

Data sheet SM 031 - Analog input (031-1BB90)

Technical data

Order no.	031-1BB90
Туре	SM 031 - Analog input
Module ID	0403 1543
General information	
Note	-
Features	2x Al 16 Bit Voltage -80 mV+80 mV TC type J, K, N, R, S, T, B, C, E, L
Current consumption/power loss	
Current consumption from backplane bus	85 mA
Power loss	1.1 W
Technical data analog inputs	
Number of inputs	2
Cable length, shielded	200 m
Rated voltage power section supply	DC 24 V
Current consumption from power section supply (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 voltage	max. 20V
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	-
Operational limit of resistance thermometer ranges	-

## **YASKAWA**

Operational limit of resistance thermometer ranges with SFU -

wppe J         wppe J           bype K         bype K           bype K         bype K           bype N         bype N           bype C         bype N           Operational limit of thermocouple ranges         Type E, L, T, J, K, N: ±2.5K / Type B, C, R, S: ±8.0K           Operational limit of thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±3.0K           Basic error limit thermocouple ranges         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple inputs         max. 20V           Programmable temperature compensation         yes           External temperature compensation         yes           Temperature error internal compensation         1K           Resolution in bi         16           Measurement principle         Sigma-Deta           Basic conversion time         4.2324.1 ms (50 Hz) 3.8270.5 ms (60 Hz) per channel           Noise suppression for frequency         yes           Status information, alarms, diagnostics         Sigma-Deta           Basic conversion time         yes, parameterizable           Diagnostic functions         yes, parameterizable           Diagnostic functions         yes, parameterizable           Diagnostic functions         yes           Diagnos	Operational limit of resistance thermometer ranges with SFU	-																																																																																										
Destruction limit resistance thermocouple ranges       yes         Thermocouple ranges       yes         Thermocouple ranges       Ypp B         Ypp E       Ypp E         Portational insit of thermocouple ranges with SPU       Type E         Procensation insit thermocouple ranges       Type E         Personable tormorature compensation       yes         Parameterization compensation       yes         Temperature error internature compensation       yes         Procesalarm <td>Basic error limit thermoresistor ranges</td> <td>-</td>	Basic error limit thermoresistor ranges	-																																																																																										
Thermocouple inputs         yes           Thermocouple ranges         type B type J type L type L type L type C           Operational limit of thermocouple ranges         Type E, L, T, J, K, N: ±2.5K / Type B, C, R, S: ±8.0K           Operational limit of thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±8.0K           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 thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple ranges         max. 20V           Programmable temperature compensation         yes           Temperature error internal compensation         yes           Temperature error internal compensation         1 K           Resolution in bit         16           Measurement principle         Sigma-Delta           Basic conversion time         42_324.1 m	Basic error limit thermoresistor ranges with SFU	-																																																																																										
Thermocouple ranges         Upp B           Thermocouple ranges         Upp B           Vipp K         Vipp K           Vipp N         Vipp K           Vipp C         Vipp C           Vipp C         Vipp C           Vipp C         Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±4.0K           Basic error limit thermocouple ranges with SFU         Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±7.0K           Basic error limit thermocouple ranges         max. 20V           Programmable temperature compensation         yes           External temperature compensation         yes           External temperature compensation         yes           Temperature error internal compensation         yes           Temperature error internal compensation         yes           Temperature error internal compensation         yes           Status display         yes           Status display         yes           Status display         yes           Process atarm         yes, parameterizable           Diagnostic Interrupt         yes, parameterizable	Destruction limit resistance thermometer inputs	-																																																																																										
wppe J         wppe J           bype K         bype K           bype K         bype K           bype N         bype N           bype C         bype N           Operational limit of thermocouple ranges         Type E, L, T, J, K, N: ±2.5K / Type B, C, R, S: ±8.0K           Operational limit of thermocouple ranges with SFU         Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±3.0K           Basic error limit thermocouple ranges         Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K           Destruction limit thermocouple inputs         max. 20V           Programmable temperature compensation         yes           External temperature compensation         yes           Temperature error internal compensation         1K           Resolution in bi         16           Measurement principle         Sigma-Deta           Basic conversion time         4.2324.1 ms (50 Hz) 3.8270.5 ms (60 Hz) per channel           Noise suppression for frequency         yes           Status information, alarms, diagnostics         Sigma-Deta           Basic conversion time         yes, parameterizable           Diagnostic functions         yes, parameterizable           Diagnostic functions         yes, parameterizable           Diagnostic functions         yes           Diagnos	Thermocouple inputs	yes																																																																																										
