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SM15K - Interface modules

CE

Models	Description
INT MOD M/S-2	Master/Slave interface SM15K
INT MOD CON	Isolated contacts interface
INT MOD SER	Multi-protocol serial interface
INT MOD DIG	Digital I/O interface
INT MOD ANA	Isolated analog interface
INT MOD SIM-2	Simulation interface SM15K

General Features

- Plug and play for the SM15K series power supplies
- Multiple interfaces possible per power supply
- Isolated from the output voltage Working voltage 1000V or 1500V depending on type of unit.
- Floating with respect to earth

Features INT MOD M/S-2

Master Slave Interface SM15K

- Easy control of series or parallel operation.
- Multiple power supplies behave as one power supply.
- Large systems, up to 300kW

Features INT MOD CON

Isolated contacts

- 4 relays with make-and-break contacts
- Additional (floating) Interlock with 24V enable system
- Programmable via Ethernet

Features INT MOD SER

Serial controller interface

- Multi protocol RS232, RS485, RS422, USB
- Web based configuration
- Speeds up to 115.2 kbps

Features INT MOD DIG

Digital (user) I/O

- 8 inputs Logic high = 2.5 … 30V, Logic low = 0V
- 8 Open Drain outputs 0 - 30V, max. 200mA
- Programmable via Ethernet or sequences

Features INT MOD ANA

Analog controller interface

- High accuracy, low drift
- 16 bit AD and DA conversion
- Compatible with other Delta Elektronika 15p analog interfaces
- Factory calibrated for optimum accuracy

Features INT MOD SIM-2

Simulation Interface SM15K

- Under development.

Master Slave Interface - INT MOD M/S-2

Typical Applications

- Applications where more current or voltage is required than one power supply can deliver.
- Applications where a symmetrical power supply is needed.

Specifications

	SM 500-CP-90	SM 1500-CP-30
M/S Parallel Operation Max. devices	maximum 20 units	maximum 20 units
Recovery time	2x the values of a single unit	
Ripple + noise	Values of a single unit	
Programming speed	2x the values of a single unit	
Typical additional programming time	20 µs	
Programming Cable	Modular connector cable 6P6C (1 cable supplied with each interface)	
Max. cable length	2m	

	SM 500-CP-90	SM 1500-CP-30
M/S Series Operation Max. voltage Max. devices	750V* 1000V** maximum 6 units **) units delivered before quarter Q4 / 2018* ***) units delivered Q4 / 2018 or newer* *Contact factory for upgrading to enable 1000V series operation for older units.*	Not possible
Typical additional programming time	20 µs	
Programming Cable	Modular connector cable 6P6C (1 cable supplied with each interface)	
Max. cable length	2m	

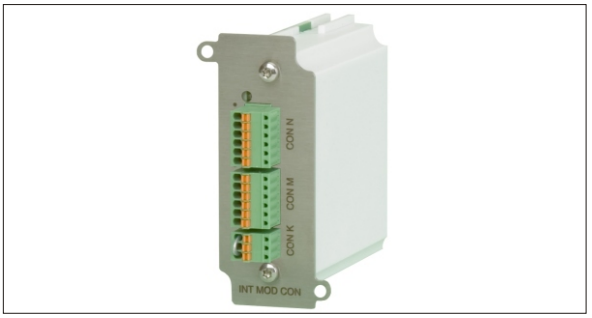
Safety	EN 60950 / EN 61010
Operating Temperature	- 20 to + 50 °C
Humidity	max. 95% RH, non condensing, up to 40 °C max. 75% RH, non condensing, up to 50 °C
Storage temperature	- 40 to + 85 °C

Assembly	Pluggable, SM15K interface slot 3 or slot 4. See paragraph 'Hardware Installation' in this manual. Note 1: max 1pcs INT MOD M/S-2 per unit.
Weight	70 g

Isolated Contacts - INT MOD CON

Typical Applications

- Trigger an external safety alarm
- Interact in automated processes
- Switch the output On/Off with a remote 24Vdc signal
- Using a floating signal for triggering the Interlock function



Specifications

Relay contacts 1... 4	
Contact voltage	60 V
Contact current	2 A
Maximum switching capacity	60 W
Floating Interlock	
Open circuit voltage	5 V
Floating Enable	
Nominal input voltage	24VDC
Input voltage range	15 - 30VDC
Input impedance	12kOhm

Insulation	
prog. connectors - internal circuits	1000 VDC Reinforced isolation acc. EN60950-1 / EN61010-1 with the exception of 1500 VDC for SM1500-CP-30
prog. connectors - earth	max. 60VDC
Safety	EN 60950 / EN 61010
Operating Temperature	– 20 to + 50 °C
Humidity	max. 95% RH, non condensing, up to 40 °C max. 75% RH, non condensing, up to 50 °C
Storage temperature	– 40 to + 85 °C

Mounting	Pluggable, SM15K interface slots 1, 2, 3 and 4. See paragraph 'Hardware Installation' in this manual. Maximum 4 per unit.
Programming connector	Relay 1 & 2, via a 6 pole push wire or so-called push in connector. Relay 3 & 4, via a 6 pole push wire / push in connector. Interlock and Enable via a 3 pole push wire / push in connector. For all 3 connectors there's a contra header supplied.
Weight	0.14 kg

