

General Specifications

ProSafe-RS/ProSafe-RS Lite Terminal Boards/Relay Boards

GS 32Q06L20-31E

■ GENERAL

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

■ STANDARD SPECIFICATIONS

● Terminal Board

19-inch Rack Mountable Type

Application	Model	Number of connection channels	Terminal	SIL (*1)	Connection module (*2)	Connection cable	Weight	Withstand voltage	Insulation resistance
For analog signals (single/dual-redundant configuration)	SEA4D	16 channels x 2	M4 screw	SIL3	SAI143/ L1AI143	KS1	1.5 kg	500 V AC (for 1 minute) (*6)	100 MΩ minimum (500 V DC)
					SAV144/ L1AV144	KS1			
					SAI533/ L1AI533	KS1			
For digital signals (single/dual-redundant configuration)	SED2D	4 channels x 4	M4 screw	SIL3	SDV521/ L1DV521	AKB651	2.3 kg	2000 V AC (for 1 minute) (*6)	100 MΩ minimum (500 V DC)
	SED3D	8 channels x 4	M4 screw	SIL3	SDV53A/ L1DV53A	AKB331 (*4)	2.0 kg	2000 V AC (for 1 minute) (*6)	
	SED4D	16 channels x 2 (*3)	M4 screw	SIL3	SDV144/ L1DV144	AKB331	1.5 kg	500 V AC (for 1 minute) (*6)	
					SDV531-S	AKB331			
					SDV531-L/ L1DV531-L	AKB331			
					SDV541/ L1DV541	AKB331			
	SWD2D (*5)	4 channels x 4	M4 screw	SIL3	SDV526/ L1DV526	AKB652	2.9 kg	1500 V AC (for 1 minute) (*6)	

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: SIL (Safety Integrity level) of the terminal board alone.
- *2: When connecting terminal boards with input/output modules, refer to following GS.
 “ProSafe-RS Field Device Connection (for FIO)” (GS 32Q06J10-31E)
 “ProSafe-RS Lite Field Device Connection” (GS 32P56J10-01EN)
- *3: 8 channels x 2 for SDV531/L1DV531 connection
- *4: Use AKB331 of style code S3 or later.
- *5: 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
- *6: Between each signal terminal, and between all signal terminals and grounding terminal

DIN Rail Mount Type

Application	Model	Number of connection channels	Terminal	SIL (*1)	Connection module (*2)	Connection cable	Weight	Withstand voltage	Insulation resistance
For analog signals (single/dual-redundant configuration)	SBA4D	16 channels x 1	Pressure clamp	SIL3	SAI143/L1AI143	KS1	0.2 kg	NA	NA
					SAV144/L1AV144	KS1			
					SAI533/L1AI533	KS1			
	S1BB4D (*3) (*4)	16 channels x 1	Pressure clamp	SIL3	SAI143/L1AI143	KS1	0.5 kg	2000 V AC (for 1 minute) (*5)	20 MΩ minimum (500 V DC)
	SBT4D	16 channels x 1	Pressure clamp	SIL3	SAT145/L1AT145	AKB331	0.3 kg	200 V AC (for 1 minute) (*6)	10 MΩ minimum (200 V DC)
SBR4D	16 channels x 1	Pressure clamp	SIL3	SAR145/L1AR145	AKB611	0.3 kg			
For digital signals (single/dual-redundant configuration)	SBD2D (*3)	4 channels x 1	Pressure clamp	SIL3	SDV521/L1DV521	AKB651	0.3 kg	2000 V AC (for 1 minute) (*5)	10 MΩ minimum (500 V DC)
	SBD3D (*3)	8 channels x 1	Pressure clamp	SIL3	SDV531-L/L1DV531-L	AKB331 (*7), AKB651	0.3 kg	2000 V AC (for 1 minute) (*5)	
					SDV531-S	AKB331 (*7)			
					SDV53A/L1DV53A	AKB331 (*7), AKB651			
	SBD4D (*3)	16 channels x 1	Pressure clamp	SIL3	SDV144/L1DV144	AKB331 (*7)	0.3 kg	2000 V AC (for 1 minute) (*5)	
SDV541/L1DV541					AKB331 (*7), 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: SIL (Safety Integrity level) of the terminal board alone.

*2: When connecting terminal boards with input/output modules, refer to following GS.

“ProSafe-RS Field Device Connection (for FIO)” (GS 32Q06J10-31E)

“ProSafe-RS Lite Field Device Connection” (GS 32P56J10-01EN)

*3: 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

*4: 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.

*5: Between power terminal and READY terminal

*6: Between channels

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

● Relay Board

19-inch Rack Mountable Type

Item	Specifications	
Model	SRM53D	SRM54D
Safety integrity level	SIL 2 (*1)	SIL 2 (*1)
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)	
Connection module	SDV531/L1DV531, SDV144/L1DV144 (read-back) (*2) Dual-redundant possible	SDV541/L1DV541, SDV144/L1DV144 (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 following GS.

