

## Data sheet

SM 031 (031-1BB30)

## Technical data

Type         SM 031           Module ID         0401 15G3           General Information           Note         -           Features         2 Inputs 12Bit Voilage 010 V           Current consumption from backplane bus         70 mA           Power loss         0.7 W           Technical data analog inputs           Number of Inputs         2           Cabbie longth, shielded         200 m           Rated load voilage         DC 24 V           Current consumption from load voilage L+ (without load)         15 mA           Voltage inputs         yes           Min. input resistance (voitage range)         100 kOhm           Input voilage ranges with SFU         -           Operational limit of voitage ranges with SFU         -           Basic error limit voitage ranges with SFU         -           Destruction limit voitage ranges with SFU         -           Destruction limit voitage ranges with SFU         -           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         - </th <th>Order no.</th> <th>031-1BB30</th>	Order no.	031-1BB30
Season	Туре	SM 031
Note         -           Features         2 inputs 12Bit Voltage 010 V           Current consumption/power loss           Current consumption from backplane bus         70 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         yes           Min. input resistance (voltage range)         100 KOhm           Input voltage ranges         4-0.3%           Operational limit of voltage ranges         4-0.3%           Operational limit of voltage ranges with SFU         -           Basic error limit voltage ranges with SFU         -           Destruction limit voltage         max. 30V           Current inputs         -           Max. input resistance (current range)         -           Max. input resistance (current ranges         -           Operational limit of current ranges with SFU         -           Basic error limit current ranges with SFU         -           Basic error limit current inputs (voltage)         -           Destructio	Module ID	0401 15C3
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Power loss         0.7 W           Technical data analog inputs         2           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         yes           Min. input resistance (voltage range)         100 kOhm           Input voltage ranges         0 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 voltage ranges with SFU         -           Destruction limit voltage         max. 30V           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 inputs (voltage)         -           Destruction limit current inputs (electrical current)         -           Resistance inputs         -	Current consumption/power loss	
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 yes Min. input resistance (voltage range) 100 kOhm Input voltage ranges 0 V +10 V Operational limit of voltage ranges +/-0.3% Operational limit of voltage ranges +/-0.3% Operational limit of voltage ranges +/-0.2% Basic error limit voltage ranges with SFU - Destruction limit to current ranges - Input current ranges - Derational limit of current ranges with SFU - Destruction limit current inputs (voltage) - Destruction limit current inputs (electrical current) - Destruction limit of resistor ranges with SFU - Destruction limit of resistor ranges with SFU - Destruction limit current ranges with SFU - Destruction limit of resisto	Current consumption from backplane bus	70 mA
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         yes           Min. input resistance (voltage range)         100 kOhm           Input voltage ranges         0 V +10 V           Operational limit of voltage ranges with SFU         -           Basic error limit voltage ranges with SFU         -           Basic error limit voltage ranges with SFU         -           Destruction limit voltage ranges with SFU         -           Destruction limit voltage ranges with SFU         -           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 (voltage)         -           Destruction limit current inputs (electrical current)         -           Resistance inputs         -           Resistance inputs         -           Operational limit of resistor ranges with SFU         -           Basic er	Power loss	0.7 W
Cable length, shielded         200 m           Rated load voltage         DC 24 V           Current consumption from load voltage L+ (without load)         15 mA           Voltage inputs         yes           Min. input resistance (voltage range)         100 kOhm           Input voltage ranges         0 V +10 V           Operational limit of voltage ranges with SFU         -           Basic error limit voltage ranges with SFU         -           Basic error limit voltage ranges with SFU         -           Destruction limit voltage ranges with SFU         -           Destruction limit voltage         max. 30V           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 (voltage)         -           Destruction limit current inputs (electrical current)         -           Resistance inputs         -           Resistance ranges         -           Operational limit of resistor ranges with SFU         -           Basic error limit w	Technical data analog inputs	
