SDL - Solcon Data Logger

HRVS-TX

Medium Voltage Inrush Current Limiter
Up to 100MVA, 36kV

The HRVS-TX eliminates transformer inrush current for all types of Medium Voltage Transformers, up to 100 MVA at 36kV. It is the ideal current limiting solution for Medium Voltage Transformers. Its sophisticated control ensures the elimination of the magnetizing inrush current, eliminating nuisance tripping as well as dynamic shock to the transformer windings. The current limiter can be supplied as IP31-54 with options such as Line and Bypass vacuum contactors and optional circuit breakers, disconnect switches, main and control protection fuses and transformer protection relays.

Advanced Features

- Integral Current Limiting Relay (TSR-6)
- Heavy duty design
- Ambient operating temperature -10°C to 50°C
- Reduced inrush current and dynamic shock
- Applicable models for any transformer
- Communication - RS485 Modbus
- Unique starting characteristics
- Fault indication to each individual fuse
- Partial Discharge (Korona) test for each transformer starter
- Wide 40-70Hz range for fluctuating frequency systems
- IP31-standard, Higher standard available
- User friendly, easy setup and operation
- Electronic Potential Transformer (optional)
- Extended protection package (optional)
- Transformer temperature protection relay (optional)

Models | Up to 36kV, 100MVA

Mains Voltage (kV)	Max Current (A)	Max Power (kVA)	Unit Dimensions (cm)		
			H	W	D
3.3	600	3,400	230	180	110
	1,200	6,900			
4.16	600	4,300			
	1,200	8,600			
6.6	600	6,900			
	1,200	13,700			
11	600	11,400	230	210	110
	1,200	22,900			
	1,600	30,500			

Mains Voltage (kV)	Max Current (A)	Max Power (kVA)	Unit Dimensions (cm)		
			H	W	D
13.8	600	14,300	230	250	110
	1,200	28,700			
	1,600	38,200			
22	600	22,900	240	330	120
	1,200	45,700			
	1,600	61,000			
36	1,200	74,800	250	450	120
	1,600	99,800			

How To Order

Example:

HRVS-TX - 2 - 0 - 3R - M -

- 2 — Supply Voltage: 2 - 110-230V
- 0 — Control Input Voltage: 0 - 220V AC/DC; 1 - 110VAC
- 3R — Thermal Sensor: 3R - 3 RTD (Pt100)
- M — Options: M - Modbus

MV-TPS | Medium Voltage Thyristor Power System
Up to 13.8kV, 500A

Medium Voltage Heater Controller

The MV-TPS is a heavy duty, fully digital, zero-crossing, phase-control, 3-phase control power unit for all types of resistive loads. The MV-TPS is intended for voltage control of Medium Voltage heating applications. Using Medium Voltage drastically reduces the amount of cable required, the size of the heating elements, the size of the electrical equipment cabinets and saves costly step-down transformers and switchgear versus a Low Voltage system.

Advanced Features

- Fully programmable, 15 protection functions
- Load Unbalance alarm to detect a faulty element, even in a parallel connected element system
- Under power level alarm to detect faulty element in case the system is designed to work unbalanced
- Two-line, 16 character LCD screen displays actual values, statistical & maintenance data

*Patent pending

MODELS | Up to 13.8kV, 500A

Mains Voltage (kV)	Rated Current (A)	Heater kW @6.6kV	Unit Dimensions (mm)		
			H	W	D
4.16	70	2000	1,573	1,032	685
	140				
	300				
	500	1000			
6.6 11 13.8	70	Consult Factory			
	140				
	300				
	500				

How To Order

Example:

MV-TPS - 70A - 4.16kV - 230V - 230V - 3M

- 70A: Rated Current
- 4.16kV: Mains Voltage
- 230V: Control Voltage
  - 115VAC, 230VAC
  - 24VDC, 110VDC
  - 125VDC, 220VDC
- 230V: Control Input Voltage
  - 90-230VAC
  - 110VDC, 125VDC
  - 220VDC, 24V AC/DC
- 3M: Options
  - 3M - Modbus
  - D - Remote key pad
  - 5 - Analog output
  - 8 - Conformal coating
  - D - Remote Panel mounting
  - Sync - Synchronization mode
  - P - Potentiometer control

iStart | Advanced Low Voltage Soft Starter 17-430A, 208-690V

YOUR TOTAL SOFT STARTING SOLUTION EASY TO COMMISSION, SIMPLE TO OPERATE

The iStart is Solcon's latest, most advanced soft starter, with built-in bypass and 2 or 3-phase control. It incorporates enhanced soft-start and soft-stop characteristics, providing the best solution for a wide range of applications.