"ProSafe-RS Field Device Connection (for FIO)" (GS 32Q06J10-31E)

"ProSafe-RS Lite Field Device Connection" (GS 32P56J10-01EN)

*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 following GS.

"ProSafe-RS Outline of I/O Modules (for FIO)" (GS 32Q06K20-31E)

"ProSafe-RS Lite Outline of I/O Modules" (GS 32P56K20-01EN)

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)
Safety integrity level	SIL 2 (*2)
Type of input/output and number of I/O channels	Contact output/16 channels x 1 (dry contact outputs)
Terminals	Pressure clamp
Connection module (*3)	SDV541/L1DV541 (*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

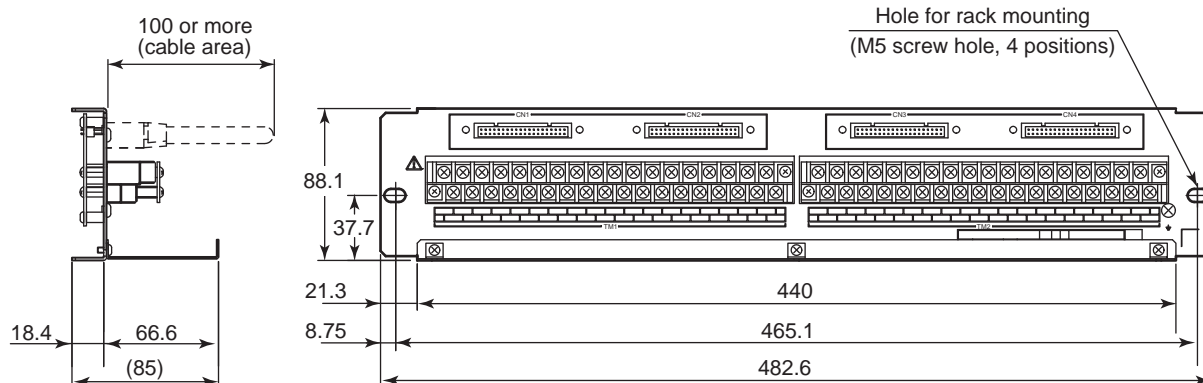
- *1: Dual power supply is available.
In case of power supply is normal operation, LED keeps ON. In the other case LED turns OFF.
The READY contact outputs the condition which power supply and all fuses is normal operation.
The READY contact rating shows below.
125 V AC or less and 0.3 A or less
60 V 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 following GS.
“ProSafe-RS Field Device Connection (for FIO)” (GS 32Q06J10-31E)
“ProSafe-RS Lite Field Device Connection” (GS 32P56J10-01EN)
- *4: The style code and firmware revision numbers of SDV541 must be used following revision or later.
SDV541 S3, F1: 1 F2: 1

EXTERNAL DIMENSIONS

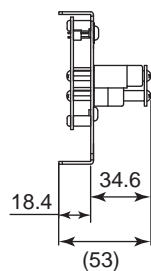
● Terminal Boards

SEA4D

Unit: mm



When option code is "/NTRY"



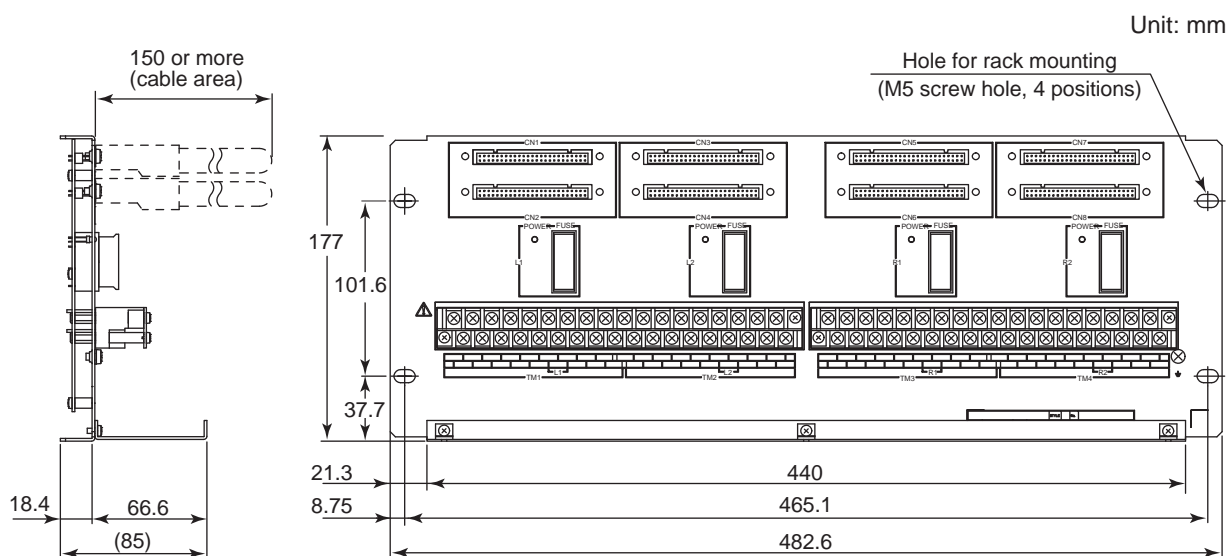
F01E.ai

Nominal tolerance:

