DELTA ELEKTRONIKA

DECKBLATT ZUM ORIGINAL-DOKUMENT DES HERSTELLERS

15KW | DATENBLATT OPTIONEN

HERSTELLER Delta Elektronika BV
PRODUKTSERIE Schnittstellen für SM15k-Serie

Ihr direkter Ansprechpartner für Delta-Produkte!

Die Ing. Erhard Fischer GmbH ist Ihr zuverlässiger Partner für die Produkte von Delta Elektronika BV. Wir bieten Ihnen nicht nur hochwertigen technischen Support, sondern auch kompetente Beratung und maßgeschneiderte Lösungen für Ihre individuellen Anforderungen.

Ob Standardprodukt, kundenspezifische Geräte oder Schaltschrankbau. Wir freuen uns, Sie bei Ihrer Lösungsfindung mit eingehender Kundenberatung kompetent unterstützen zu können.

Kontaktieren Sie uns für technische Beratung oder ein individuelles Angebot!

Wir freuen uns auf das Gespräch mit Ihnen.

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SM15K - Interface modules

Models	Description
INT MOD ANA	Isolated Analog interface
INT MOD ANY	Anybus-carrier interface
INT MOD CON	Isolated Contacts interface
INT MOD DIG	Digital I/O interface
INT MOD M/S 2	Master/Slave interface SM15K
INT MOD SER	Multi-protocol Serial interface

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 ANA

Analog programming 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 ANY

Anybus carrier interface

- Compatible with a variety of HMS Anybus CompactCom 40 modules
- Web based configuration
- High speed programming and monitoring

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 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 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 900kW

Features INT MOD SER

Serial programming interface SM15K

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

SM15K Interfaces Combinations

Most of the interface types can be combined with others. There are some limitations.

	INT MOD ANA	INT MOD ANY	INT MOD CON	INT MOD DIG	INT MOD M/S-2	INT MOD SER
INT MOD ANA						
INT MOD ANY						
INT MOD CON						
INT MOD DIG						
INT MOD M/S-2						
INT MOD SER						

Combination allowed

Multiple interfaces of this type allowed

Combination not allowed

For the total amount per type and the allowed slots, please check the information on the corresponding interface page in this document, under “Mounting”.

Isolated Analog Interface - INT MOD ANA

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 / 0 - 10 V	0 - 5 / 0 - 10 V[1]
Accuracy		± 0.2 %	± 0. 2%
Offset		– 1 ... + 1 mV (on 5 V)	– 1 ... + 1 mV (on 5 V)
Temp. coeff. offset		10 µV / °C	10 µV / °C
Input impedance		10 MΩ	10 MΩ
Monitoring output			
Output range		0 - 5 / 0 - 10 V	– 5 to + 5 V / – 10 to + 10 V
Accuracy		± 0.2%	± 0.2%
Offset		– 1 ... + 1 mV (on 5 V)	– 1 ... + 1 mV (on 5 V)
Temp. coeff. Offset		3 µV / °C	60 µV / °C
Output impedance		2 Ω / max. 4 mA	2 Ω / max. 4 mA
Reference voltage			
On prog. connector	V_{ref}	5.114 V ±15 mV (R_o = 2 Ω, 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 Ω	
Status outputs			
CC - status		CC - operation	5 V = logic 1 (R_o = 500 Ω)
LIM - status		CV or CC limit	5 V = logic 1 (R_o = 500 Ω)
OT - status		Over Temperature	5 V = logic 1 (R_o = 500 Ω)
ACF - status		AC - Fail	5 V = logic 1 (R_o = 500 Ω)
DCF - status		DC - Fail[2]	5 V = logic 1 (R_o = 500 Ω)
Remote Shutdown		with +5 V, 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. 60 VDC	
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 +70 °C	
Mounting[3]		Pluggable, SM15K interface slots 1, 2, 3 and slot 4.	
Programming connector		15 pole D-connector (female)	
Compatibility		Cannot be combined with INT MOD ANY.	
Weight		140 g	

[1] CC-prog input (pin3) sets both CC+ and CC- with 1 signal.
[2] V_{out} ±5% beyond set point
[3] Max 1pc INT MOD ANA per unit.

