

Data sheet SM 031 (031-1LD80)

## Technical data

Type SM 031  Module ID 0410 1544  General Information  Note - 1, 3000 ohm rosistance General Consumption/power loss  Current consumption/power loss  Current consumption from backplane bus 55 mA  Power loss 1 W  Technical data analog inputs  Number of inputs 4  Cable length, shielded 200 m  Rated load voltage DC 24 V  Current consumption from load voltage L+ (without load) 30 mA  Voltage inputs - 1  Input voltage ranges - 2  Operational limit of voltage ranges with SFU - 3  Basic error limit voltage ranges with SFU - 3  Basic error limit current ranges with SFU - 3  Basic error limit current ranges with SFU - 3  Basic error limit current ranges with SFU - 5  Basic error limit current ranges with SFU - 5  Basic error limit current ranges - 7  Operational limit of current ranges with SFU - 7  Basic error limit current ranges - 7  Operational limit of current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Basic error limit current ranges with SFU - 7  Destruction limit current inputs (electrical current) - 7  Resistance inputs - 7  Destruction limit current inputs (electrical current) - 7  Resistance inputs - 7  Destruction limit current inputs (electrical current) - 7  Destruction limit current in	Order no.	031-1LD80
General information  Note  Features  4 inputs 16Bit 0.3000 ohm resistance Resistance measurment with 2, 3, and 4-wires requires less parameter bytes than module 031-1BD80  Current consumption/power loss  Current consumption from backplane bus  55 mA  Power loss  1 W  Technical data analog inputs  Number of inputs  4  Cable length, shielded  200 m  Rated load voltage  DC 24 V  Current consumption from load voltage L+ (without load)  30 mA  Voltage inputs	Туре	SM 031
Features   -	Module ID	0410 1544
Features   -		
Features 4 inputs 16Bit 0 3000 ohm resistance Resistance measurment with 2, 3, and 4-wires requires less parameter bytes than module 031-1BD80  Current consumption/power loss 55 mA  Power loss 1 W  Technical data analog inputs  Number of inputs 4  Cable length, shielded 200 m  Rated load voltage DC 24 V  Current consumption from load voltage L+ (without load) 30 mA  Voltage inputs  Min. input resistance (voltage range) Input voltage ranges Operational limit of voltage ranges with SFU Basic error limit voltage ranges with SFU Current limuts  Max. input resistance (current range) Input ourrent anges Operational limit of current ranges with SFU Basic error limit current Current inputs  Max. input resistance (current range) Input self-actional limit of current ranges Operational limit of current ranges with SFU Basic error limit current ranges with SFU Destruction limit current ranges with SFU	General information	
O 3000 ohm resistance Resistance measurment with 2, 3, and 4-wires reqires less parameter bytes than module 031-1BD80  Current consumption/power loss  Current consumption from backplane bus  55 mA  Power loss  1 W  Technical data analog inputs  Number of inputs  4  Cable length, shielded  200 m  Rated load voltage  DC 24 V  Current consumption from load voltage L+ (without load)  Voltage inputs  Min. input resistance (voltage range)	Note	•
Current consumption from backplane bus 55 mA Power loss 1 W  Technical data analog inputs  Number of inputs 4 Cable length, shielded 200 m Rated load voltage DC 24 V  Current consumption from load voltage L+ (without load) 30 mA  Voltage inputs - Min. input resistance (voltage range) - Input voltage ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Current inputs  Assing input resistance (current range) - Input outlage ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Obestruction limit current - Current inputs - Max. input resistance (current range) - Input current ranges - Operational limit of current ranges with SFU - Basic error limit current ranges - Operational limit of current ranges - Operational limit of current ranges - Operational limit of current ranges with SFU - Basic error limit current ranges with SFU - Basic error limit current ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance inputs -  Resistance ranges - Operational limit of resistor ranges with SFU - Operational limit of res	Features	0 3000 ohm resistance Resistance measurment with 2, 3, and 4-wires
Power loss 1 W  Technical data analog inputs  Number of inputs 4  Cable length, shielded 200 m  Rated load voltage DC 24 V  Current consumption from load voltage L+ (without load) 30 mA  Voltage inputs	Current consumption/power loss	
Number of inputs 4 Cable length, shielded 200 m Rated load voltage DC 24 V Current consumption from load voltage L+ (without load) 30 mA Voltage inputs - Min. input resistance (voltage range) - Input voltage ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current Current inputs - Max. input resistance (current ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current - Current inputs - Max. input resistance (current range) - Input current ranges - Operational limit of current ranges with SFU - Basic error limit current ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current inputs (electrical current) - Resistance inputs -  Pesistance ranges - O 60 Ohm O 600 Ohm	Current consumption from backplane bus	55 mA