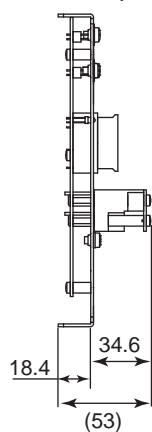
Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SED2D



When option code is "/NTRY"



F07E.ai

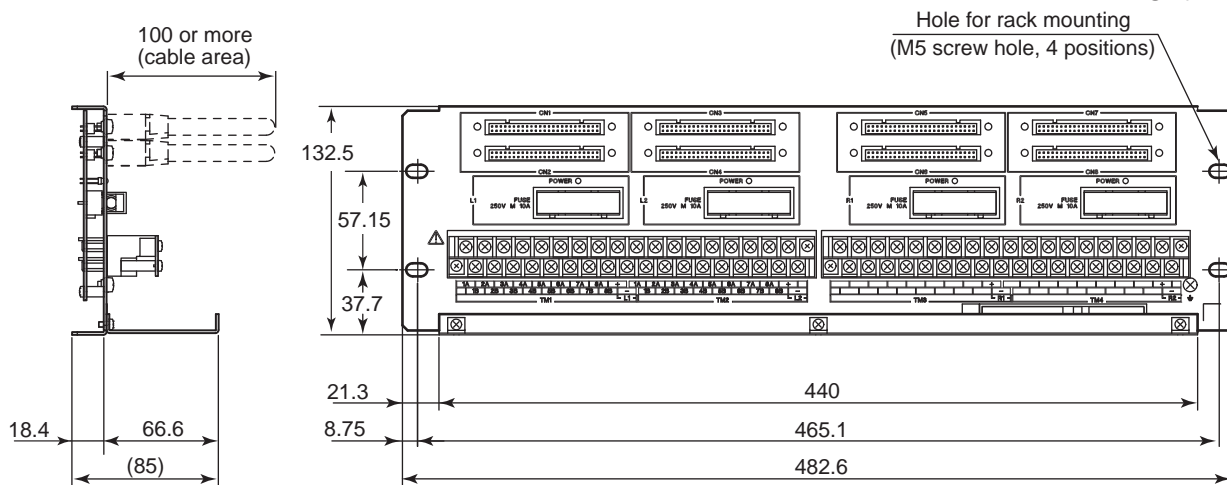
Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

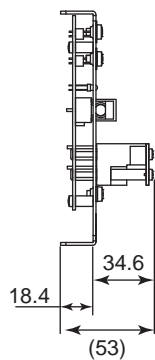
The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SED3D

Unit: mm



When option code is "/NTRY"



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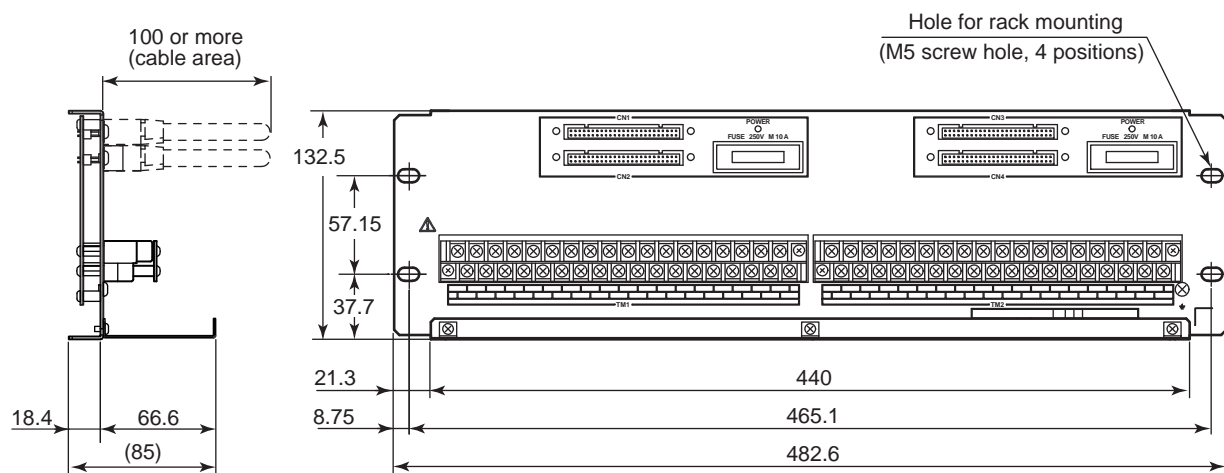
Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