Rated load voltage  Current consumption from load voltage L+ (without load)  Voltage inputs  Wes  Min. input resistance (voltage range)  Input voltage ranges  O V +10 V  Operational limit of voltage ranges  Operational limit of voltage ranges  H-0.3%  Operational limit of voltage ranges  With SFU  Basic error limit voltage ranges with SFU  Destruction limit voltage ranges with SFU  Axx. input resistance (current ranges)  Operational limit of current ranges  Axx. input resistance (current ranges)  Operational limit of current ranges  Operational limit of current ranges  Pasic error limit voltage  Max. input resistance (current range)  Input current ranges  Operational limit of current ranges  Pasic error limit current ranges  Operational limit of 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  Operational limit of resistor ranges with SFU  Basic error limit current ranges with SFU  Resistance ranges  Operational limit of resistor ranges with SFU  Basic error limit erresistor ranges with SFU  Basic error limit erresistor ranges with SFU  Basic error limit resistance inputs  Operational limit of resistor ranges with SFU  Basic error limit with SFU  Basic error limit with SFU  Destruction limit resistance inputs	Number of inputs	2
Current consumption from load voltage L+ (without load)  Voltage inputs  Min. input resistance (voltage range)  Min. input voltage ranges  0 V +10 V  Operational limit of voltage ranges  4-0.3%  Operational limit of voltage ranges  +-0.2%  Basic error limit voltage ranges with SFU  Destruction limit voltage ranges with SFU	Cable length, shielded	200 m
Voltage inputs     yes       Min. input resistance (voltage range)     100 kOhm       Input voltage ranges     0 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 voltage ranges with SFU     -       Destruction limit voltage     max. 30V       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 (voltage)     -       Destruction limit current inputs (electrical current)     -       Resistance ranges     -       Operational limit of resistor ranges     -       Operational limit of resistor ranges with SFU     -       Besistance ranges     -       Operational limit of resistor ranges with SFU     -       Basic error limit     -       Basic error limit     -       Basic error limit     -       Basic error limit with SFU     -       Basic error limit with SFU     -       Basic error limit with SFU <t< td=""><td>Rated load voltage</td><td>DC 24 V</td></t<>	Rated load voltage	DC 24 V
Min. input resistance (voltage range)         100 kOhm           Input voltage ranges         0 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 voltage ranges with SFU         -           Destruction limit voltage         max. 30V           Current inputs         -           Max. input resistance (current range)         -           Input current ranges         -           Operational limit of current ranges with SFU         -           Basic error limit current ranges with SFU         -           Destruction limit current ranges with SFU         -           Destruction limit current inputs (voltage)         -           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         -           Basic error limit with SFU         -           Basic error limit with SFU         -           Basic error limit with SFU <t< td=""><td>Current consumption from load voltage L+ (without load)</td><td>15 mA</td></t<>	Current consumption from load voltage L+ (without load)	15 mA
Input voltage ranges 0 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 voltage ranges with SFU - Current inputs - Max. input resistance (current range) - Input current ranges - Operational limit of current ranges with SFU - Basic error limit current ranges - Operational limit current ranges with SFU - Basic error limit current ranges with SFU - Current limit current ranges with SFU - Basic error limit current ranges with SFU - Destruction limit current ranges with SFU - Custruction limit current inputs (voltage) - Destruction limit current inputs (voltage) - Custruction limit current inputs (electrical current) - Custruction limit current inputs (electrical current) - Custruction limit current inputs (electrical current) - Custruction limit of resistor ranges - Custruction limit of resistor ranges - Custruction limit of resistor ranges - Custructional limit of resistor ranges with SFU - Custruction limit with SFU - Custruction limit with SFU - Custruction limit resistance inputs - Custruction limit of voltage anges with SFU - Custruction limit of voltag	Voltage inputs	yes
Operational limit of voltage ranges	Min. input resistance (voltage range)	100 kOhm
Destructional limit of voltage ranges with SFU	Input voltage ranges	0 V +10 V
