

Data sheet SM 031 (031-1BB90)

Technical data

Order no.	031-1BB90
Туре	SM 031
Module ID	0403 1543
General information	
Note	
Features	2 inputs 16Bit
	Thermocouple Voltage -80mV+80mV
Current consumption/power loss	
Current consumption from backplane bus	75 mA
Power loss	1.1 W
Technical data analog inputs	
Number of inputs	2
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)	10 MOhm
Input voltage ranges	-80 mV +80 mV
Operational limit of voltage ranges	±0.3%
Operational limit of voltage ranges with SFU	±0.1%
Basic error limit voltage ranges	±0.25%
Basic error limit voltage ranges with SFU	±0.05%
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 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	-
Resistance thermometer inputs	-
Resistance thermometer ranges	-



Thermocouple inputs Thermocouple ranges Sype C Type C Type C Type C Type L Type I Ty	Operational limit of resistance thermometer ranges	A YASKAWA COMPANY
Operational limit of resistance thermometer ranges with SFU Thermocouple inputs Thermocouple ranges Viye B Viye C	Operational limit of resistance thermometer ranges with SFU	-
Destruction limit resistance thermometer inputs Thermocouple inputs Thermocouple inputs Thermocouple ranges Stype C S S Stype C S S S Stype C S S S S S S S S S S S S S S S S S S S	Basic error limit thermoresistor ranges	-
Thermocouple inputs Thermocouple ranges Uppe B Uppe C Uppe C Uppe E Uppe J Uppe I Uppe S Uppe B Up	Operational limit of resistance thermometer ranges with SFU	-
Thermocouple ranges Vipe B Vipe C V	Destruction limit resistance thermometer inputs	
Sype C Sype E Sype E Sype C Sype E	Thermocouple inputs	✓
Operational limit of thermocouple ranges with SFU Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±4.0K Basic error limit thermoelement ranges Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±7.0K Basic error limit thermoelement ranges with SFU Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Destruction limit thermocouple inputs Programmable temperature compensation External temperature compensation Internal temperature enasurement - Resolution in bit Basic conversion time 4.2324.1 ms (50 Hz) 3.8270.5 ms (60 Hz) per channel Noise suppression for frequency Status information, alarms, diagnostics Status display yes Interrupts yes Process alarm yes, parameterizable Diagnostic functions Diagnostic functions Diagnostic functions Diagnostic information read-out Module state Module error display red LED Channel error display red LED Retween channels Between channels of groups to Between channels of groups to Between channels and backplane bus Between channels and backplane bus Max. potential difference between inputs (Ucm) Max. potential difference between inputs and Mana (Ucm) Diagnostic full difference between inputs and Mana (Ucm) Diagnostic didference between inputs and Mana (Ucm) Diagnostic didference between inputs and Mana (Ucm) Diagnostic didference between inputs (Ucm) Diagnostic didference between inputs and Mana (Ucm) Diagnostic didference between inputs (Ucm) Diagnostic didference between inputs (Ucm) Diagnostic didference between inputs (Ucm) Diagnostic diagnostic difference between inputs (Ucm) Diagnostic diagnost	Thermocouple ranges	type C type E type J type K type L type N type R type S
Basic error limit thermoelement ranges Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±7.0K Basic error limit thermoelement ranges with SFU Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Destruction limit thermoecuple inputs - Programmable temperature compensation External temperature compensation Internal temperature compensation Internal temperature compensation 1 K Technical unit of temperature measurement - Resolution in bit 16 Measurement principle Sigma-Delta Basic conversion time 4.2324.1 ms (50 Hz) 3.8270.5 ms (60 Hz) per channel Noise suppression for frequency >90dB at 50Hz (UCM<10V) Status information, alarms, diagnostics Status display yes Interrupts yes Process alarm yes, parameterizable Diagnostic interrupt Diagnostic information read-out possible Module state Module error display red LED Channel error display red LED Channel error display red LED Ethem channels Between channels of groups to Between channels and bower supply Max. potential difference between inputs (Ucm) Max. potential difference between inputs and Mana (Ucm) Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K Type E, L, T, J, K, N: ±1.0K / Type B, Constants - Retroit themerature compensation 1 K Type E, L, T, J, K, N: ±1.0K / Type B, Constants - Retroit themerature compensation 1 K Type E, L, T, J, K, N: ±1.0K / Type B, Constants 1 K Letter Lette	Operational limit of thermocouple ranges	Type E, L, T, J, K, N: ±2.5K / Type B, C, R, S: ±8.0K
Basic error limit thermoelement ranges with SFU Destruction limit thermocouple inputs	Operational limit of thermocouple ranges with SFU	Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±4.0K
Destruction limit thermocouple inputs Programmable temperature compensation External temperature compensation Internal temperature defensation Internal temperature compensation Internal t	Basic error limit thermoelement ranges	Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±7.0K
Programmable temperature compensation External temperature compensation Internal temperature description Internation Internation Internature description Internation Internation Internation Internation Internation Internation Internature description Inter	Basic error limit thermoelement ranges with SFU	Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K
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Technical unit of temperature measurement Resolution in bit 16 Measurement principle Basic conversion time 4.2324.1 ms (50 Hz) 3.8270.5 ms (60 Hz) per channel Noise suppression for frequency >90dB at 50Hz (UCM<10V) Status information, alarms, diagnostics Status display yes Interrupts Process alarm plagnostic interrupt plagnostic interrupt plagnostic functions Diagnostic functions Module state Module state Green LED Channel error display red LED Channel error display red LED per channel Stolation Between channels Between channels Between channels and backplane bus Between channels and power supply Max. potential difference between inputs (Ucm) Module, and power supples and Mana (Ucm) DC 140 V/ AC 60 V Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm) Technical maximum and mana in the signal of the conversion of the co	Internal temperature compensation	✓
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Basic conversion time 4.2324.1 ms (50 Hz) 3.8270.5 ms (60 Hz) per channel Noise suppression for frequency >90dB at 50Hz (UCM<10V) Status information, alarms, diagnostics Status display yes Interrupts yes Process alarm yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic functions yes Diagnostic functions yes Diagnostics information read-out possible Module state green LED Ted LED Channel 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 Amx. potential difference between inputs (Ucm) Max. potential difference between linputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm)	Resolution in bit	16
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Diagnostic functions Diagnostics information read-out Module state Module error display Channel error display Channel error display red LED red LED per channel setween channels - Between channels of groups to Between channels and backplane bus ### A setween channels and power supply Max. potential difference between inputs (Ucm) Max. potential difference between Mana and Mintern (Uiso) Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm) ### A setween channels and power supply ### A setween channels and power suppl	Process alarm	yes, parameterizable
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Max. potential difference between circuits - Max. potential difference between inputs (Ucm) DC 140 V/ AC 60 V Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) -	Between channels and backplane bus	✓
Max. potential difference between inputs (Ucm) Max. potential difference between Mana and Mintern (Uiso) Max. potential difference between inputs and Mana (Ucm) -	Between channels and power supply	-
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Max. potential difference between inputs and Mana (Ucm) -	Max. potential difference between inputs (Ucm)	DC 140 V/ AC 60 V
	Max. potential difference between Mana and Mintern (Uiso)	-
Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 60 V	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	-	A YASKAWA COMPANY
Insulation tested with	DC 500 V	
Datasizes		
Input bytes	4	
Output bytes	0	
Parameter bytes	22	
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	