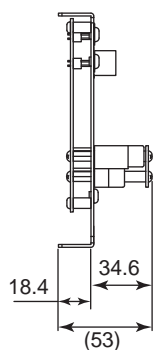
The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SED4D

Unit: mm



When option code is "/NTRY"



F02E.ai

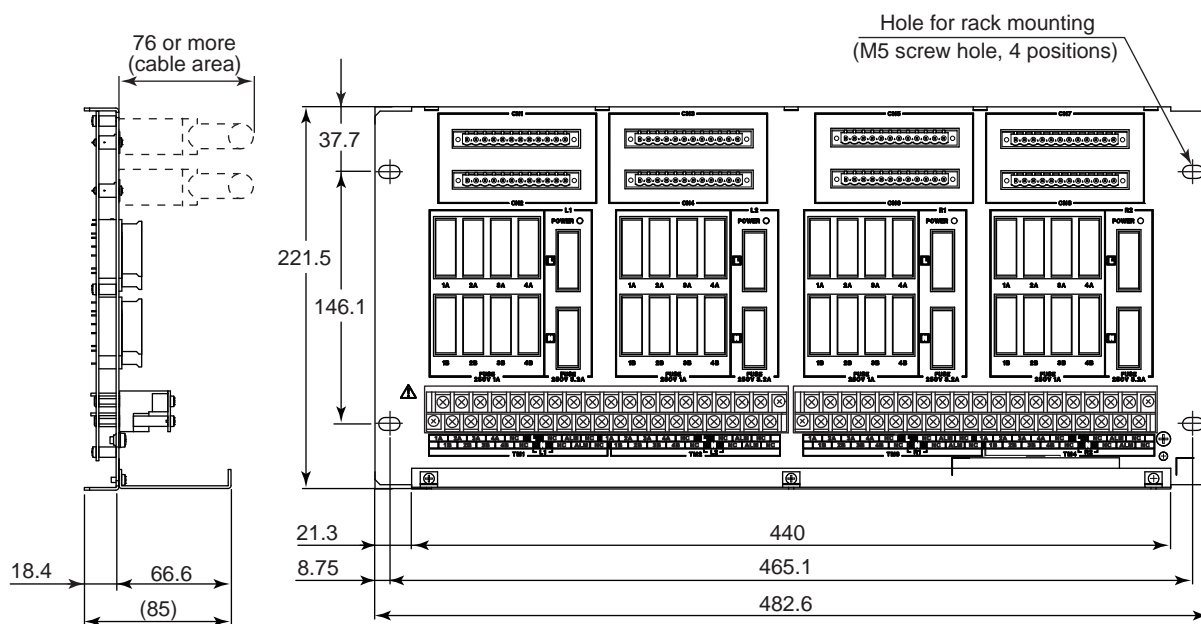
Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

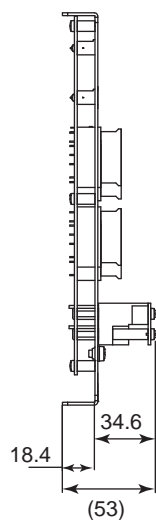
The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SWD2D

Unit: mm



When option code is "/NTRY"