Number of inputs  A Cable length, shielded  Cable length, shielded  Current consumption from load voltage L+ (without load)  OC 24 V  Current consumption from load voltage L+ (without load)  Notlage inputs  Min. input resistance (voltage range)  Input voltage ranges  Operational limit of voltage ranges  Operational limit of voltage ranges  Operational limit ovlatage ranges with SFU  Basic error limit voltage ranges with SFU  Destruction limit current  Current inputs  Max. Input resistance (current range)  Input current ranges  Operational limit of current ranges  Operational limit of current ranges with SFU  Basic error limit current ranges with SFU  Destruction limit current ranges  Operational limit of current ranges with SFU  Basic error limit current ranges with SFU  Destruction limit current inputs (voltage)  Pestruction limit current inputs (voltage)  Destruction limit current inputs (voltage)  Pestruction limit current inputs (voltage)  Destruction limit current inputs (voltage)  Pestruction limit current inputs (voltage)  Pestruction limit current inputs (voltage)  Operational limit of resistor ranges with SFU  Pesistance ranges  Operational limit of resistor ranges with SFU  H- 0.4 %  Operational limit of resistor ranges with SFU  H- 0.2 %	Power loss	1 W
Number of inputs 4 Cable length, shielded 200 m Rated load voltage DC 24 V Current consumption from load voltage L+ (without load) 30 mA Voltage inputs - Min. input resistance (voltage range) - Input voltage ranges - Operational limit of voltage ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current ranges - Input current ranges - Operational limit of current ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current ranges - Operational limit of current ranges - Operational limit of current ranges - Operational limit of current ranges with SFU - Basic error limit current ranges with SFU - Basic error limit current ranges with SFU - Basic error limit current inputs (voltage) - Destruction limit current inputs (voltage) - Destruction limit current inputs (voltage) - Operational limit of resistor ranges with SFU	Technical data analog inputs	
Cable length, shielded 200 m  Rated load voltage DC 24 V  Current consumption from load voltage L+ (without load) 30 mA  Voltage inputs -  Min. input resistance (voltage range) -  Input voltage ranges -  Operational limit of voltage ranges -  Operational limit of voltage ranges with SFU -  Basic error limit voltage ranges with SFU -  Destruction limit current ranges -  Input current inputs -  Max. input resistance (current range) -  Input current ranges -  Operational limit of current ranges with SFU -  Basic error limit current ranges -  Operational limit of current ranges with SFU -  Basic error limit current ranges -  Operational limit of current ranges with SFU -  Basic error limit current ranges with SFU -  Basic error limit current ranges with SFU -  Basic error limit current inputs (voltage) -  Destruction limit or resistor ranges with SFU +/- 0.4 %  Operational limit of resistor ranges with SFU +/- 0.2 %  Basic error limit of resistor ranges with SFU +/- 0.2 %		4
Rated load voltage DC 24 V  Current consumption from load voltage L+ (without load) 30 mA  Voltage inputs -  Min. input resistance (voltage range) - Input voltage ranges - Operational limit of voltage ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current - Current inputs - Max. input resistance (current range) - Input current ranges - Operational limit of current ranges - Operational limit current ranges - Operational limit current ranges - Basic error limit current ranges - Operational limit current ranges - Operational limit current ranges - Operational limit current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (voltage) - Destruction limit current inputs (voltage) - Operational limit of resistor ranges - O 60 Ohm O 500 Ohm O 5000 Ohm	·	
Current consumption from load voltage L+ (without load)  Voltage inputs  - Min. input resistance (voltage range) - Input voltage ranges - Operational limit of voltage ranges - Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current - Current inputs - Max. input resistance (current range) - Input current ranges - Operational limit of current ranges - Operational limit of current ranges - Coperational limit current ranges - Coperational limit current ranges - Basic error limit current ranges - Coperational limit current ranges with SFU - Basic error limit current ranges - Coperational limit current inputs (voltage) - Coperational limit of resistor ranges with SFU - Coperational lim		