The comprehensive motor protection package guarantees long term reliability while the built-in bypass ensures excellent performance, all in a small versatile design.

iStart size A, B

ADVANCED FEATURES

- Universal Interchangeable Control Module
- Communication options (Modbus, Profibus)
- Multi language operating system
- Real-time, online, 99 event and trip log (including currents, voltages)
- Optimized for high efficiency motors (IE3)
- 2-phase mode for on-site phase fault operation
- Plug and play fan option for increased capacity (sizes A, B, C)
- Basic, professional and expert set-up menus
- User defined metering and monitoring of 3-phase voltages, 3-phase currents and power factor
- Auto reset for selected faults
- 3 Thermistor inputs
- Frequency auto tracking 45-65 Hz
- Inline and inside delta connection
- Universal control voltage 110-220V AC/DC (Sizes A, B, C)
- 3 Current transformers
- Economical 2-phase units available

Comprehensive Protection Package

- Under voltage
- Phase sequence
- Sheer-pin current
- Under current
- overload classes (IEC, NEMA)
- Current imbalance
- Ground fault
- Excessive number of starts
- Excessive starting time
- Soft starter over temperature
- Programmable external fault
- Phase loss
- Inside delta wrong connection alarm

Soft Start & Soft Stop Functions

- Acceleration control
- Current limit start
- 6 adjustable curves for pumps, generators, standard and torque controlled applications
- Soft stop
- Kick start
- Restart delay (3 sec)

iStart size A, B, C

MODELS | 17-430A, 208-690V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)	Internal Bypas	2 or 3-Phase Control
			H	W	D			
A	17	7.5	245	122	147	3.2	+	+
	31	15						
	44	22						
B	58	30	275	132	208	5.2	+	+
	72	37						
	85	45						
C	105	55	388	175	234	10.9	+	+
	145	75						
	170	90						
D	230	132	555	365	275	37	+	+
	310	160						
	350	200						
	430	250						

How To Order

Example:

iStart - 31A - 480V - 230V - 24V - 3P

Rated Current

Mains Voltage
480V, 600V,
690V (210-1100A)

Control Voltage
95-230V (A,B,C)
115V, 230V (D)

Control Input Voltage
95-230VAC
24V DC

Options

2P - 2-phase control
3M - Modbus
3P - Profibus
D - Remote key pad
4 - Insulation test
5 - Analog output
6 - 3xRTD thermal sensor
8 - Conformal coating
F115 - Fan unit 115VAC
F230 - Fan unit 230VAC

RVS-DN

Heavy Duty, Low Voltage Soft Starter
8-3,000A, 220-1,200V

The RVS-DN is a heavy duty, advanced, highly reliable Soft Starter, designed to operate under severe conditions starting the most demanding applications, such as those in Marine and Mining installations. Advanced features such as pump control, slow speed, electronic reverse and enhanced motor protection make it one of the best and most popular soft starters in the industry.

ADVANCED FEATURES

- Robust construction
- Highly advanced starting & stopping characteristics
- User friendly set up and operation
- Line or Inside delta connection
- Ambient operating temperature: up to 60°C
- Motor insulation tester
- Communication: Modbus, Profibus, DeviceNet, Thermistor input
- Analog output
- 45-65Hz Auto-tracking frequency range
- Can be operated without bypass contactor at 50°C up to 820A
- Designed to meet Marine Industry standards

Comprehensive Protection Package

- Too many starts & start inhibit time
- Long start time (Stall protection)
- Shear pin (jam) with adjustable delay
- Electronic overload with selectable curves
- Under current
- Phase loss
- Phase sequence and Under/Over frequency
- Under/Over voltage
- Load loss (motor not connected)
- External fault
- Shorted SCR
- Starter over temperature protection
- Motor insulation test (option)
- Motor thermistor (option)
- When using “Preparation for Bypass” all protections remains active