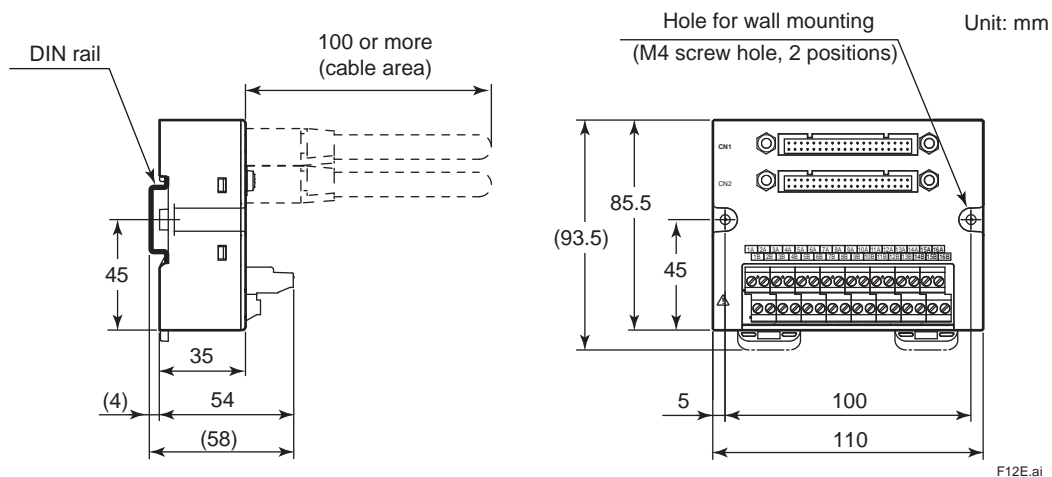
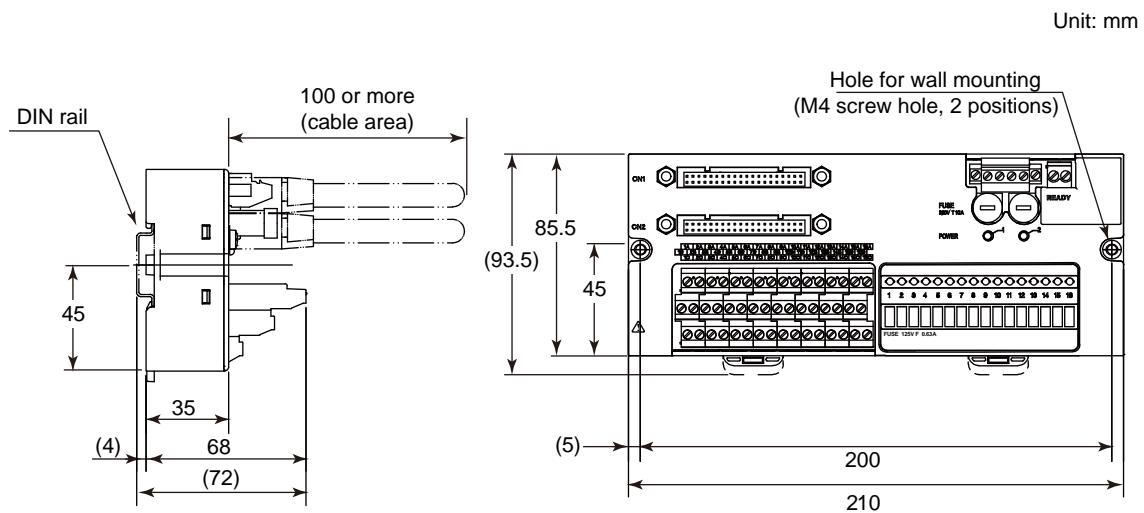
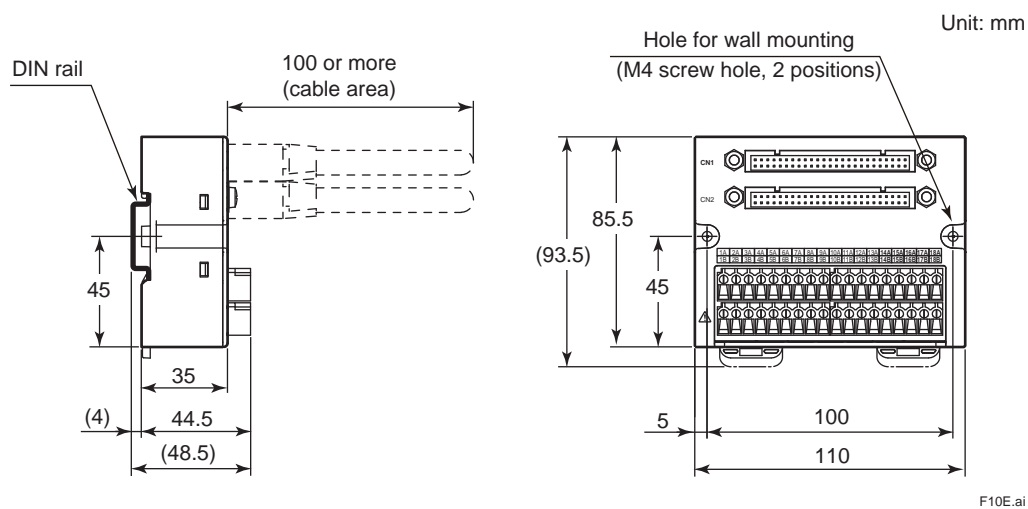


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Nominal tolerance:

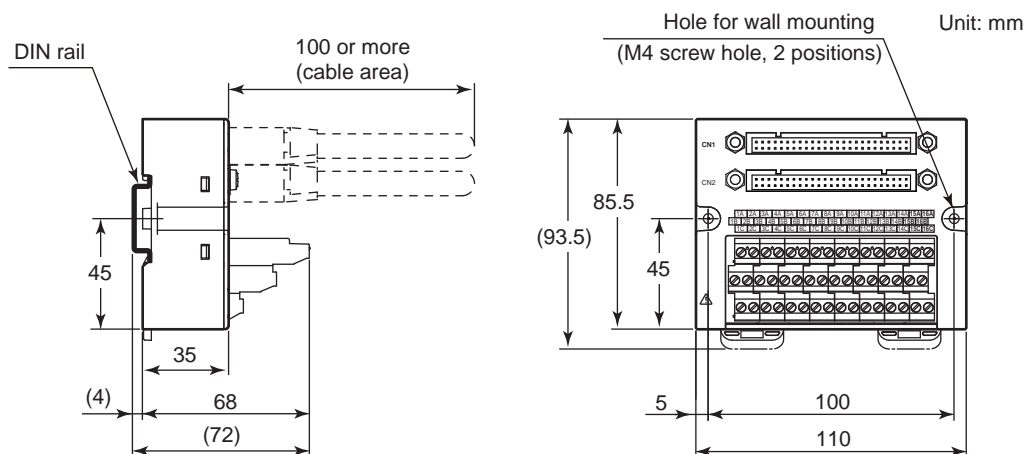
Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