Voltage inputs  Min. input resistance (voltage range)  Input voltage ranges  Operational limit of voltage ranges  Operational limit of voltage ranges		
Min. input resistance (voltage ranges) Input voltage ranges Operational limit of voltage ranges Operational limit of voltage ranges Operational limit of voltage ranges with SFU Basic error limit voltage ranges with SFU Operational limit voltage ranges with SFU Operational limit current  Current inputs Operational limit of current range) Input current ranges Operational limit of current ranges Operational limit of current ranges Operational limit current ranges Operational limit current ranges Operational limit current inputs (voltage) Operational limit current inputs (voltage) Operational limit current inputs (electrical current) Operational limit of resistor ranges Operational limit of resistor ranges Operational limit of resistor ranges with SFU		
Input voltage ranges  Operational limit of voltage ranges  Operational limit of voltage ranges with SFU  Basic error limit voltage ranges with SFU  Destruction limit current  Current inputs  Max. input resistance (current range)  Input current ranges  Operational limit of current ranges  Operational limit of current ranges  -  Operational limit current ranges  Radical error limit current ranges with SFU  Destruction limit current ranges with SFU  Basic error limit current ranges with SFU  Destruction limit current inputs (voltage)  Destruction limit current inputs (electrical current)  Resistance ranges  Operational limit of resistor ranges with SFU  Aliance ranges  Operational limit of resistor ranges with SFU  Postruction limit current inputs (electrical current)  Resistance ranges  Operational limit of resistor ranges with SFU  Aliance ranges  Operational limit of resistor ranges with SFU  Postruction limit current inputs (electrical current)  Resistance ranges  Operational limit of resistor ranges with SFU  Aliance ranges  Operational limit of resistor ranges with SFU  Aliance ranges  Aliance ranges  Operational limit of resistor ranges with SFU  Aliance ranges  Aliance range		
Operational limit of voltage ranges		
Operational limit of voltage ranges with SFU  Basic error limit voltage ranges  Basic error limit voltage ranges with SFU  Destruction limit current  - Current inputs  - Max. input resistance (current range)  Input current ranges  Operational limit of current ranges  Operational limit of current ranges  - Coperational limit current ranges  - Basic error limit current ranges  - Coperational limit current ranges with SFU  - Coperational limit current inputs (voltage)  - Coperational limit current inputs (electrical current)  Resistance ranges  Oum 60 Ohm Oum 600 Ohm Oum 3000 Ohm Operational limit of resistor ranges with SFU  - Coperational limit of resistor ranges with SFU  - Co		
Basic error limit voltage ranges -  Basic error limit voltage ranges with SFU -  Destruction limit current -  Current inputs -  Max. input resistance (current range) -  Input current ranges -  Operational limit of current ranges -  Operational limit of current ranges with SFU -  Basic error limit current ranges with SFU -  Basic error limit current ranges with SFU -  Destruction limit current inputs (voltage) -  Destruction limit current inputs (electrical current) -  Resistance inputs -  Resistance ranges -  O 60 Ohm O 3000 Ohm Operational limit of resistor ranges with SFU +/- 0.2 %  Basic error limit +/- 0.2 %		
Basic error limit voltage ranges with SFU  Destruction limit current  - Current inputs  - Max. input resistance (current range) - Input current ranges - Operational limit of current ranges - Operational limit of current ranges - Sasic error limit current ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance inputs  Our 60 Ohm Our 600 Ohm Ou		
Destruction limit current  Current inputs  -  Max. input resistance (current range) - Input current ranges - Operational limit of current ranges - Operational limit of current ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance inputs  -  Resistance ranges - 0 60 Ohm 0 3000 Ohm 0 3000 Ohm 0 3000 Ohm O 3000 Ohm	<u> </u>	
Current inputs		
Max. input resistance (current range)  Input current ranges  Operational limit of current ranges  Operational limit of current ranges  Operational limit of current ranges with SFU  Basic error limit current ranges with SFU  Destruction limit current inputs (voltage)  Destruction limit current inputs (electrical current)  Resistance inputs  Resistance ranges  O 60 Ohm O 600 Ohm O 3000 Ohm O 3000 Ohm O 3000 Ohm O 3000 Ohm O 40 We  Operational limit of resistor ranges with SFU  +/- 0.2 %  Basic error limit  +/- 0.2 %		
