

Data sheet

SM 031 (031-1BD70)

Technical data

Type	Order no.	031-1BD70
Reatures 4 inputs 12Bit Voltage -10 V+10 V Current consumption/power loss Current consumption from backplane bus 50 mA Power loss 0.5 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) 15 mA Voltage inputs 4 Min. input resistance (voltage range) 100 kOhm 101 kO	Туре	SM 031
Note	Module ID	0409 15C4
Note		
Features 4 inputs 12Bit Voltage -10 V+10 V Current consumption/power loss Current consumption from backplane bus 50 mA Power loss 0.5 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) 15 mA Voltage inputs 4 Min. input resistance (voltage range) 100 kOhm Input voltage ranges -10 V+10 V Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Current inputs - Max. input resistance (current ranges with SFU - Operational limit ourrent ranges - Operational limit ourrent ranges with SFU - Basic error limit voltage ranges - Operational limit ourrent ranges with SFU - Basic error limit current ranges - Operational limit ourrent ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current ranges with SFU - Resistance inputs - Resistance inputs - Resistance ranges - Operational limit of resistor ranges - Operational limit of resistor ranges with SFU - Basic error limit with S	General information	
Current consumption/power loss Current consumption from backplane bus 50 mA Power loss 0.5 W Technical data analog inputs Number of inputs 4 Cable length, shielded 200 m Rated load voltage particular (without load) 15 mA Voltage inputs Min. input resistance (voltage range) 100 kOhm Input voltage ranges -10 V+10 V Operational limit of voltage ranges with SFU -2 Basic error limit voltage ranges with SFU -3 Max. input resistance (current ranges with SFU -2 Input current ranges -2 Operational limit of current ranges with SFU -3 Max. input resistance (current ranges -2 Operational limit of current ranges -3 Operational limit of current ranges with SFU -4 Basic error limit current ranges -4 Operational limit of current ranges -4 Operational limit of current ranges with SFU -4 Basic error limit current ranges with SFU -4 Destruction limit current inputs (electrical current) -4 Resistance ranges -4 Operational limit of resistor ranges with SFU -4 Basic error limit of resistor ranges with SFU -4 Basic error limit with SFU -4 Basi	Note	-
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Current consumption from backplane bus 0.5 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) 15 mA Voltage inputs 4 Min. input resistance (voltage range) 100 kOhm Input voltage ranges -10 V +10 V Operational limit of voltage ranges +4/-0.3% Operational limit of voltage ranges +4/-0.3% Operational limit of voltage ranges with SFU -2% Basic error limit voltage ranges with SFU -2% Max. input resistance (current range) -2 Input current ranges -2 Operational limit of current ranges +4/-0.2% Basic error limit voltage ranges with SFU -2 Destruction limit current -2 Current inputs -2 Max. input resistance (current range) -3 Input current ranges -4 Operational limit of current ranges with SFU -4 Destruction limit current ranges with SFU -4 Destruction limit current ranges with SFU -4 Radical error limit voltage ranges with SFU -4 Destruction limit current ranges with SFU -4 Destruction limit current ranges with SFU -4 Destruction limit current ranges with SFU -4 Resistance inputs -4 Resistance inputs -4 Resistance ranges -4 Operational limit of resistor ranges with SFU -4 Resistance ranges -4 Operational limit of resistor ranges with SFU -4 Basic error limit with SFU -4 Basic error		renage to thirte
Power loss 0.5 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) 15 mA Voltage inputs Min. input resistance (voltage range) 100 kOhm Input voltage ranges -10 V +10 V OV +10 V OPerational limit of voltage ranges +1-0.3% Operational limit of voltage ranges +1-0.3% Destruction limit current ranges +1-0.2% Basic error limit voltage ranges with SFU -2-8 Extractional limit of voltage ranges with SFU -2-8 Destruction limit current -2-8 Current inputs -2-8 Max. input resistance (current range) -2-8 Input current ranges -2-8 Operational limit of current ranges -2-8 Operational limit of current ranges -3 Radical error limit current ranges with SFU -3 Destruction limit current ranges -4 Radical error limit current ranges with SFU -4 Destruction limit current ranges with SFU -5 Destruction limit current ranges -5 Radical error limit current ranges with SFU -5 Destruction limit current inputs (voltage) -5 Destruction limit current inputs (electrical current) -5 Resistance inputs -5 Resistance ranges -5 Operational limit of resistor ranges with SFU -5 Destruction limit current ranges with SFU -5 Destruction limit current ranges with SFU -5 Destruction limit or fesistor ranges -5 Operational limit of resistor ranges with SFU -5 Destruction limit current ranges with SFU -5 Destruction limit current ranges with SFU -5 Destruction limit or resistor ranges with SFU -5 Destruction limit with SFU -5 Basic error limit with SFU -5 Basic error limit with SFU -5 Basic error limit with SFU -5 Destruction limit resistance inputs -5 Destruction limit resistance inputs -5 Destruction limit resistance inputs -5 Destruction limit error resistance inputs -	Current consumption/power loss	
Number of inputs A Cable length, shielded 200 m Rated load voltage DC 24 V Current consumption from load voltage L+ (without load) 15 mA Voltage inputs Min. input resistance (voltage range) Input voltage ranges -10 V +10 V 0	Current consumption from backplane bus	50 mA
Number of inputs 4 Cable length, shielded 200 m Rated load voltage DC 24 V Current consumption from load voltage L+ (without load) 15 mA Voltage inputs Min. input resistance (voltage range) 100 kOhm Input voltage ranges -10 v +10 V Operational limit of voltage ranges +/-0.3% Operational limit of voltage ranges with SFU - Basic error limit voltage ranges with SFU - Destruction limit current Current inputs Max. input resistance (current ranges Input current ranges Operational limit of current ranges Current inputs Input current ranges Operational limit of current ranges Input current ranges Operational limit of current ranges Current inputs Current inputs Basic error limit current ranges Current input resistance (current ranges Current input current ranges with SFU Basic error limit current inputs (voltage) Current inputs (voltage) Current inputs (electrical current) Current inputs (electrical	Power loss	0.5 W
