

## Data sheet

SM 021 (021-1BF01)

## Technical data

Type SM 021  Module ID 0013 9FC1  General Information  Note - Festures 8 Inputs, 0.5ms  Current consumption/power loss  Current consumption from backplane bus 60 mA Power loss 0.9 W  Technical data digital inputs  Number of inputs 8 Cable length, shielded 1000 m Cable length, unshielded 600 m Rated load voltage - Current consumption from load voltage L+ (without load) - Rated load voltage or signal '0' DC 05 V Input voltage for signal '0' DC 128.8 V Input voltage for signal '1' DC 128.8 V Input voltage for signal '1' DC 328.8 V Input voltage for signal '1' DC 338 Input voltage for signal '1' DC 338 Input voltage for signal '1' DC 338 Input delay of '1' TC 5' DC 338 Input delay of '1' DC 5'	Order no.	021-1BF01
General information  Note - Features 8 Inputs, 0.5ms  Current consumption/power loss  Current consumption from backplane bus 60 mA  Power loss 0.9 W  Technical data digital inputs  Number of inputs 8  Cable length, shielded 1000 m  Cable length, unshielded 600 m  Rated load voltage - Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input	Туре	SM 021
Note	Module ID	0013 9FC1
Note		
Features 8 Inputs, 0.5ms  Current consumption/power loss  Current consumption from backplane bus 60 mA  Power loss 0.9 W  Technical data digital inputs  Number of inputs 8 Cable length, shielded 1000 m Cable length, unshielded 600 m Rated load voltage Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1520.8 V Input voltage for signal "1" TO 1520.8 V Input voltage for signal "1" TO 1520.8 V Input resistance - Input current for signal "1" TO 5 mA Input delay of "1" to "0" max. 500 µs Input delay of "1"	General information	
Current consumption/power loss Current consumption from backplane bus 60 mA Power loss 0.9 W  Technical data digital inputs  Number of inputs 8 Cable length, shielded 1000 m Cable length, unshielded 600 m Rated load voltage Current consumption from load voltage L+ (without load) Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis Frequency range Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "0" to "1" max. 500 µs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration Number of simultaneously utilizable inputs vertical configuration Input delay of "0" to "1" to "0" max. 500 µs Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status display green LED per channel Interrupts no Diagnostic information, alarms, diagnostics Diagnostic interrupt No Diagnostic information read-out none Module state green LED	Note	•
Current consumption from backplane bus 60 mA Power loss 0.9 W  Technical data digital inputs  Number of inputs 8 Cable length, shielded 1000 m Cable length, shielded 600 m Rated load voltage Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis Input resistance Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" max. 50	Features	8 Inputs, 0.5ms
Current consumption from backplane bus 60 mA Power loss 0.9 W  Technical data digital inputs  Number of inputs 8 Cable length, shielded 1000 m Cable length, shielded 600 m Rated load voltage Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis Input resistance Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" max. 50	Current consumption/power loss	
Power loss 0.9 W  Technical data digital inputs  Number of inputs 8 Cable length, shielded 1000 m Cable length, unshielded 600 m Rated load voltage Current consumption from load voltage L+ (without load) Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input delay of "1" to "signal "1" And DC 1528.8 V Input delay of "0" to "1" DC 1528.8 V Input delay of "0" to "1" DC 1528.8 V Input delay of "0" to "1" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "0" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input delay of "1" to "1" DC 1528.8 V Input		60 mA
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Number of inputs 8 Cable length, shielded 1000 m Cable length, unshielded 600 m Rated load voltage - Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Frequency range - Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Input delay of "1" to "0" max. 500 µs Status display Input shorizontal configuration 8 Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic interrupt no Diagnostics information read-out none Module state green LED		
Cable length, shielded 1000 m Cable length, unshielded 600 m Rated load voltage - Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Frequency range - Input resistance - Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration 8 Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic interrupt no Diagnostics information read-out none Module state green LED	Technical data digital inputs	
Cable length, unshielded 600 m  Rated load voltage - Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V  Input voltage for signal "0" DC 05 V  Input voltage for signal "1" DC 1528.8 V  Input voltage for signal "1" DC 1528.8 V  Input voltage hysteresis - Frequency range - Input resistance - Input current for signal "1" 3 mA  Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 0.5 mA  Input delay of "0" to "1" max. 500 µs  Input delay of "1" to "0" max. 500 µs  Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration 8  Input characteristic curve IEC 61131-2, type 1  Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Diagnostic functions no  Diagnostics information read-out none  Module state green LED	Number of inputs	8
Rated load voltage - Current consumption from load voltage L+ (without load) - Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Frequency range - Input resistance - Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration 8 Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED	Cable length, shielded	1000 m
Current consumption from load voltage L+ (without load) Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis	Cable length, unshielded	600 m
Rated value DC 20.428.8 V Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Frequency range - Input resistance - Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration Resistance Bit Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit Status information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic functions no Diagnostic functions no Diagnostic information read-out none Module state green LED	Rated load voltage	-
Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Frequency range - Input resistance - Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 μs Input delay of "1" to "0" max. 500 μs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration 8 Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic functions no Diagnosticis information read-out none Module state green LED	Current consumption from load voltage L+ (without load)	-
Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Frequency range - Input resistance - Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 µs Input delay of "1" to "0" max. 500 µs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration Number of simultaneously utilizable inputs vertical configuration  Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic interrupt no Diagnostic information read-out none Module state green LED	Rated value	DC 20.428.8 V
Input voltage hysteresis  Frequency range  Input resistance  Input current for signal "1"  S mA  Connection of Two-Wire-BEROs possible  Max. permissible BERO quiescent current  O.5 mA  Input delay of "0" to "1"  Input delay of "1" to "0"  Number of simultaneously utilizable inputs horizontal  configuration  Number of simultaneously utilizable inputs vertical configuration  Residual size  Input data size  Input data size  Input data size  Status information, alarms, diagnostics  Status display  Green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions  no  Diagnostics information read-out  Module state  Green LED  Green LED  Green LED  Green LED  Green LED	Input voltage for signal "0"	DC 05 V
Frequency range Input resistance Input current for signal "1" 3 mA Connection of Two-Wire-BEROs possible Max. permissible BERO quiescent current 0.5 mA Input delay of "0" to "1" max. 500 μs Input delay of "1" to "0" max. 500 μs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration 8 Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out Module state   3 mA  2 mA  3 mA  2 mA  3 mA  Lec 61131-2 max  4 max. 500 μs  max. 500 μs	Input voltage for signal "1"	DC 1528.8 V
Input resistance - Input current for signal *1* 3 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 0.5 mA Input delay of *0* to *1* max. 500 μs Input delay of *1* to *10* max. 500 μs Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration 8 Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED	Input voltage hysteresis	-
Input current for signal "1" 3 mA  Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 0.5 mA  Input delay of "0" to "1" max. 500 µs  Input delay of "1" to "0" max. 500 µs  Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration  Input characteristic curve IEC 61131-2, type 1  Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions no  Diagnostics information read-out none  Module state green LED	Frequency range	-
Connection of Two-Wire-BEROs possible  Max. permissible BERO quiescent current  0.5 mA  Input delay of "0" to "1"  max. 500 µs  Input delay of "1" to "0"  Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration  8  Input characteristic curve  IEC 61131-2, type 1  Initial data size  8 Bit  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions  no  Diagnostics information read-out  Module state  green LED	Input resistance	-
Max. permissible BERO quiescent current       0.5 mA         Input delay of "0" to "1"       max. 500 μs         Input delay of "1" to "0"       max. 500 μs         Number of simultaneously utilizable inputs horizontal configuration       8         Input characteristic curve       IEC 61131-2, type 1         Initial data size       8 Bit         Status information, alarms, diagnostics         Status display       green LED per channel         Interrupts       no         Process alarm       no         Diagnostic interrupt       no         Diagnostic functions       no         Diagnostics information read-out       none         Module state       green LED	Input current for signal "1"	3 mA
Input delay of "0" to "1" max. 500 μs  Input delay of "1" to "0" max. 500 μs  Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration  Input characteristic curve IEC 61131-2, type 1  Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions no  Diagnostics information read-out none  Module state green LED	Connection of Two-Wire-BEROs possible	yes
Input delay of "1" to "0" max. 500 µs  Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration 8  Input characteristic curve IEC 61131-2, type 1  Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions no  Diagnostics information read-out none  Module state green LED	Max. permissible BERO quiescent current	0.5 mA
Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration  Input characteristic curve  IEC 61131-2, type 1  Initial data size  8 Bit  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions  no  Diagnostics information read-out  Module state  green LED	Input delay of "0" to "1"	max. 500 µs
Number of simultaneously utilizable inputs vertical configuration  Input characteristic curve IEC 61131-2, type 1 Initial data size  8 Bit  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions no  Diagnostics information read-out Module state green LED	Input delay of "1" to "0"	max. 500 µs
Input characteristic curve IEC 61131-2, type 1 Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED		8
Initial data size 8 Bit  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED	Number of simultaneously utilizable inputs vertical configuration	8
Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED	Input characteristic curve	IEC 61131-2, type 1
Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED	Initial data size	8 Bit
Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED	Status information, alarms, diagnostics	
Process alarm no Diagnostic interrupt no Diagnostic functions no Diagnostics information read-out none Module state green LED		green LED per channel
Diagnostic interrupt     no       Diagnostic functions     no       Diagnostics information read-out     none       Module state     green LED	Interrupts	no
Diagnostic functions no Diagnostics information read-out none Module state green LED	Process alarm	no
Diagnostics information read-out none  Module state green LED	Diagnostic interrupt	no
Module state green LED	Diagnostic functions	no
	Diagnostics information read-out	none
Module error display red LED	Module state	green LED
	Module error display	red LED



Channel error display	none	A YASKAWA COMPANY	
Isolation			
Between channels	-		
Between channels of groups to	-		
Between channels and backplane bus	yes		
Insulation tested with	DC 500 V		
Safety			
Safety protocol	-		
Safety requirements	-		
Secure user address	-		
Watchdog	-		
Two channels	-	-	
Test pulse outputs	-		
Datasizes			
Input bytes	1		
Output bytes	0	0	
Parameter bytes	0		
Diagnostic bytes	0		
Housing			
Material	PPE / PPE GF10		
Mounting	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data			
Dimensions (WxHxD)	12.9 mm x 109 mm x 76	12.9 mm x 109 mm x 76.5 mm	
Weight	60 g		
Environmental conditions			
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications			
UL certification	in preparation		
KC certification	in preparation	in preparation	