Data sheet
SM M31 (M31-1CD50)

Technical data

Order no.	M31-1CD50
Type	SM M31
Module ID	0417 1544
General information	
Note	-
Features	4x AI 16 Bit Voltage 0/1...10 V +-10 V Current 0/4...20 mA Resistance 0....3000 Ohm, RTD, Pt100, Pt1000, NI100, NI1000 in 2/3/4 conductor measurement TC type J, K, N, R, S, T, B, C, E, L and U +-80 mV
Current consumption/power loss	
Current consumption from backplane bus	150 mA
Power loss	750 mW
Technical data analog inputs	
Number of inputs	4
Cable length, shielded	200 m
Rated load voltage	-
Current consumption from load voltage L+ (without load)	-
Voltage inputs	yes
Min. input resistance (voltage range)	100 kOhm
Input voltage ranges	0 V ... +10 V -10 V ... +10 V -80 mV ... +80 mV
Operational limit of voltage ranges	+/-0.3%
Operational limit of voltage ranges with SFU	+/-0.3%
Basic error limit voltage ranges	+/-0.2%
Basic error limit voltage ranges with SFU	+/-0.2%
Destruction limit voltage	max. 30V
Current inputs	yes
Max. input resistance (current range)	70 Ohm
Input current ranges	0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	+/-0.3%
Operational limit of current ranges with SFU	+/-0.3%
Basic error limit current ranges	+/-0.2%
Radical error limit current ranges with SFU	+/-0.2%
Destruction limit current inputs (voltage)	max. 30V
Destruction limit current inputs (electrical current)	max. 60mA
Resistance inputs	yes
Resistance ranges	0 ... 60 Ohm 0 ... 600 Ohm 0 ... 3000 Ohm
Operational limit of resistor ranges	+/-0.3%
Operational limit of resistor ranges with SFU	+/-0.3%
Basic error limit	+/-0.2%

Basic error limit with SFU	+/-0.2%
Destruction limit resistance inputs	max. 30V
Resistance thermometer inputs	yes
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000
Operational limit of resistance thermometer ranges	+/-0.3%
Operational limit of resistance thermometer ranges with SFU	+/-0.3%
Basic error limit thermoresistor ranges	+/-0.2%
Basic error limit thermoresistor ranges with SFU	+/-0.2%
Destruction limit resistance thermometer inputs	max. 30V
Thermocouple inputs	yes
Thermocouple ranges	type J type L type K type N type R type S type B type C type E type T
Operational limit of thermocouple ranges	for type B: +/-14.6K; for type K, for type N: +/-1.,0K; for type S, for type R: +/-14.1K; for type T: +/-12.0K; for type C: +/-14.0K; for type E: +/-13.0K; for type J: +/-11.0K; for type L: +/-13.5K
Operational limit of thermocouple ranges with SFU	for type B: +/-14.6K; for type K, Typ N: +/-10.0K; for type S, for type R: +/-14.1K; for type T: +/-12.0K; for type C: +/-14.0K; for type E: +/-13.0K; for type J: +/-11.0K; for type L: +/-13.5K
Basic error limit thermoelement ranges	for type B: +/-14.6K; for type K, type N: +/-10.0K; for type S, for type R: +/-14.1K; for type T: +/-12.0K; for type C: +/-14.0K; for type E: +/-13.0K; for type J: +/-11.0K; for type L: +/-13.5K
Basic error limit thermoelement ranges with SFU	for type B: +/-14.6K; for type K, Typ N: +/-10.0K; for type S, type R: +/-14.1K; for type T: +/-12.0K; for type C: +/-14.0K; for type E: +/-13.0K; for type J: +/-11.0K; for type L: +/-13.5K
Destruction limit thermocouple inputs	max. 30V
Programmable temperature compensation	-
External temperature compensation	-
Internal temperature compensation	yes
Temperature error internal compensation	8 K
Technical unit of temperature measurement	°C, °F, K
Resolution in bit	16
Measurement principle	Sigma-Delta
Basic conversion time	10ms … 200ms (for R/RTD & TC)
Noise suppression for frequency	>80dB (UCM <3,2V)
Status information, alarms, diagnostics	
Status display	Bicolour green/red LED
Interrupts	yes, parameterizable
Process alarm	yes, parameterizable
Diagnostic interrupt	yes, parameterizable
Diagnostic functions	yes, parameterizable
Diagnostics information read-out	possible
Module state	none
Module error display	Bicolour green/red LED
Channel error display	red LED per channel
Isolation	
Between channels	yes

Between channels of groups to	-
Between channels and backplane bus	yes
Between channels and power supply	-
Max. potential difference between circuits	-
Max. potential difference between inputs (Ucm)	DC 3 V
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 50 V
Max. potential difference between inputs and Mana (Ucm)	-
Max. potential difference between inputs and Mintern (Uiso)	-
Max. potential difference between Mintern and outputs	-
Insulation tested with	-

Datasizes

Input bytes	8
Output bytes	0
Parameter bytes	32
Diagnostic bytes	20

Housing

Material	PPE / PPE GF10
Mounting	Profile rail 35 mm

Mechanical data

Dimensions (WxHxD)	26 mm x 88 mm x 71 mm
Net weight	88 g
Weight including accessories	88 g
Gross weight	105 g

Environmental conditions

Operating temperature	0 °C to 60 °C
Storage temperature	-40 °C to 70 °C

Certifications

UL certification	in preparation
KC certification	in preparation