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Ves           Internal temperature compensation         yes           Internal temperature compensation         1 K           Temperature error internal compensation         1 K           Technical unit of temperature measurement         °C, °F, K           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)	Destruction limit thermocouple inputs	max. 20V																																																																																										
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    Max. potential difference between inputs and Mintern (Uiso)         -           Max. potential difference between inputs and Mintern (Uiso)         -           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 Mintern and outputs         - <td< td=""><td>Measurement principle</td><td>Sigma-Delta</td></td<>	Measurement principle	Sigma-Delta	Status information, alarms, diagnosticsStatus displayyesInterruptsyes, parameterizableProcess alarmyes, parameterizableDiagnostic interruptyes, parameterizableDiagnostic interruptyesDiagnostic functionsyesModule stategreen LEDModule error displayred LEDChannel error displayred LED per channelIsolationBetween channels-Between channels of groups to-Between channels and backplane busyesBetween channel and power supply-Max. potential difference between inputs (Ucm)DC 75 V/ AC 50 VMax. potential 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functions</td><td>yes</td></t<>	Diagnostic functions	yes	Module error displayred LEDChannel error displayred LED per channelIsolationIsolationBetween channels-Between channels of groups to-Between channels and backplane busyesBetween channels and power supply-Max. potential difference between inputs (Ucm)DC 75 V/ AC 50 VMax. potential difference between inputs and Mintern (Uiso)-Max. potential difference between inputs and Mintern (Uiso)C 75 V/ AC 50 VMax. potential difference between inputs and Mintern (Uiso)-Max. potential difference between inputs and Mintern (Uiso)C 75 V/ AC 50 VMax. potential difference between inputs and Mintern (Uiso)-Max. potential difference between inputs and Mintern (Uiso)C 75 V/ AC 50 VMax. potential difference between inputs and Mintern (Uiso)DC 75 V/ AC 50 VMax. potential difference between inputs and Mintern (Uiso)DC 75 V/ AC 50 VMax. potential difference between inputs and Mintern (Uiso)DC 75 V/ AC 50 VMax. potential difference between inputs and 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Insulation tested with       DC 500 V	Between channels	-	Between channels and power supply       -         Max. potential difference between circuits       -         Max. potential difference between inputs (Ucm)       DC 75 V/ AC 50 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)       -         Max. potential difference between inputs and Mintern (Uiso)       -         Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V	Between channels of groups to		Max. potential difference between circuits       -         Max. potential difference between inputs (Ucm)       DC 75 V/ AC 50 V         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 -         Insulation tested with       DC 500 V	Between channels and power supply		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 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V	Max. potential difference between circuits		Max. potential difference between inputs and Mana (Ucm)       -         Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V	Max. potential difference between inputs (Ucm)	DC 75 V/ AC 50 V	Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V	Max. potential difference between Mana and Mintern (Uiso)		Max. potential difference between Mintern and outputs     -       Insulation tested with     DC 500 V	Max. potential difference between inputs and Mana (Ucm)		Insulation tested with DC 500 V	Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 50 V		Max. potential difference between Mintern and outputs		Technical data encoder supply	Insulation tested with	DC 500 V		Technical data encoder supply	
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Diagnostic functions         yes           Module state         green LED           Module error display         red LED           Channel error display         red LED           Between channels         -           Between channels         -           Between channels of groups to         -           Between channels and power supply         -           Max. potential difference between inputs (Ucm)         DC 75 V/ AC 50 V           Max. potential difference between inputs and Mintern (Uiso)         -           Max. potential difference between inputs and Mintern (Uiso)         -           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 Mintern and outputs         - <td< td=""><td>Measurement principle</td><td>Sigma-Delta</td></td<>	Measurement principle	Sigma-Delta	Status information, alarms, diagnosticsStatus 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## YASKAWA

Number of outputs	-
Output voltage (typ)	-
Output current (rated value)	-
Short-circuit protection	-
Binding of potential	-
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
Net weight	58 g
Weight including accessories	
weight including accessories	58 g
Gross weight	58 g 72 g
Gross weight	
Gross weight Environmental conditions	72 g
Gross weight Environmental conditions Operating temperature	72 g 0 °C to 60 °C
Gross weight Environmental conditions Operating temperature Storage temperature	72 g 0 °C to 60 °C
Gross weight Environmental conditions Operating temperature Storage temperature Certifications	72 g 0 °C to 60 °C -25 °C to 70 °C
Gross weight Environmental conditions Operating temperature Storage temperature Certifications UL certification	72 g 0 °C to 60 °C -25 °C to 70 °C yes