Serial interface (multi-protocol) - INT MOD SER

Typical Applications

- RS232 Programming
- Balanced RS422 Programming
- USB Programming
- Balanced RS485 Bi-directional Programming

Specifications

Communication speeds (bps)	2400, 4800, 9600, 19200, 38400, 57600, 115200
Insulation prog. connectors - internal circuits prog. connectors - earth	 1000 VDC Reinforced isolation acc. EN60950-1 / EN61010-1 with the exception of 1500 VDC for SM1500-CP-30 max. 60VDC
Safety	EN 60950 / EN 61010
Operating Temperature	– 20 to + 50 °C
Humidity	max. 95% RH, non condensing, up to 40 °C max. 75% RH, non condensing, up to 50 °C
Storage temperature	– 40 to + 85 °C

Mounting	Pluggable, SM15K interface slots 1, 2, 3 and 4. See paragraph 'Hardware Installation' in this manual. Maximum 4 per unit.
Programming connector	RS422 & RS485 wires via push wire or so-called push in connector (contra header supplied) RS232 via 9 pole D-connector (female), USB socket type B.
Weight	0.14 kg

Digital User I/O - INT MOD DIG

Typical Applications

- Hardware triggering of sequences
- Interaction with other equipment
- Stand-alone automation
- Safety or Alarm indications

Specifications

Logic inputs 1... 8 Input range Input impedance Load current +5V	 2 - 30V Rin = 22kOhm 100mA
Logic outputs 1 ... 8 Output type Output impedance	 Open Drain (True = 0V, False = open) 7 Ohm (max 30V/200mA)

Insulation prog. connectors - internal circuits prog. connectors - earth	 1000 VDC Reinforced isolation acc. EN60950-1 / EN61010-1 with the exception of 1500 VDC for SM1500-CP-30 max. 60VDC
Safety	EN 60950 / EN 61010
Operating Temperature	– 20 to + 50 °C
Humidity	max. 95% RH, non condensing, up to 40 °C max. 75% RH, non condensing, up to 50 °C
Storage temperature	– 40 to + 85 °C

Mounting	Pluggable, SM15K interface slots 1, 2, 3 and 4. See paragraph 'Hardware Installation' in this manual. Maximum 4 per unit.
Programming connector	User Outputs via 15 pole D-connector High Density (female), User Inputs via 15 pole D-connector High Density (female).
Weight	0.14 kg

Isolated Analog Controller interface

Typical Applications

- Analog programming of voltage and current
- Analog monitoring of voltage and current
- Remote monitoring of the status signals: OverTemp, Limit
- Remote Shut down of the power output using a 5V signal

Specifications

Analog Programming	CV	CC
Programming inputs		
input range	0 - 5 V / 0 - 10 V	0 - 5 V / 0 - 10 V
accuracy	± 0.2%	± 0.2%
offset	- 1 ... +1 mV (on 5V)	- 1 ... + 1 mV (on 5V)
temp. coeff. offset	10 µV / °C	10 µV / °C
input impedance	10 MOhm	10 MOhm
Monitoring output		
output range	0 - 5 V / 0 - 10 V	- 5 V to + 5 V / - 10 to + 10 V
accuracy	± 0.2%	± 0.2%
offset	- 1... 1 mV (on 5V)	- 1... 1 mV (on 5V)
temp. coeff. offset	3 µV / °C	60 µV / °C
output impedance	2 Ohm / max. 4 mA	2 Ohm / max. 4 mA

Reference voltage		
on prog. connector	V_{ref}	5.114 V ± 15 mV (Ro = 2 Ohm, max. 4 mA)
	TC	20 ppm
+12 V output	V_o	12 V ± 0.2 V
on prog. Connector	I_{max}	0.2 A
	R_o	5 Ohm

Status outputs			
CC - status	CC - operation	5 V = logic 1	(R_o = 500 Ohm)
LIM- status	CV or CC limit	5 V = logic 1	(R_o = 500 Ohm)
OT - status	Over Temperature	5 V = logic 1	(R_o = 500 Ohm)
ACF - status	AC - Fail	5 V = logic 1	(R_o = 500 Ohm)
DCF - status	DC - Fail [2])	5 V = logic 1	(R_o = 500 Ohm) [2]) output voltage ± 5% beyond set point
Remote ShutDown	with + 5V, 1 mA or relay contact		

Insulation	
prog. connector - internal circuits	1000 VDC Reinforced isolation acc. EN60950-1 / EN61010-1 with the exception of 1500 VDC for SM1500-CP-30
prog. connector - earth	max. 60VDC
Safety	EN 60950 / EN 61010
Operating Temperature	– 20 to + 50 °C
Humidity	max. 95% RH, non condensing, up to 40 °C max. 75% RH, non condensing, up to 50 °C
Storage temperature	– 40 to + 85 °C

Mounting	Pluggable, SM15K interface slots 1, 2, 3 and 4. See paragraph 'Hardware Installation' in this manual. Note: max 1pcs MOD INT ANA per unit.
Programming connector	15 pole D-connector (female)
Weight	0.14 kg