

## Data sheet

SM 321 (321-1BH01)

## Technical data

Type	Order no.	321-1BH01
Note	Туре	SM 321
Note		
Features   16x DI DC 24 V POF 20 pole front connector   SPEED-Bus		
DC 24 V   For 20 pole front connector		
Current consumption/power loss Current consumption from backplane bus Some some some some some some some some s	Features	DC 24 V
Current consumption from backplane bus 25 mA Power loss 3.5 W Technical data digital inputs Number of inputs 16 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 - Signal logic input Sinking input Frequency range - Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "0" to "1" 3 ms Input delay of "0" a "1" 3 ms Number of simultaneously utilizable inputs horizontal configuration 16 Input characteristic curve IEC 61131-2, type 1 Initial data size 2 Byte Status display green LED per channel Interrupts no Diagnostic functions no	SPEED-Bus	-
Power loss 3.5 W  Technical data digital inputs  Number of inputs 16 Cable length, shielded 1000 m  Cable length, unshielded 600 m  Rated load voltage - Current consumption from load voltage L+ (without load) - Rated value DC 20.5 V Input voltage for signal "0" 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 - Signal logic input Sinking input  Frequency range - Input resistance - Input current for signal "1" 7 mA  Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "1" to "0" 3 ms Number of simultaneously utilizable inputs vertical configuration 16 Input characteristic curve IEC 61131-2, type 1 Initial data size 2 Byte  Status display green LED per channel Interrupts no Diagnostic functions no	Current consumption/power loss	
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Number of inputs 16 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 - Signal logic input Sinking input Frequency range - Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "0" to "1" 3 ms Number of simultaneously utilizable inputs horizontal 16 Input of simultaneously utilizable inputs vertical configuration 16 Input characteristic curve IEC 61131-2, type 1 Initial data size 2 Byte Status information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic functions	Power loss	3.5 W
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 - Signal logic input Sinking input Frequency range - Input resistance - Input resistance - Input remarksible BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "1" to "0" 3 ms Number of simultaneously utilizable inputs vertical configuration 16 Input characteristic curve IEC 61131-2, type 1 Initial data size 2 Byte  Status information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic functions 10	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 - Signal logic input Sinking input Frequency range - Input resistance - Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "0" to "1" 3 ms Input delay of "1" to "0" 3 ms 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 2 Byte Status Information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic interrupt	Number of inputs	16
Rated load voltage  Current consumption from load voltage L+ (without load)  Rated value  DC 20.428.8 V  Input voltage for signal "0"  DC 1528.8 V  Input voltage for signal "1"  DC 1528.8 V  Input voltage hysteresis  Signal logic input  Sinking input  Frequency range  Input resistance  Input current for signal "1"  7 mA  Connection of Two-Wire-BEROs possible  Max. permissible BERO quiescent current  1.5 mA  Input delay of "0" to "1"  3 ms  Input delay of "1" to "0"  3 ms  Number of simultaneously utilizable inputs horizontal configuration  Input characteristic curve  IEC 61131-2, type 1  Initial data size  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Diagnostic interrupt  no  Diagnostic interrupt  no  Diagnostic functions	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  - Signal logic input  Sinking input  Frequency range  - Input resistance  - Input current for signal "1"  7 mA  Connection of Two-Wire-BEROs possible  Max. permissible BERO quiescent current  1.5 mA  Input delay of "0" to "1"  3 ms  Input delay of "1" to "0"  3 ms  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  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions	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 - Signal logic input Sinking input Frequency range - Input resistance - Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "0" to "1" 3 ms Input delay of "1" to "0" 3 ms 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 2 Byte Status information, alarms, diagnostics Status display green LED per channel Interrupts no Process alarm no Diagnostic functions	Rated load voltage	-
Input voltage for signal "0" DC 05 V Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Signal logic input Sinking input Frequency range - Input resistance - Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "0" to "1" 10" 3 ms Input delay of "1" to "0" 3 ms 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 2 Byte Status information, alarms, diagnostics Status display green LED per channel Interrupts no Diagnostic interrupt no Diagnostic functions	Current consumption from load voltage L+ (without load)	
