
**User's
Manual**

**ProSafe-RS
ProSafe-RS Lite**

**ProSafe-RS
Hardware Document Guide**

**ProSafe-RS
ハードウェアドキュメントガイド**

IM 32P06S10-01Z1

Table List of User's Manuals 10—I/O Module

Product Model	Product Name	Document No. (*1)	Document Title
SAI143	Analog Input Module	For Release 3 IM 32Q06C10-31E For Release 4 IM 32P06C10-01EN	For Release 3 Safety Control Stations (Hardware) For Release 4 Hardware User's Guide
SAV144	Analog Input Module		
SAT145	TC/mV Input Module		
SAR145	RTD Input Module		
SAI533	Analog Output Module		
SDV144	Digital Input Module		
SDV531	Digital Output Module		
SDV541	Digital Output Module		
SDV521	Digital Output Module		
SDV526	Digital Output Module		
SDV53A	Digital Output Module		
SCB100	Wiring Check Adapter for Digital Input		
SCB110	Wiring Check Adapter for Digital Input		
SCCC01	Connector Cover for MIL Cable		
SCCC02	Connector Cover for MIL Cable		
ALR111	Serial Communication Module		
ALR121	Serial Communication Module		
ALE111	Ethernet Communication Module		
S2LP131	Fire and Gas Communication Module	For Release 4 IM 32P06C10-01EN	For Release 4 Hardware User's Guide
L1AI143	Analog Input Module		
L1AV144	Analog Input Module		
L1AT145	TC/mV Input Module		
L1AR145	RTD Input Module		
L1AI533	Analog Output Module		
L1DV144	Digital Input Module		
L1DV531	Digital Output Module		
L1DV541	Digital Output Module		
L1DV521	Digital Output Module		
L1DV526	Digital Output Module		
L1DV53A	Digital Output Module		
L1CCC01	Connector Cover for MIL Cable		
L1CCC02	Connector Cover for MIL Cable		

*1: The "EN" and "E" in the document number are the language code.

General Specifications

Terminal Boards/ Relay Boards (for ProSafe-RS)



GS 32Q06L20-31E

■ GENERAL

This GS describes the hardware specifications of the terminal boards used for the ProSafe-RS system.

■ STANDARD SPECIFICATIONS

● Terminal Board

19-inch Rack Mountable Type

Application	Model	Number of connection channels	Terminal	SIL	Connection module (*1)	Connection cable	Weight	Withstand voltage	Insulation resistance
For analog signals (single/dual-redundant configuration)	SEA4D	16 channels x 2	M4 screw	SIL3	SAI143	KS1	1.5 kg	500 V AC (for 1 minute) (*5)	100 MΩ minimum (500 V DC)
					SAV144	KS1			
					SAI533	KS1			
For digital signals (single/dual-redundant configuration)	SED2D	4 channels x 4	M4 screw	SIL3	SDV521	AKB651	2.3 kg	2000 V AC (for 1 minute) (*5)	100 MΩ minimum (500 V DC)
	SED3D	8 channels x 4	M4 screw	SIL3	SDV53A	AKB331 (*3)	2.0 kg	2000 V AC (for 1 minute) (*5)	
	SED4D	16 channels x 2 (*2)	M4 screw	SIL3	SDV144	AKB331	1.5 kg	500 V AC (for 1 minute) (*5)	
					SDV531-S	AKB331			
					SDV531-L	AKB331			
					SDV541	AKB331			
	SWD2D (*4)	4 channels x 4	M4 screw	SIL3	SDV526	AKB652	2.9 kg	1500 V AC (for 1 minute) (*5)	

Note: Connector covers must be mounted on connectors that do not have cables connected to them, to protect them from dust, and also to protect the connector pins.

*1: When connecting terminal boards with input/output modules, refer to "Field Device Connection (for FIO)" (GS 32Q06J10-31E).

*2: 8 channels x 2 for SDV531 connection

*3: Use AKB331 of style code S3 or later.

*4: Contact rating between ALM terminals when any fuse is blown

Meet all the following requirements.

Rated output voltage: 125 V AC or less, 125 V DC or less

Rated output current: 0.3 A or less

Rated power: 25 VA or less

*5: Between each signal terminal, and between all signal terminals and grounding terminal

DIN Rail Mount Type

Application	Model	Number of connection channels	Terminal	SIL	Connection module (*1)	Connection cable	Weight	Withstand voltage	Insulation resistance
For analog signals (single/ dual-redundant configuration)	SBA4D	16 channels x 1	Pressure clamp	SIL3	SAI143	KS1	0.2 kg	NA	NA
					SAV144	KS1			
					SAI533	KS1			
	S1BB4D (*2) (*3)	16 channels x 1	Pressure clamp	SIL3	SAI143	KS1	0.5 kg	2000 V AC (for 1 minute) (*4)	20 MΩ minimum (500 V DC)
	SBT4D	16 channels x 1	Pressure clamp	SIL3	SAT145	AKB331	0.3 kg	200 V AC (for 1 minute) (*5)	10 MΩ minimum (200 V DC)
SBR4D	16 channels x 1	Pressure clamp	SIL3	SAR145	AKB611	0.3 kg			
For digital signals (single/ dual-redundant configuration)	SBD2D (*2)	4 channels x 1	Pressure clamp	SIL3	SDV521	AKB651	0.3 kg	2000 V AC (for 1 minute) (*4)	10 MΩ minimum (500 V DC)
	SBD3D (*2)	8 channels x 1	Pressure clamp	SIL3	SDV531-L	AKB331 (*6), AKB651	0.3 kg	2000 V AC (for 1 minute) (*4)	
					SDV531-S	AKB331 (*6)			
					SDV53A	AKB331 (*6), AKB651			
	SBD4D (*2)	16 channels x 1	Pressure clamp	SIL3	SDV144	AKB331 (*6)	0.3 kg	2000 V AC (for 1 minute) (*4)	
					SDV541	AKB331 (*6), AKB651			

Note: Connector covers must be mounted on connectors that do not have cables connected to them, to protect them from dust, and also to protect the connector pins.