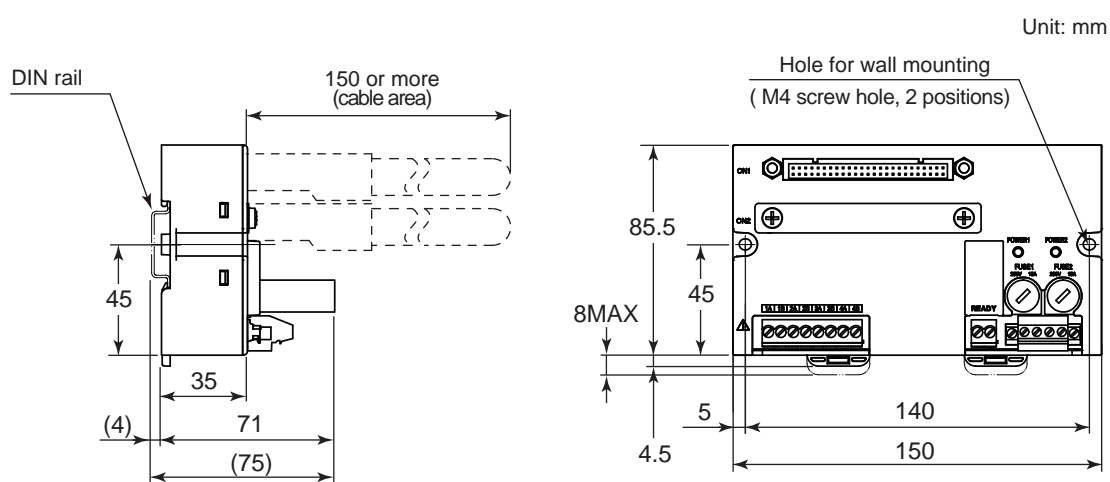
SBA4D**S1BB4D****SBT4D****Nominal tolerance:**

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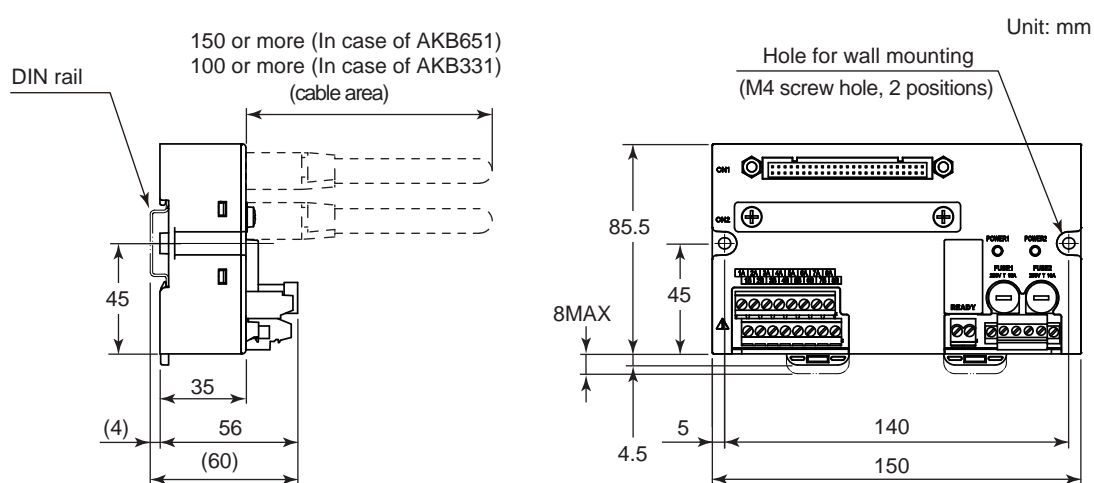
The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SBR4D