Soft Start and Soft Stop Functions

- Soft start and soft stop
- Soft, stepless acceleration & deceleration
- Current limiting
- Torque & current control - for optimized acceleration and deceleration
- Pump control program
- Dual adjustment - two start/stop characteristics
- Slow speed with electronic reverse
- Pulse start

MODELS | 8-3,000A, 220-690V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	8	4	310	153	170	4.5
	17	7.5				
	31	15				6.0
	44	22				7.5
	58	30				
	72	37				
B	85	45	385	274	238	14.5
	105	55				
	145	75				
	170	90				
C	210*	110	455	380	292	32
	310*	160				
	390*	200				
D	460*	250	455	380	292	39
	580	315	640	470	302	48
	820	450	710	470	302	65
	950	560	660	623	290	83.5
E	1,100	630	1,100	723	370	170
	1,400	800	1,300	750	392	240
	1,800	950				
F	2,150	1,250				
G	2,400	1,400	1,300	900	410	350
	2,700	1,575				
	3,000	1,750				

* Dimensions differ with Marine approvals.

MODELS | 105-580A, 1,000-1,200V

Model	Rated Current (A)	Unit Dimensions (mm)			Weight (kg)
		H	W	D	
H	105	400	325	300	20
I	170	500	592	345	55
	210				
	310				
	390				60
	460				
J	580	650	650	400	85

How To Order

Example:

RVS-DN - 31A - 480V - 230V - 230V - 3P

- 31A: Rated Current
- 480V: Mains Voltage — 400V, 480V, 600V, 690V, 1000V, 1200V
- 230V: Control Voltage — 115VAC, 230 VAC, 110VDC
- 230V: Control Input Voltage — 90-230VAC, 24V AC/DC, 48V AC/DC
- 3P: Options
  - 3D - DeviceNet
  - 3M - Modbus
  - 3P - Profibus
  - 4 - Insulation test
  - 5 - Analog output
  - 8 - Conformal coating
  - 9 - Preparation for bypass contactor
  - D - Remote display
  - M - Marine approval (A-C)
  - U - UL standard (A-C)

RVS-DXM

Digital, Low Voltage Soft Starter
210-1100A, 208-690V

The RVS-DXM is a digital, highly reliable Soft Starter, providing advanced methods of reducing current and torque during motor starting. The RVS-DX/M is equipped with a digitally controlled internal bypass. The bypass closes at the end of the starting process in order to save power.

MODELS | 210-1100A, 208-690V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	210	110	643	365	277	40
	240	135				
	310	160				
B	360	200	631	510	298	41.5
	414	230				
	477	270				
C	515	290	691	480	302	46.7
D	590	330	791	480	302	55.5
E	720	400	791	510	305	60
	840	480				
F	960	550	815	558	316	85
	1100	630				

Advanced Features

- Internal bypass for the entire range
- Enhanced Soft Start and Soft Stop characteristics
- Communication: Modbus, Profibus, Devicenet
- Two-line, 16 character LCD screen displays actual values, statistical & maintenance data
- Frequency autotracking 45-65Hz

Protection Package:

- Too many starts & start inhibit
- Long start time (Stall protection)
- Electronic shear-pin (Jam) with adjustable curves and delay
- Electronic overload with selectable curves
- Under current
- Phase loss
- Phase sequence and under/over frequency
- Under/over and no voltage
- Load loss (motor not connected)
- External fault
- Shorted SCR
- Starter over temperature protection

How To Order

Example:

RVS–DXM - 210A - 400V - 230V - 3M

- 210A — Rated Current
- 400V — Mains Voltage: 400V, 480V, 600V, 690V
- 230V — Control Voltage: 115VAC, 230VAC
- 3M — Options:
  - 3M - Modbus, 3P - Profibus, 3D - DeviceNet
  - 5 - Analog output
  - 8 - Conformal coating
  - 33 - 3 inputs and 3 outputs bus bars
  - 36 - 3 input bus bars on top and 6 input/output bus bars on bottom
  - 63 - 3 input bus bars on bottom and 6 input/output bus bars on top
  - 66 - 6 input bus bars on bottom and 6 input/output bus bars on top
  - D - Remote key pad
  - F - Unit supplied with fan
  - TIN – Tin Plated bus bars (opt. 33 only)
  - U - UL & CUL approval