- *1: When connecting terminal boards with input/output modules, refer to "Field Device Connection (for FIO)" (GS 32Q06J10-31E).
- *2: The READY contact rating shows below.
125 V AC or less and 0.3 A or less
60 V DC or less and 1 A or less
- *3: Rated power supply current for field devices is 0.35 A per channel. Inrush current must be 0.7 A or less for the first 2 seconds.
- *4: Between power terminal and READY terminal
- *5: Between channels
- *6: Use AKB331 of style code S3 or later.

● Relay Board

19-inch Rack Mountable Type

Item	Specifications	
Model	SRM53D	SRM54D
Type of input/output and number of I/O channels	Contact output/8 channels x 2 (dry contact outputs)	Contact output/16 channels x 1 (dry contact outputs)
Terminals	M4 screws, 16 poles x 2 (outputs) M4 screws, 2 poles x 1 (power)	
SIL	SIL2 (*1)	SIL2 (*1)
Connection module	SDV531, SDV144 (read-back) (*2) Dual-redundant possible	SDV541, SDV144 (read-back) (*2) Dual-redundant possible
External connection	Dedicated signal cable AKB331	
Withstanding voltage	Between field device terminals and case: 2 kV for 1 minute Between 24 V power terminal and case: 500 V for 1 minute Between 24 V power terminal and field device terminals: 2.5 kV for 1 minute	
Insulation resistance	10 MΩ minimum (500 V DC)	
External supply voltage/current	24 V DC +5 %, -3.1 % (*3) Up to 1500 mA (24 V DC)	24 V DC +5 %, -1.2 % (*3) Up to 1500 mA (24 V DC)
Rated output voltage/current (current/channel)	250 V AC / 2 A 125 V DC / 0.4 A 30 V DC / 2 A	
Ambient temperature (during operation)	-20 to 70 °C	
Ambient humidity (both during operation and in transit/storage conditions)	5 to 85 % RH	
Weight	2.7 kg	

- *1: SRM53D, SRM54D complies with SIL2 when used as DTS (De-energized-To-Safe) outputs under “low demand mode of operation” (the frequency of demands is no greater than one per year), which is defined in the IEC 61508.
- *2: When connecting relay boards with output modules, refer to “Field Device Connection (for FIO)” (GS 32Q06J10-31E).
- *3: This is the tolerance of the external supply voltage when the signal cable of 10 m (AKB331-M010) is used. The voltage loss of the external power supply varies with the length of the signal cable. For details, refer to “ProSafe-RS Outline of I/O Modules (for FIO)” (GS 32Q06K20-31E). Moreover, the maximum length of the signal cable (AKB331) used for connecting to the relay board is 20 m.

DIN Rail Mount Type

Item	Specifications
Model	SBM54D (*1)
Type of input/output and number of I/O channels	Contact output/16 channels x 1 (dry contact outputs)
Terminals	Pressure clamp
SIL	SIL2 (*2)
Connection module (*3)	SDV541 (*4) Dual-redundant possible
External connection	Dedicated signal cable AKB331
Withstanding voltage	Between field device terminal and case: 2 kV for 1 minute Between 24 V power terminal and case: 2 kV for 1 minute Between 24 V power terminal and field device terminals: 2.5 kV for 1 minute Between READY terminal and case: 2 kV for 1 minute Between READY terminal and 24 V power terminal: 2 kV for 1 minute Between READY terminal and field device terminals: 2.5 kV for 1 minute
Insulation resistance	10 MΩ minimum (500 V DC)
External supply voltage/current	24 V DC +20 %, -10% Up to 500 mA (24 V DC)
Rated output voltage/current (current/channel)	30 V DC/4 A 240 V AC/4 A
Ambient temperature (during operation)	-20 to 70 °C
Ambient humidity (both during operation and in transit/storage conditions)	5 to 85 % RH
Weight	0.6 kg

- *1: Dual power supply is available.
In case of power supply is normal operation, LED keeps ON. In the other case LED turns OFF.
The READY contact outputs the condition which power supply and all fuses is normal operation.
The READY contact rating shows below.
125 V AC or less and 0.3 A or less
60 V DC or less and 1 A or less
- *2: SBM54D style code S3 or later complies with SIL2 when used as DTS (De-energized-To-Safe) outputs under "low demand mode of operation" (the frequency of demands is no greater than one per year), which is defined in the IEC 61508.
- *3: When connecting relay boards with output modules, refer to "Field Device Connection (for FIO)" (GS 32Q06J10-31E).
- *4: The style code and firmware revision numbers of SDV541 must be used following revision or later.
SDV541 S3, F1: 1 F2: 1