Input voltage for signal "1" DC 1528.8 V Input voltage hysteresis - Signal logic input Sinking input Frequency range - Input resistance - Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible yes Max. permissible BERO quiescent current 1.5 mA Input delay of "0" to "1" 3 ms Input delay of "0" to "1" to "0" 3 ms Number of simultaneously utilizable inputs horizontal configuration Number of simultaneously utilizable inputs vertical configuration 16 Input characteristic curve IEC 61131-2, type 1 Initial data size 2 Byte Status information, alarms, diagnostics Status display green LED per channel Interrupts no Process alarm no Diagnostic functions no	Rated value	DC 20.428.8 V
Input voltage hysteresis  Signal logic input  Sinking input  Frequency range - Input resistance - Input current for signal "1"  7 mA  Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 1.5 mA  Input delay of "0" to "1" 3 ms  Input delay of "1" to "0" 3 ms  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 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no  Process alarm no  Diagnostic functions no	Input voltage for signal "0"	DC 05 V
Signal logic input  Frequency range  Input resistance  Input current for signal "1"  7 mA  Connection of Two-Wire-BEROs possible  Max. permissible BERO quiescent current  1.5 mA  Input delay of "0" to "1"  3 ms  Input delay of "1" to "0"  3 ms  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  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic functions  no	Input voltage for signal "1"	DC 1528.8 V
Frequency range Input resistance Input current for signal "1" 7 mA Connection of Two-Wire-BEROs possible Max. permissible BERO quiescent current Input delay of "0" to "1" 3 ms Input delay of "0" to "1" 3 ms 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 2 Byte Status information, alarms, diagnostics Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions	Input voltage hysteresis	-
Input current for signal "1" 7 mA  Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 1.5 mA  Input delay of "0" to "1" 3 ms  Input delay of "1" to "0" 3 ms  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 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions	Signal logic input	Sinking input
Input current for signal "1" 7 mA  Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 1.5 mA  Input delay of "0" to "1" 3 ms  Input delay of "1" to "0" 3 ms  Number of simultaneously utilizable inputs horizontal configuration  Number of simultaneously utilizable inputs vertical configuration 16  Input characteristic curve IEC 61131-2, type 1  Initial data size 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions	Frequency range	-
Connection of Two-Wire-BEROs possible yes  Max. permissible BERO quiescent current 1.5 mA  Input delay of "0" to "1" 3 ms  Input delay of "1" to "0" 3 ms  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 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no	Input resistance	-
Max. permissible BERO quiescent current  Input delay of "0" to "1"  Input delay of "1" to "0"  Input delay of "1" to "0"  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  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions	Input current for signal "1"	7 mA
Input delay of "0" to "1" 3 ms  Input delay of "1" to "0" 3 ms  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 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel  Interrupts no  Process alarm no  Diagnostic interrupt no  Diagnostic functions no	Connection of Two-Wire-BEROs possible	yes
Input delay of "1" to "0" 3 ms  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  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions  no	Max. permissible BERO quiescent current	1.5 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  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions  16	Input delay of "0" to "1"	3 ms
Number of simultaneously utilizable inputs vertical configuration  Input characteristic curve  IEC 61131-2, type 1  Initial data size  2 Byte  Status information, alarms, diagnostics  Status display  green LED per channel  Interrupts  no  Process alarm  no  Diagnostic interrupt  no  Diagnostic functions  no	Input delay of "1" to "0"	3 ms
Input characteristic curve IEC 61131-2, type 1 Initial data size 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no		16
Initial data size 2 Byte  Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no	Number of simultaneously utilizable inputs vertical configuration	16
Status information, alarms, diagnostics  Status display green LED per channel Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no	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	Initial data size	2 Byte
Interrupts no Process alarm no Diagnostic interrupt no Diagnostic functions no	Status information, alarms, diagnostics	
Process alarm no Diagnostic interrupt no Diagnostic functions no	Status display	green LED per channel
Diagnostic interrupt     no       Diagnostic functions     no	Interrupts	no
Diagnostic functions no	Process alarm	no
	Diagnostic interrupt	no
Diagnostics information read-out none	Diagnostic functions	no
	Diagnostics information read-out	none
Supply voltage display none	Supply voltage display	none