Basic error limit voltage ranges with SFU -  Destruction limit voltage  Max. 30V  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 inputs (voltage) -  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 (voltage) -  Resistance inputs -  Resistance ranges -  Operational limit of resistor ranges with SFU -  Basic error limit current inputs (electrical current) -  Resistance ranges -  Operational limit of resistor ranges with SFU -  Basic error limit with SFU -  Basic error limit with SFU -  Destruction limit resistance inputs -  Basic error limit with resistance inputs -  Basic error limit with sFU -  Destruction limit resistance inputs -  -  -  -  -  -  -  -  -  -  -  -  -	Operational limit of voltage ranges	+/-0.3%
Basic error limit voltage ranges with SFU  Destruction limit voltage  max. 30V  Current inputs  Ax. input resistance (current range)  Input current ranges  Operational limit of current ranges  Operational limit of current ranges  Assic error limit current ranges  Radical error limit current ranges with SFU  Destruction limit current inputs (voltage)  Destruction limit current inputs (voltage)  Pessistance inputs  Resistance ranges  Operational limit of resistor ranges  Acceptable  Destruction limit current inputs (voltage)  Destruction limit current inputs (voltage)  Pessistance ranges  Operational limit of resistor ranges  Acceptable  Destruction limit current inputs  Resistance ranges  Operational limit of resistor ranges with SFU  Basic error limit  Basic error limit with SFU  Destruction limit resistance inputs  Acceptable  Accept	Operational limit of voltage ranges with SFU	-
Destruction limit voltage max. 30V  Current inputs -  Max. input resistance (current range) -  Input 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 ranges -  Operational limit of resistor ranges with SFU -  Resistance ranges -  Operational limit or resistor ranges with SFU -  Basic error limit with SFU -  Destruction limit resistance inputs -  Operational limit or resistor ranges with SFU -  Basic error limit with SFU -  Destruction limit resistance inputs -  Operational limit resistance inputs -  Operational limit or resistor ranges with SFU -  Operational limit or resistor ranges with SFU -  Basic error limit with SFU -  Destruction limit resistance inputs -  Operational limit or resistor ranges with SFU -  Operationa	Basic error limit voltage ranges	+/-0.2%
Current inputs  Max. input resistance (current range) Input current ranges with SFU Input current ranges with SFU Input current ranges with SFU Input current inputs (voltage) Input current inputs (electrical current) Input current inputs (electrical current) Input current ranges In	Basic error limit voltage ranges with SFU	-
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 Cestruction 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 current inputs Cestruction limit of resistor ranges Cestruction limit of resistor ranges Cestruction limit of resistor ranges with SFU Basic error limit Cestruction limit resistance inputs Cestruction limi	Destruction limit voltage	max. 30V
Input current ranges Operational limit of current ranges Operational limit of current ranges with SFU Basic error limit current ranges with SFU Coestruction 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 Basic error limit with SFU Destruction limit resistance inputs	Current inputs	-
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  Destruction limit resistance inputs	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  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  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	-
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 - 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  Coperational limit of resistor ranges  Operational limit of resistor ranges with SFU  Basic error limit  Basic error limit with SFU  Destruction limit resistance inputs  -  Coperational limit of resistor ranges with SFU  -  Co	Basic error limit current ranges	-
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 -	Radical error limit current ranges with SFU	-
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 -	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 thermometer inputs	-
Resistance thermometer ranges -	Resistance thermometer ranges	-



Operational limit of resistance thermometer ranges	_ A YASKAWA COMPANY
Operational limit of resistance thermometer ranges with SFU	-
Basic error limit thermoresistor ranges	-
Grundfehlergrenze Widerstandsthermometerbereiche mit 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	2 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	yes
Between channels and power supply	yes
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 50 V
Max. potential difference between Mintern and outputs	DC 75 V/ AC 50 V
Insulation tested with	
Datasizes	-
Datasizes Input bytes	-
	- DC 500 V



Diagnostic bytes	20	A YASKAWA COMPANY		
Housing				
Material	PPE / PPE GF10			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	1		
Weight	60 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL certification	yes			
KC certification	yes	yes		