RVS-AX

Analog, Low Voltage Soft Starter
8-170A, 220-600V

The RVS-AX provides an optimal solution for small to medium size motors and is an ideal cost effective replacement for Star- Delta and Auto-Transformer type starters. It is easy to install and operate with built-in Current Limit and Motor Protection, integral bypass and 3-phase control. Control voltage is not required to operate the RVS-AX

FEATURES

- Built-in motor protection
- Built-in bypass (31-170A)
- Soft start & soft stop
- Current limit
- Start / Stop with voltage free contact

MODELS | 8-170A, 220-600V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	8	4	232	120	105	2.6
	17	8				
	31	15				
	44	22				
B	58	25	275	129	185	5
	72	37				
C	85	45	380	120	185	8.4
	105	55				
D	145	75	380	172	195	11.8
	170	90				

How to Order

Example:
RVS-AX **31A** **480V** **U**

- **31A** → Rated Current
- **480V** → Mains Voltage: 230V, 400V, 440V, 480V 600V
- **U** → Options: 8 - Conformal coating; U - UL & CUL approval

Solstart

Compact, Analog, Low Voltage Soft Starter
8-58A, 220-600V

The Solstart is a compact, analog Soft Starter with 2-phase control, internal bypass and basic motor protection. The Solstart does not require control voltage to operate and is an ideal solution where space is limited.

FEATURES

- Built-in bypass
- Soft start & soft stop
- Start / Stop with voltage free contact
- End of acceleration contact
- Compact foot print
- DIN Rail mounting (8-22A)
- Suitable for single phase motor

MODELS | 8-58A, 220-600V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	8	3	75	45	110	0.42
B	17	8	75	90	105	0.55
	22	11				
C	31	15	190	65	114	1.3
	44	22				
	58	25				

How to Order

Example:
Solstart - **31A** - **400V** - **U**

- **31A** → Rated Current
- **400V** → Mains Voltage: 230V, 400V, 440V 480V, 600V
- **U** → Options: 8 - Conformal coating; U - UL & CUL approval; DRM - DIN rail mounting

Solbrake

DC Injection Brake
8-820A, 208-690V

The Solbrake electronic brake provides fast, smooth, frictionless braking of standard motors by injecting controlled DC current into the motor windings after the line contactor has opened. This DC current induces a stationary magnetic field which exerts a braking torque on the rotor.

Advanced Features

- Reduces stopping time of high inertia loads
- Adjustable braking time
- Auto stop - DC Injection stops when the motor stops
- DIN Rail mounting (Rated current 10A)
- Easy to install and simple to operate
- Reduced stopping time - Increases production rate in machine tools and high inertia loads
- Reduced stopping time - For increased safety of hazardous machines
- Soft, smooth stopping, preventing wear and tear of mechanical parts
- Adjustable braking torque, matching load size and required stop time
- Auto stop, reducing motor heating
- Maintenance free, highly reliable operation

MODELS | 8-820A, 208-690V

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (kg)
			H	W	D	
A	10	5	75	45	105	0.7
B	17	7.5	190	65	114	1.4
	31	15				
	58	30				
C	105	55	280	154	160	5.2
	210	90				5.7
D	310	110	384	224	222	12
	390	160				
	460	220				

How to Order

Example:

Solbrake - 31A - 400V - 8

- 31A: Rated Current
- 400V: Mains Voltage — 230V, 400V, 480V, 600V, 690V
- 8: Options
  - 8 - Conformal coating
  - E - 30 sec braking time

TPS | Thyristor Power System 8-1500A, 230-1200V

The TPS is a heavy duty 3-phase power unit for controlling the voltage applied to either inductive or resistive heating elements. It is a heavy duty, digital, zero crossing and phase control power system.

Models | Up to 690VAC

Model	Rated Current (A)	Motor kW @400V	Unit Dimensions (mm)			Weight (Kg)
			H	W	D	
A	8	6	291	172	185	6.3
	17	12				6.3
	31	21				6.4
	44	30				6.5
	58	40				6.5
	72	50				6.5
B	85	59	390	172	195	8.5
	105	73				
C	145	100	385	274	238	14.5
	170	118				
	210	145				
D	310	215	455	380	292	31
	390	270				
E	460	318	555	380	292	51
F	580	401	640	470	302	53
	820	567	640	470	302	53
G	950	657	Consult Factory			
	1100	761				
	1400	969	1225	1050	471	172
	1500	1038				