Anybus Module Interface - INT MOD ANY

Typical Applications

- Carrier interface for HMS Networks Anybus® CompactCom M40 modules
- Connecting the power supply to existing industrial fieldbus network
- Programming of voltage and current
- Monitoring of voltage and current
- Remote monitoring of the status signals: ACF, DCF, Interlock, etc.
- Remote shutdown of the power output

Supported Anybus modules

Interface between Power Supply and Industrial Field Buses via HMS AnyBus CompactCom 40 Module:

- PROFIBUS
- PROFINET-IRT
- Ethernet/IP
- EtherCAT
- Modbus-TCP
- CANopen

Note: Both an INT MOD ANY and a CompactCom M40 module are required to connect a power supply to one of the above fieldbuses.

Specifications

Maximum Programming/Monitoring processing time[4,5] Ethernet/IP EtherCAT Modbus-TCP CANopen PROFIBUS PROFINET-IRT	 < 500 µs < 150 µs < 300 µs < 300 µs t.b.d. t.b.d.
Status update time	< 1ms
Insulation Prog.connectors - internal circuits Prog.connectors - earth	 1000 VDC Reinforced isolation acc. EN61010-1 with the exception of 1500 VDC for SM1500-CP-30. Max. 60 VDC
Safety	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 +70 °C
Mounting[6]	Pluggable, SM15K interface slots 1, 2, 3 or slot 4.
Compatibility	Cannot be combined with INT MOD ANA.
Weight	140 g[7]

[4] Excluding network latency and Power Supply response times
[5] Measured using 16-bit Data Format A.
[6] Max 1pc INT MOD ANY per unit.
[7] Excluding AnyBus CompactCom 40 Module.

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 Contact current Maximum switching capacity	 60 V 2 A 60 W
Floating Interlock Open circuit voltage	 5 V
Floating Enable Nominal input voltage Input voltage range Input impedance	 24 VDC 15 - 30 VDC 12 kΩ
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. 60 VDC
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 +70 °C
Mounting	Pluggable, SM15K interface slots 1, 2, 3 and slot 4.
Programming connector	Relay 1 & 2, via a 6 pole “FK-MC 0,5/ 6-ST-2,5” connector. Relay 3 & 4, via a 6 pole “FK-MC 0,5/ 6-ST-2,5” connector. Interlock and Enable via a 3 pole “FK-MC 0,5/ 3-ST-2,5” connector. Contra connectors supplied with interface.
Weight	140 g

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 – 30 V R_{in} = 22 kΩ 100 mA
Logic outputs 1 ... 8 Output type Output impedance	 Open Drain (True = 0V, False = open) 7 Ω (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. 60 VDC
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 +70 °C
Mounting	Pluggable, SM15K interface slots 1, 2, 3 and slot 4.
Programming connector	User Outputs via 15 pole D-connector High Density (female), User Inputs via 15 pole D-connector High Density (female).
Weight	140 g

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

	SM70-CP-450	SM210-CP-150	SM500-CP-90	SM1000-CP-45	SM1500-CP-30
M/S Parallel operation Max. number of devices[8] Ripple + noise Programming Speed Additional programming time[9] Programming cable Max. cable length	60 units Values of a single unit 2 x the values of a single unit 20 µs Modular connector cable S/FTP CAT6 8P8C 2 m				
Recovery time	3x the values of a single unit		2x the values of a single unit		
M/S Series operation Max. voltage Max. number of devices[8] Additional programming time[9] Programming cable Max. cable length	Not possible		750 V[10] 1000 V[11] 6 units 20 µs Modular connector cable S/FTP CAT6 8P8C 2 m	Not possible	
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 +70 °C				
Mounting[12]	Pluggable, SM15K interface slot 3 or slot 4. See paragraph ‘Hardware Installation’ in the operating manual.				
Weight	70 g				

[8] For M/S setups, only use units of the same type
[9] Typical
[10] Units delivered before Q4 / 2018. Contact factory for upgrading to enable 1000V series operation for older units
[11] Units from Q4 / 2018 or newer
[12] Max 1pc INT MOD M/S-2 per unit.

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. 60 VDC
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 +70 °C
Mounting	Pluggable, SM15K interface slots 1, 2, 3 and slot 4.
Programming connector	RS422 & RS485 wires via a 4 pole FK-MC 0,5/ 4-ST-2,5 connector (contra header supplied) RS232 via 9 pole D-connector (female), USB socket type B.
Weight	140 g