Cable length, shielded 200 m Rated load voltage DC 24 V Current consumption from load voltage L+ (without load) 15 mA Voltage inputs ✓ Min. input resistance (voltage range) 100 kOhm Input voltage ranges -10 V +10 V O V +10 V Operational limit of voltage ranges +/-0.3% Operational limit of voltage ranges with SFU - Basic error limit 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 inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance ranges - Operational limit of resistor ranges with SFU - Resistance ranges - Operational limit of resistor ranges with SFU - Resistance inputs - Resistance ranges - Operational limit of resistor ranges with SFU - Basic error limit - Basic	Technical data analog inputs	
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Min. input resistance (voltage range) Input voltage ranges -10 V +10 V Operational limit of voltage ranges +/-0.3% Operational limit of voltage ranges with SFU Basic error limit voltage ranges with SFU	Current consumption from load voltage L+ (without load)	15 mA
Input voltage ranges -10 V +10 V 0 V +10 V O V	Voltage inputs	✓
Input voltage ranges -10 V +10 V O V	Min. input resistance (voltage range)	100 kOhm
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 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 ranges Operational limit of resistor ranges with SFU Basic error limit current inputs (voltage) Destruction limit current inputs (electrical current) Resistance ranges Operational limit of resistor ranges with SFU Basic error limit with fresistor ranges with SFU		
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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 inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance inputs - Resistance ranges - Operational limit of resistor ranges with SFU - Basic error limit surrent inputs (electrical current) - Resistance inputs - Resistance ranges - Operational limit of resistor ranges with SFU - Basic error limit with SFU - Basic error limit with SFU - Destruction limit resistance inputs -	Operational limit of voltage ranges with SFU	
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Current inputs	Basic error limit voltage ranges with SFU	
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Operational limit of current ranges	Max. input resistance (current range)	-
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 - Operational limit of resistor ranges with SFU - Basic error limit - Basic error limit with SFU - Destruction limit resistance inputs -	Input current ranges	-
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 - COperational limit of resistor ranges - COperational limit of resistor ranges with SFU - Basic error limit - Destruction limit resistance inputs - COperational limit of resistor ranges with SFU - COPERATION	Operational limit of current ranges	-
Radical error limit current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (electrical current) - Resistance inputs - Resistance ranges - Operational limit of resistor ranges - Operational limit of resistor ranges with SFU - Basic error limit - Basic error limit with SFU - Destruction limit resistance inputs -	Operational limit of current ranges with SFU	-
Destruction limit current inputs (voltage) Destruction limit current inputs (electrical current) Resistance inputs Resistance ranges Operational limit of resistor ranges Operational limit of resistor ranges with SFU Basic error limit Basic error limit with SFU Destruction limit resistance inputs -	Basic error limit current ranges	-
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Resistance inputs - Resistance ranges - Operational limit of resistor ranges - Operational limit of resistor ranges with SFU - Basic error limit - Destruction limit resistance inputs -	Destruction limit current inputs (voltage)	-
Resistance ranges - Operational limit of resistor ranges - Operational limit of resistor ranges with SFU - Basic error limit - Basic error limit with SFU - Destruction limit resistance inputs -	Destruction limit current inputs (electrical current)	-
Operational limit of resistor ranges - Operational limit of resistor ranges with SFU - Basic error limit - Basic error limit with SFU - Destruction limit resistance inputs -	Resistance inputs	-
Operational limit of resistor ranges with SFU - Basic error limit - Basic error limit with SFU - Destruction limit resistance inputs -	Resistance ranges	-
Basic error limit - Basic error limit with SFU - Destruction limit resistance inputs -	Operational limit of resistor ranges	-
Basic error limit with SFU - Destruction limit resistance inputs -	Operational limit of resistor ranges with SFU	-
Destruction limit resistance inputs -	Basic error limit	-
	Basic error limit with SFU	-
Resistance thermometer inputs	Destruction limit resistance inputs	-
resistance mermometer inputs	Resistance thermometer inputs	-



Resistance thermometer ranges	A YASKAWA COMPANY	
Operational limit of resistance thermometer ranges	-	
Operational limit of resistance thermometer ranges with SFU	-	
Basic error limit thermoresistor ranges	-	
Operational limit of resistance thermometer ranges with SFU	-	
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	12	
Measurement principle	successive approximation	
Basic conversion time	4 ms all channels	
Noise suppression for frequency	>50dB at 50Hz (UCM<2V)	
Status information, alarms, diagnostics Status display	yes	
Interrupts	no	
Process alarm	no	
Diagnostic interrupt	no	
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 2 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		
Input bytes	8	
	-	



Output bytes	0	A YASKAWA COMPANY	
Parameter bytes	8	8	
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		