Advanced Features

- Range: 8-1500A, 230-1200V, 50/60Hz
- Zero crossing & phase control (field programmable)
- Comprehensive protection package
- Communication: Modbus, Profibus, DeviceNet
- Line and Inside delta connection
- Synchronized mode (up to 10 units)

Models | 1200VAC

Rated Current (A)	Motor kW @1000V	Unit Dimensions (mm)			Weight (kg)
		H	W	D	
55	95	550	280	346	33.5
105	182				
160	277				
200	346				

How to Order

Example:

TPS - 31A - 400V - 230V - 230V - 3M

- 31A: Rated Current
- 400V: Mains Voltage — 400V, 480V, 600V, 690V, 1000V
- 230V: Control Voltage — 115VAC, 230VAC, 24VDC, 110VDC
- 230V: Control Input Voltage — 90-230VAC, 24VAC, 48VAC
- 3M: Options
  - 3M - Modbus
  - D - Remote key pad
  - 5 - Analog output
  - 8 - Conformal coating
  - D - Remote Panel mounting
  - Sync - Synchronization mode
  - P - Potentiometer control

MPS 3000 | Motor Protection and Control Relay

The MPS-3000 provides a comprehensive motor protection and control package. Monitoring 3-phase currents and voltage together with 10 RTD/Thermistor temperature inputs it provides an ideal solution for Medium and Large Low Voltage Motors

ADVANCED FEATURES

- Monitoring 3 temperature inputs, 3-phase current, voltage and energy
- Power measurement (3-phase voltage measurement)
- Statistical data of last 10 trips, with time and date stamp
- RTD bias for thermal overload
- Multiple Thermal Overload curves
- Too Many Starts pre alarm, configurable to energize dedicated output relay
- Capture and display of min and max RMS, average of 3-phase current, one voltage, min and max frequency
- Ground Fault setting during start elimination nuisance trip
- MODBUS communication, remote parameter programming, control and supervision.
- Programmable discrete inputs/output
- 4 programmable analog outputs

How To Order

Example:

MPS-3000

P	-	V	-	1P	-	2	-	3P
Relay Type		Construction		Thermal Sensor		Control Voltage		Options
P - Motor Protection Relay C - Motor Protection Controller		V - Vertical H - Horizontal		1P - 10 RTD Platinum 1C - 10 RTD Copper TP - 4 Thermistors+6 RTD (Pt100) TC - 4 Thermistors+6 RTD (Copper)		2 - 110-230VAC 2S - 110-230V AC/DC w separate AUX 3 - 19-60VDC		2- Trip on disconnected RTD M- Modbus P- Profibus

Comprehensive Protection Package

ANSI/IEEE C37.2	PROTECTIONS	MPS 3000	MPS-6
3	Communication failure / Internal failure	√	√
27	Under-voltage	√	√
32L/R	Under Power Level 1/2	√	√
37	Under current Level 1/2	√	√
38	Bearing over Temperature	√	-
46	Current Imbalance Level 1/2	√	√
47	Phase sequence/loss	√	-
48	Max. Start Time	√	√
49T	RTD Over temperature	√	√
49R	High Temp. Level 1/2, sensors 1-10	√	√

ANSI/IEEE C37.2	PROTECTIONS	MPS 3000	MPS-6
49/51	Thermal Capacity Level 1	√	√
50	Over Current Level 2 - Short	√	√
50G	Ground Fault Level during starting	√	√
50G/N	Ground Fault Level 1/2	√	√
51L	Load Increase - Alarm	√	√
51R	Over Current Level 1 - Jam	√	√
55	Lead / Lag PF / Low Power Factor	√	√
59	Over-voltage Level 1/2	√	√
66	Too Many Starts Level 1	√	-
74	Welded contactor (MPS 3000c)	√	√

MPS-6 | Motor Protection System

The MPS-6 is a Motor Protection System that offers protection, control and supervision for Low Voltage high power motors and is also suitable for motors operating in a Motor Control Center (MCC).