F11E.ai

SBD2D

F15E.ai

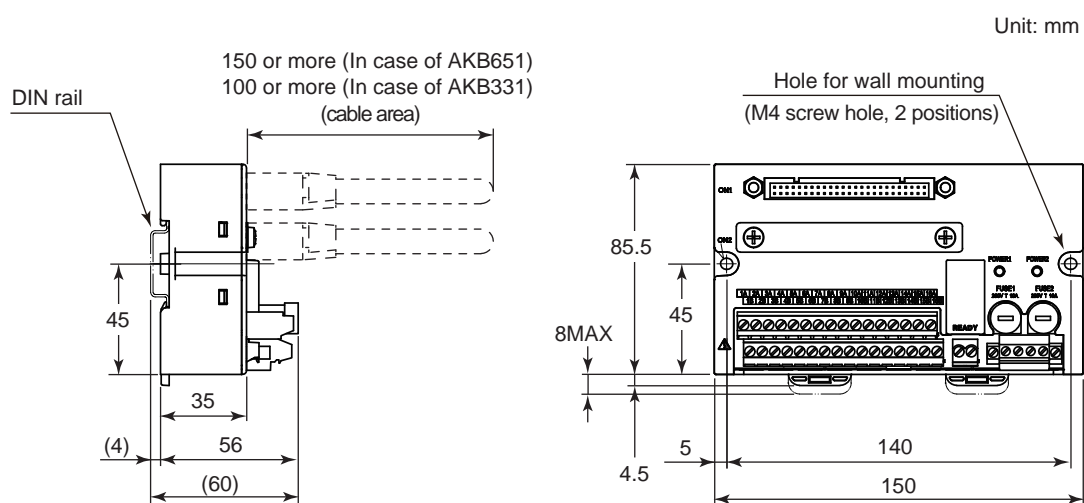
SBD3D

F14.ai

Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SBD4D

F13.ai

Nominal tolerance:

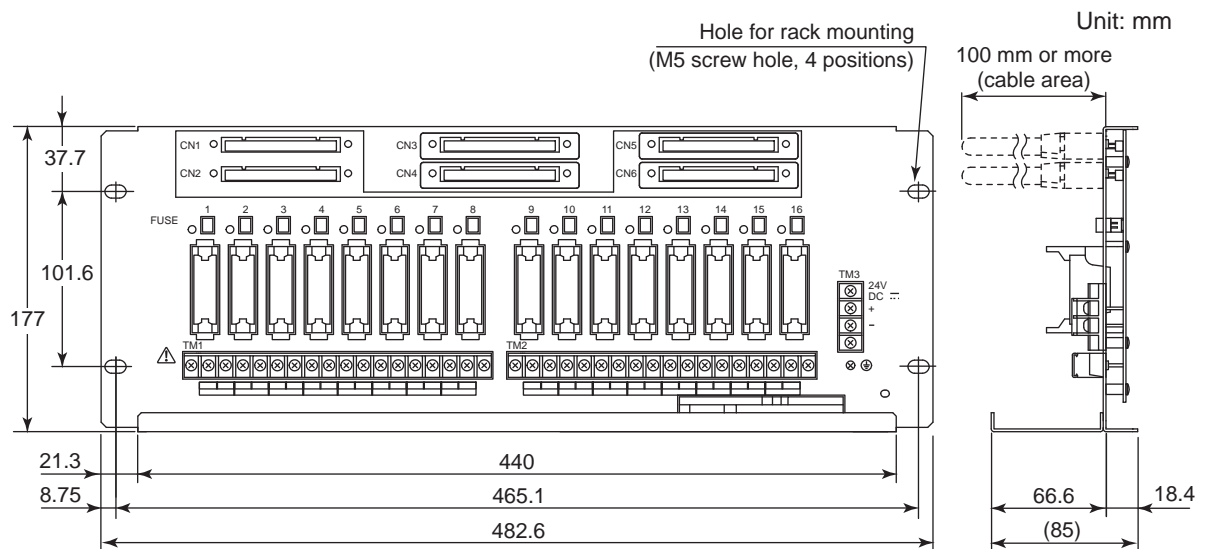
Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

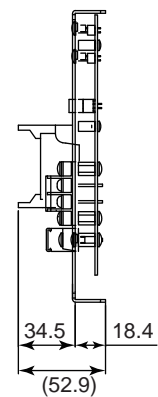
● Relay Board

SRM53D

Other than /BR4



When option code is "/NTRY"