Input current ranges  Operational limit of current ranges  Operational limit of current ranges with SFU  Basic error limit current ranges  Radical error limit current ranges with SFU  Destruction limit current inputs (voltage)  Destruction limit current inputs (electrical current)  Resistance inputs  Resistance ranges  O 60 Ohm O 600 Ohm O 3000 Ohm O 3000 Ohm Operational limit of resistor ranges with SFU  H/- 0.4 %  Operational limit of resistor ranges with SFU  H/- 0.2 %  Basic error limit	<u>'</u>	-
Operational limit of current ranges		-
Operational limit of current ranges with SFU -  Basic error limit current ranges -  Radical error limit current ranges with SFU -  Destruction limit current inputs (voltage) -  Destruction limit current inputs (electrical current) -  Resistance inputs   Resistance ranges 0 60 Ohm 0 600 Ohm 0 600 Ohm 0 3000 Ohm O 3000 Ohm O 3000 Ohm Operational limit of resistor ranges +/- 0.4 %  Operational limit of resistor ranges with SFU +/- 0.2 %  Basic error limit +/- 0.2 %		-
Basic error limit current ranges - Radical error limit current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance inputs	<u> </u>	-
Radical error limit current ranges with SFU -  Destruction limit current inputs (voltage) -  Destruction limit current inputs (electrical current) -  Resistance inputs   Note: 60 Ohm    Our 600 Ohm    Our 600 Ohm    Our 3000 Ohm    Our 3000 Ohm    Operational limit of resistor ranges +/- 0.4 %  Department of resistor ranges with SFU +/- 0,2 %  Basic error limit +/- 0.2 %	<u> </u>	
Destruction limit current inputs (voltage)  Destruction limit current inputs (electrical current)  Resistance inputs  O 60 Ohm O 600 Ohm O 3000 Ohm O 3000 Ohm Operational limit of resistor ranges  +/- 0.4 %  Operational limit of resistor ranges with SFU  +/- 0,2 %  Basic error limit	-	-
Resistance inputs  O 60 Ohm O 600 Ohm O 3000 Ohm O 3000 Ohm Operational limit of resistor ranges  +/- 0.4 % Operational limit of resistor ranges with SFU  +/- 0,2 %  Basic error limit  +/- 0.2 %	Destruction limit current inputs (voltage)	-
Resistance ranges  0 60 Ohm 0 600 Ohm 0 3000 Ohm  Operational limit of resistor ranges  +/- 0.4 %  Operational limit of resistor ranges with SFU  +/- 0,2 %  Basic error limit  +/- 0.2 %	Destruction limit current inputs (electrical current)	-
Resistance ranges  0 60 Ohm 0 600 Ohm 0 3000 Ohm  Operational limit of resistor ranges  +/- 0.4 %  Operational limit of resistor ranges with SFU  +/- 0,2 %  Basic error limit  +/- 0.2 %	Resistance inputs	y
Operational limit of resistor ranges with SFU +/- 0,2 %  Basic error limit +/- 0.2 %	Resistance ranges	0 60 Ohm 0 600 Ohm
Operational limit of resistor ranges with SFU +/- 0,2 %  Basic error limit +/- 0.2 %	Operational limit of resistor ranges	+/- 0.4 %
Basic error limit +/- 0.2 %		
Pagin array limit with SELL / 0.4.9/		
Dasic etion innit with 500 +/- U, 1 %	Basic error limit with SFU	+/- 0,1 %
Destruction limit resistance inputs -	Destruction limit resistance inputs	-



Resistance thermometer inputs	A YASKAWA COMPANY
Tresistance thermometer inputs	₩
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000
Operational limit of resistance thermometer ranges	+/- 0.4 %
Operational limit of resistance thermometer ranges with SFU	+/- 0,2 %
Basic error limit thermoresistor ranges	+/- 0.2 %
Operational limit of resistance thermometer ranges with SFU	+/- 0,1 %
Destruction limit resistance thermometer inputs	-
Thermocouple inputs	-
Thermocouple ranges	-
Operational limit of thermocouple ranges	-
Operational limit of thermocouple ranges with SFU	-
Basic error limit thermoelement ranges	-
Basic error limit thermoelement ranges with SFU	-
Destruction limit thermocouple inputs	-
Programmable temperature compensation	-
External temperature compensation	-
Internal temperature compensation	-
Internal temperature compensation	-
Technical unit of temperature measurement	-
Resolution in bit	16
Measurement principle	Sigma-Delta
Basic conversion time	84.2 ms (50 Hz) 70.5 ms (60 Hz) per channel
Noise suppression for frequency	>80dB at 50Hz (UCM<6V)
Status information, alarms, diagnostics	
Status display	yes
Interrupts	yes, parameterizable
Process alarm	no
Diagnostic interrupt	yes, parameterizable
Diagnostic functions	yes
Diagnostics information read-out	possible
Module state	green LED
Module error display	red LED
Channel error display	red LED per channel
Isolation	
Between channels	-
Between channels of groups to	-
Between channels and backplane bus	✓
Between channels and power supply	-
Max. potential difference between circuits	-
Max. potential difference between inputs (Ucm)	DC 6 V
Max. potential difference between Mana and Mintern (Uiso)	-
Max. potential difference between inputs and Mana (Ucm)	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	
Insulation tested with	DC 500 V



Datasizes	/
Datasizes	
Input bytes	8
Output bytes	0
Parameter bytes	12
Diagnostic bytes	20
Housing	
Material	PPE / PPE GF10
Mounting	Profile rail 35 mm
Mechanical data	
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm
Weight	60 g
Environmental conditions	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Certifications	
UL508 certification	yes