ADVANCED FEATURES

- Monitoring 3-phase currents, single phase voltage and 3 temperature inputs
- Power measurement (single phase voltage measurement)
- Statistical data of last 10 trips with time and date stamp
- RTD Bias for thermal overload
- Multiple Thermal Overload curves
- Too Many Starts pre alarm, configurable to energize dedicated output relay
- No Start Process - starting method, allowing switching to run, if I>= 10%
- Capture and display of min and max RMS average of 3-phase current, one voltage, min and max frequency
- Ground Fault setting during start elimination nuisance trip
- MODBUS communication (up to 19200 bps) - remote parameter programming, control and supervision
- 6 programmable discrete inputs and outputs

How To Order

Example:

MPS-6

5	-	2	-	3T	-	M
C/T Secondary		Control Voltage		Thermal Sensor		Options
1 - 1A 5 - 5A		2 - 100-230V		3R - 3 RTDs (Pt100) 3T - 3 Thermistors		M - Modbus P - Profibus

MODELS

MPS-3000

Model	Unit Dimensions (mm)			Weight (kg)
	H	W	D	
Vertical	310	134	140	3.1
Horizon	140	310	134	

MPS-6

Model	Unit Dimensions (mm)			Weight (kg)
	H	W	D	
MPS-6	144	96	107	1.5

TPR-6 | Temperature Protection Relay

The TPR-6 Temperature Protection Relay is designed to protect electric motors, transformers and other systems from overheating. The TPR-6 has up to 14 temperature inputs that can be programmed to measure thermistors (PTC or NTC) and RTDs (Pt100).

ADVANCED FEATURES

- Advanced Features:
- Advanced microprocessor based circuitry
- Display of operating RTD or Thermistor Data, Fault and Statistics
- Programmable inputs and outputs
- RS-485 communication with MODBUS protocol
- Easy installation and friendly operation
- Two level protection for Alarm and Trip
- Selection between Trip and Trip fail-safe
- Analog output related to any input or input combinations
- RTD / Thermistor selection - RTDs 100 ohm Platinum (PT100) - Thermistor - PTC or NTC
- Disconnected sensor protection

Protection Features

- RTD / Thermistor with two levels for each input
- Thermistor PTC / NTC selection
- Over temperature Alarm and Trip to each input
- Continuous analog output signal
- External fault 1 and 2

Protection Functions

- Exact input can be assigned to any of the following items:
- Alarm only - Relay A
- Trip only - Relay B
- Fan (Trip, Alarm)- Relay C
- Trip/Alarm- Relay D
- Enabling Auto Reset

MODELS

Model	Unit Dimensions (mm)			Weight (kg)
	H	W	D	
TPR-6	144	96	107	0.8

How To Order

Example:

TPR-6 - 14 - 2 - M

Temperature Inputs
6 - 6 Temperature Inputs
14 - 14 Temperature Inputs

Control Voltage
2 - 100-230V AC/DC

Options
8 - Conformal coating
M - Modbus

MIP-6

Motor Insulation Protection Relay
Low/Medium Voltage Motors

The MIP-6 monitors the level of deterioration in the insulation of Low and Medium Voltage Motors. It measures the motor's insulation resistance and displays the actual and average highs and lows over a predefined period of time.

Two types of units available:

- Low Voltage
- Medium Voltage with an additional resistor box (up to 15kV Medium Voltage motors)

ADVANCED FEATURES

- Monitors insulation deterioration of Low / Medium Voltage motors
- Displays the present and average insulation resistance on LCD
- Monitoring while motors are de-energized
- Programmable parameters
- Microprocessor based technology
- Alarm / Trip Setpoint in the range of 0.1 to 60 Mega Ohms
- Utilizes up to 48 VDC test voltage to increase personnel safety
- Illuminated LCD display with 2 lines of 16 characters each
- Six keys for easy programming
- Three LEDs for easy status indication
- Deterioration monitoring by storing history with time stamp
- Unauthorized parameter modification prevention
- Four C/O 8 Amp., 250V programmable signaling relays
- Optional analog 0/4-20mA output for remote reading
- Optional Modbus communication
- Control Voltage: 85-230VDC/AC (50/60Hz)
- Operating Temperature Range 0°C to +50°C (default - all units) -10°C to +60°C (optional)

MODELS

Model	Unit Dimensions (mm)			Weight (kg)
	H	W	D	
MIP-6	144	96	107	0.5

How To Order

Example:

MIP-6 - LV - M

Mains Voltage

LV - 230-690VAC
MV1 - 690-7200VAC
MV2 - 7200-13800VAC

Options

5 - Analog output
8 - Conformal coating
M - Modbus

Water

Oil & Gas

Industry

Mining

Marine

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