

Data sheet SM 031 (031-1CB40)

Technical data

Туре	
7 F -	SM 031
Module ID	040B 1543
General information	
Note	<u>-</u>
Features	2 inputs 16Bit Current 0(4)20 mA
Current consumption/power loss	
Current consumption from backplane bus	60 mA
Power loss	0.7 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)	15 mA
Voltage inputs	-
Min. input resistance (voltage range)	<u>- </u>
Input voltage ranges	-
Operational limit of voltage ranges	<u>- </u>
Operational limit of voltage ranges with SFU	-
Basic error limit voltage ranges	-
Basic error limit voltage ranges with SFU	-
Destruction limit voltage	-
Current inputs	yes
Max. input resistance (current range)	60 Ohm
Input current ranges	0 mA +20 mA +4 mA +20 mA
Operational limit of current ranges	+/-0.2%
Operational limit of current ranges with SFU	-
Basic error limit current ranges	+/-0.1%
Radical error limit current ranges with SFU	-
Destruction limit current inputs (voltage)	max. 24V
Destruction limit current inputs (electrical current)	max. 40mA
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 with SFU - Basic error limit thermoresistor ranges - Basic error limit thermoresistor ranges with SFU - Destruction limit resistance thermometer inputs - Thermocouple inputs - Thermocouple inputs - Thermocouple ranges - Operational limit of thermocouple ranges - Operational limit of thermocouple ranges with SFU - Basic error limit thermolement ranges with SFU - Basic error limit thermolement ranges with SFU - Destruction limit thermolement ranges with SFU - Basic error limit thermolement ranges with SFU - Destruction limit thermolement ranges with SFU - Programmable temperature compensation - External temperature compensation - Technical unit of temperature compensation - Technical unit of temperature measurement - Resolution in bit 16 Measurement principle successive approximation Basic conversion time 240 ps all channels Noise suppression for frequency -88088 (UCM-44V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic information read-out possible Module error display red LED Channel error display red LED Between channels and power supply yes Between channels and fower supply DC 4 V Bax. potential difference between inputs and Mintern (Uiso) Max. potential difference between influsts and Mintern (Uiso) Max. potential difference between influsts and Min	Operational limit of resistance thermometer ranges	A YASKAWA COMPANY
Basic error limit thermoresistor 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 thermocouple ranges with SFU - Basic error limit thermocouple ranges with SFU - Basic error limit thermocouple inputs - Basic error limit thermocouple inputs - Programmable temperature compensation - External temperature compensation - Internal temperature compensation - Internal temperature compensation - Temperature error internal compensation - Technical unit of temperature measurement - Resolution in bit 16 Measurement principle successive approximation Basic conversion time 240 µs all channels Noise suppression for frequency >80dB (UCM-4V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic functions yes Diagnostic functions Detween channels of groups to - Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between inputs and Mantern (Uiso) Max. potential difference between inputs and Mintern (Uiso) Max. potential difference between inputs and Mintern (Uiso) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Operational limit of resistance thermometer ranges with SFU	-
Destruction limit resistance thermometer inputs	Basic error limit thermoresistor ranges	-
Thermocouple inputs Thermocouple ranges Operational limit of thermocouple ranges Operational limit of thermocouple ranges Operational limit of thermocouple ranges with SFU Basic error limit thermocouple inputs Basic error limit thermocouple inputs Operational limit of themocouple ranges with SFU Basic error limit thermocouple inputs Operational limit of themocouple inputs Operational limit of themocoup	Basic error limit thermoresistor ranges with SFU	-
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Operational limit of thermocouple ranges	Thermocouple inputs	-
Operational limit of thermocouple ranges with SFU Basic error limit thermocelement ranges Basic error limit thermocelement ranges Basic error limit thermocelement ranges with SFU Destruction limit thermocouple inputs	Thermocouple ranges	-
Basic error limit thermoelement ranges	Operational limit of thermocouple ranges	-
Basic error limit thermoelement ranges with SFU Destruction limit thermocouple inputs - Programmable temperature compensation External temperature compensation - Internal temperature compensation - Temperature error internal compensation Temperature error internal compensation - Temperature error internal compensation Temperature error internal compensation - Temperature error internal compensation Temperature error internal compensation - Temperature error internal compensation Temperature error internal compensation - Temperature error internal compensation Temperature error internal compensation - Resolution in bit 16 Measurement principle successive approximation Basic conversion time 240 µs all channels Noise suppression for frequency ->80dB (UCM ->80dB (UCM //> Yes ->90dB (UCM //> Yes ->90dB (UCM //> Status display yes ->90dB (UCM //> Yes ->90dB (UCM //> Yes ->90dB (UCM //> Yes ->90dB (UCM //	Operational limit of thermocouple ranges with SFU	-