## YASKAWA VIPA CONTROLS

Between channels - Between channels of groups to 16 Between channels and backplane bus yes Insulation tested with DC 500 V  Datasizes Input bytes 2 Output bytes 0 Parameter bytes 0 Diagnostic bytes 0 Housing Material PPE Mounting Rail System 300  Mechanical data Dimensions (WXHxD) 40 mm x 125 mm x 120 mm Net weight 220 g Weight including accessories - Gross weight - Environmental conditions Operating temperature 0 °C to 60 °C Storage temperature -25 °C to 70 °C  Certifications	Group error display	none
Between channels         -           Between channels of groups to         16           Between channels and backplane bus         yes           Insulation tested with         DC 500 V           Datasizes           Input bytes         2           Output bytes         0           Parameter bytes         0           Diagnostic bytes         0           Housing           Material         PPE           Mounting         Rail System 300           Mechanical data           Dimensions (WxHxD)         40 mm x 125 mm x 120 mm           Net weight         220 g           Weight including accessories         -           Gross weight         -           Environmental conditions         0 °C to 60 °C           Storage temperature         -25 °C to 70 °C           Certifications           UL certification         yes	Channel error display	none
Between channels of groups to Between channels and backplane bus Insulation tested with  DC 500 V  Datasizes  Input bytes  2 Output bytes  0 Parameter bytes  0 Diagnostic bytes  0 Housing  Material  PPE  Mounting  Rail System 300  Mechanical data  Dimensions (WxHxD)  Net weight  220 g  Weight including accessories  Gross weight  Environmental conditions  Operating temperature  0 °C to 60 °C  Storage temperature  -25 °C to 70 °C  Certifications  UL certification  yes	Isolation	
Between channels and backplane bus Insulation tested with  DC 500 V  Datasizes  Input bytes  2 Output bytes  0 Parameter bytes  0 Diagnostic bytes  0 Housing  Material  PPE  Mounting  Rail System 300  Mechanical data  Dimensions (WxHxD)  Net weight  220 g  Weight including accessories  Gross weight  Environmental conditions  Operating temperature  0 °C to 60 °C  Storage temperature  -25 °C to 70 °C  Certifications  UL certifications  VSC 10 00 V  2  Q	Between channels	
Insulation tested with  DC 500 V  Datasizes  Input bytes  2 Output bytes  0 Parameter bytes  0 Diagnostic bytes  0 Housing  Material  PPE  Mounting  Rail System 300  Mechanical data  Dimensions (WxHxD)  A 0 mm x 125 mm x 120 mm  Net weight  220 g  Weight including accessories  Gross weight  Environmental conditions  Operating temperature  0 °C to 60 °C  Storage temperature  -25 °C to 70 °C  Certifications  UL certification  yes	Between channels of groups to	16
Datasizes  Input bytes 2 Output bytes 0 Parameter bytes 0 Diagnostic bytes 0 Housing  Material PPE Mounting Rail System 300  Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm Net weight 220 g  Weight including accessories - Gross weight - Environmental conditions  Operating temperature 0 °C to 60 °C Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Between channels and backplane bus	yes
Input bytes  Output bytes  Out	Insulation tested with	DC 500 V
Output bytes         0           Parameter bytes         0           Diagnostic bytes         0           Housing         PPE           Mounting         Rail System 300           Mechanical data         Vechanical data           Dimensions (WxHxD)         40 mm x 125 mm x 120 mm           Net weight         220 g           Weight including accessories         -           Gross weight         -           Environmental conditions         O°C to 60 °C           Storage temperature         -25 °C to 70 °C           Certifications         UL certification           UL certification         yes	Datasizes	
Parameter bytes 0 Diagnostic bytes 0 Housing  Material PPE Mounting Rail System 300  Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm  Net weight 220 g  Weight including accessories - Gross weight - Environmental conditions  Operating temperature 0 °C to 60 °C Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Input bytes	2
Diagnostic bytes  Housing  Material PPE  Mounting Rail System 300  Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm  Net weight 220 g  Weight including accessories - Gross weight - Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Output bytes	0
Material PPE  Mounting Rail System 300  Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm  Net weight 220 g  Weight including accessories - Gross weight -  Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Parameter bytes	0
Material PPE  Mounting Rail System 300  Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm  Net weight 220 g  Weight including accessories - Gross weight -  Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Diagnostic bytes	0
Mounting Rail System 300  Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm  Net weight 220 g  Weight including accessories - Gross weight -  Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Housing	
Mechanical data  Dimensions (WxHxD) 40 mm x 125 mm x 120 mm  Net weight 220 g  Weight including accessories - Gross weight - Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Material	PPE
Dimensions (WxHxD)  40 mm x 125 mm x 120 mm  Net weight  220 g  Weight including accessories  - Gross weight  - Environmental conditions  Operating temperature  0 °C to 60 °C  Storage temperature  -25 °C to 70 °C  Certifications  UL certification  yes	Mounting	Rail System 300
Net weight  Weight including accessories  Gross weight  Environmental conditions  Operating temperature  O °C to 60 °C  Storage temperature  -25 °C to 70 °C  Certifications  UL certification  yes	Mechanical data	
Weight including accessories  Gross weight  Environmental conditions  Operating temperature  O °C to 60 °C  Storage temperature  -25 °C to 70 °C  Certifications  UL certification  yes	Dimensions (WxHxD)	40 mm x 125 mm x 120 mm
Gross weight -  Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Net weight	220 g
Environmental conditions  Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Weight including accessories	-
Operating temperature 0 °C to 60 °C  Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Gross weight	-
Storage temperature -25 °C to 70 °C  Certifications  UL certification yes	Environmental conditions	
Certifications UL certification yes	Operating temperature	0 °C to 60 °C
UL certification yes	Storage temperature	-25 °C to 70 °C
	Certifications	
KC certification yes	UL certification	yes
	KC certification	yes