Destruction limit thermocouple inputs - Programmable temperature compensation - External temperature compensation - Internal temperature compensation - Internal temperature compensation - Temperature error internal compensation - Temperature error internal compensation - Technical unit of temperature measurement - Resolution in bit 16 Measurement principle successive approximation Basic conversion time 240 µs all channels Noise suppression for frequency >80dB (UCM-4V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic functions yes Diagnostic information read-out possible Module state green LED Module error display red LED Channel error display red LED Estween channels Between channels of groups to - Between channels and power supply yes Between channels and power supply yes 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	Basic error limit thermoelement ranges	-
Programmable temperature compensation - External temperature compensation - Internal temperature compensation - Internal temperature compensation - Temperature error internal compensation - Technical unit of temperature measurement - Resolution in bit 16 Measurement principle successive approximation Basic conversion time 240 µs all channels Noise suppression for frequency >80dB (UCM<4V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable Diagnostic functions yes 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 and power supply yes Between channels and power supply yes Max. potential difference between inputs and Mana (Ucm) DC 3 V 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	Basic error limit thermoelement ranges with SFU	-
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Internal temperature compensation - Temperature error internal compensation - Technical unit of temperature measurement - Resolution in bit 16 Measurement principle successive approximation Basic conversion time 240 µs all channels Noise suppression for frequency >80dB (UCM-4V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic functions yes Diagnostic information read-out possible Module state green LED Module state green LED Channel error display red LED Channel error display red LED per channel Isolation Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between inputs (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Programmable temperature compensation	-
Temperature error internal compensation Technical unit of temperature measurement Technical unit of temperature perature pe	External temperature compensation	-
Technical unit of temperature measurement Resolution in bit Measurement principle Basic conversion time 240 µs all channels Noise suppression for frequency Status information, alarms, diagnostics Status display Interrupts Process alarm Process alarm Diagnostic interrupt Diagnostic functions Diagnostic information read-out Module state Green LED Module error display red LED Channel error display Relween channels Between channels of groups to Between channels and backplane bus Between channels and power supply 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) DC 75 V/ AC 50 V	Internal temperature compensation	-
Resolution in bit Measurement principle Basic conversion time 240 µs all channels Noise suppression for frequency Status information, alarms, diagnostics Status display yes Interrupts Process alarm Diagnostic interrupt Diagnostic interrupt Diagnostic information read-out Module state green LED Module error display red LED Channel error display red LED Between channels Between channels of groups to Between channels and backplane bus Between channels and power supply Max. potential difference between linputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mana (Ucm) Mox. potential difference between inputs and Mana (Ucm) DC 75 V/ AC 50 V Max. potential difference between inputs and Mana (Ucm) DC 75 V/ AC 50 V	Temperature error internal compensation	-
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Basic conversion time 240 µs all channels Noise suppression for frequency >80dB (UCM<4V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic functions yes Diagnostic sinformation read-out possible Module state green LED Module error display red LED Channel error display red LED per channel Isolation Between channels of groups to - Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between inputs (Ucm) DC 3 V Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mintern (Uiso) DC 75 V / AC 50 V	Resolution in bit	16
Noise suppression for frequency >80dB (UCM<4V) Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable Diagnostic interrupt yes, parameterizable Diagnostic functions yes Diagnostic sinformation read-out possible Module state green LED Module error display red LED Channel error display red LED per channel Isolation Between channels of groups to - Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between injuts (Ucm) DC 3 V Max. potential difference between injuts and Mintern (Uiso) DC 75 V/ AC 50 V Max. potential difference between injuts and Mintern (Uiso) DC 75 V/ AC 50 V	Measurement principle	successive approximation
Status information, alarms, diagnostics Status display yes Interrupts yes, parameterizable Process alarm yes, parameterizable 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 Channel error display red LED per channel Isolation Between channels - Between channels of groups to - Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between inputs (Ucm) DC 3 V Max. potential difference between inputs and Mana (Ucm) DC 75 V/ AC 50 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Basic conversion time	240 μs all channels
Status display Interrupts Process alarm Process	Noise suppression for frequency	>80dB (UCM<4V)
Interrupts Process alarm Process alarm yes, parameterizable Diagnostic interrupt Diagnostic functions Diagnostics information read-out Module state Module error display Channel error display Ted LED Between channels Between channels of groups to Between channels and backplane bus Between channels and power supply Max. potential difference between inputs (Ucm) 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 inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Status information, alarms, diagnostics	
Process alarm Diagnostic interrupt Diagnostic functions Diagnostics information read-out Module state Module error display Channel error display Ted LED Between channels Between channels and backplane bus Between channels and power supply Between channels and power supply Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Status display	yes
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Diagnostic functions Diagnostics information read-out Module state Module error display Channel error display Red LED Tred LED Tred LED Tred 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 inputs (Ucm) Max. potential difference between inputs and Mana (Ucm) Max. potential difference between inputs and Mintern (Uiso) Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Process alarm	yes, parameterizable
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 yes Between channels and power supply yes Max. potential difference between circuits - Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mana (Uiso) DC 75 V/ AC 50 V	Diagnostic interrupt	yes, parameterizable
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 yes Between channels and power supply yes Max. potential difference between circuits - Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mana (Mintern (Uiso) DC 75 V/ AC 50 V	Diagnostic functions	yes
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 yes Between channels and power supply yes Max. potential difference between circuits - Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mana (Ucm) DC 75 V/ AC 50 V	Diagnostics information read-out	possible
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Between channels - Between channels of groups to - Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between circuits - Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Module error display	red LED
Between channels - Between channels of groups to - Between channels and backplane bus yes Between channels and power supply yes Max. potential difference between circuits - Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Channel error display	red LED per channel
Between channels and backplane bus Between channels and power supply Max. potential difference between circuits Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Isolation	
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Between channels and power supply Max. potential difference between circuits Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Between channels of groups to	-
Max. potential difference between circuits Max. potential difference between inputs (Ucm) DC 4 V Max. potential difference between Mana and Mintern (Uiso) Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Between channels and backplane bus	yes
Max. potential difference between inputs (Ucm) Max. potential difference between Mana and Mintern (Uiso) Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Between channels and power supply	yes
Max. potential difference between Mana and Mintern (Uiso) - Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Max. potential difference between circuits	-
Max. potential difference between inputs and Mana (Ucm) DC 3 V Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Max. potential difference between inputs (Ucm)	DC 4 V
Max. potential difference between inputs and Mintern (Uiso) DC 75 V/ AC 50 V	Max. potential difference between Mana and Mintern (Uiso)	-
	Max. potential difference between inputs and Mana (Ucm)	DC 3 V
Max. potential difference between Mintern and outputs -	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	Insulation tested with	DC 500 V
Datasizes	Datasizes	
Input bytes 4	Input bytes	4
Output bytes 0	Output bytes	0
Parameter bytes 20	Parameter bytes	20



Diagnostic bytes	20	A YASKAWA COMPANY	
Housing			
Housing			
Material	PPE / PPE GF10	PPE / PPE GF10	
Mounting	Profile rail 35 mm		
Mechanical data			
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5	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	-25 °C to 70 °C	
Certifications			
UL certification	yes	yes	
KC certification	yes	yes	
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