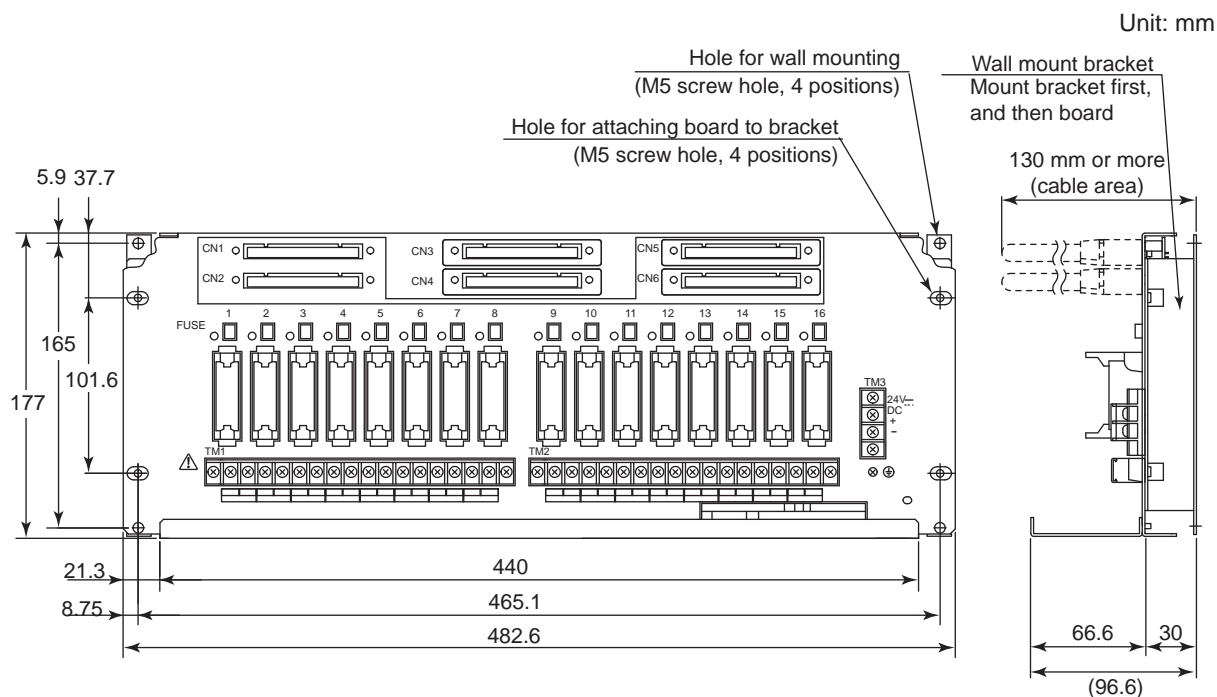
F03E.ai

Nominal tolerance:

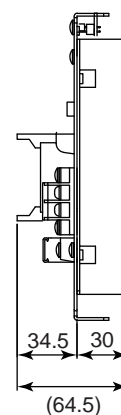
Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

For /BR4



When option code is "/NTRY"

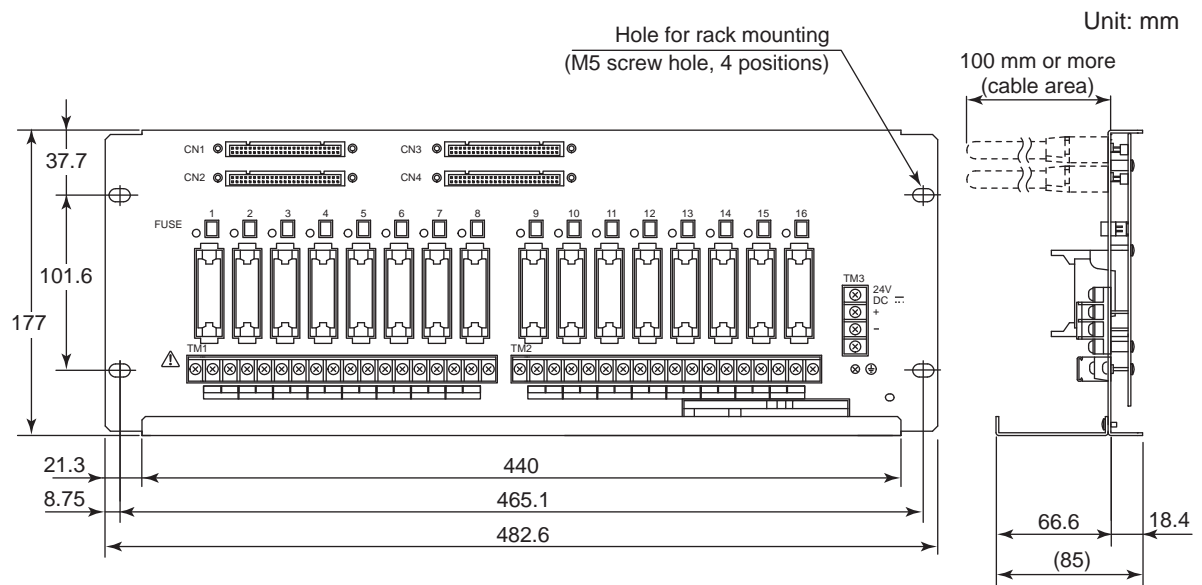


F04E.ai

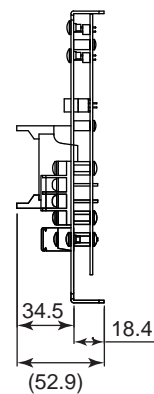
Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SRM54D**Other than /BR4**

When option code is "/NTRY"



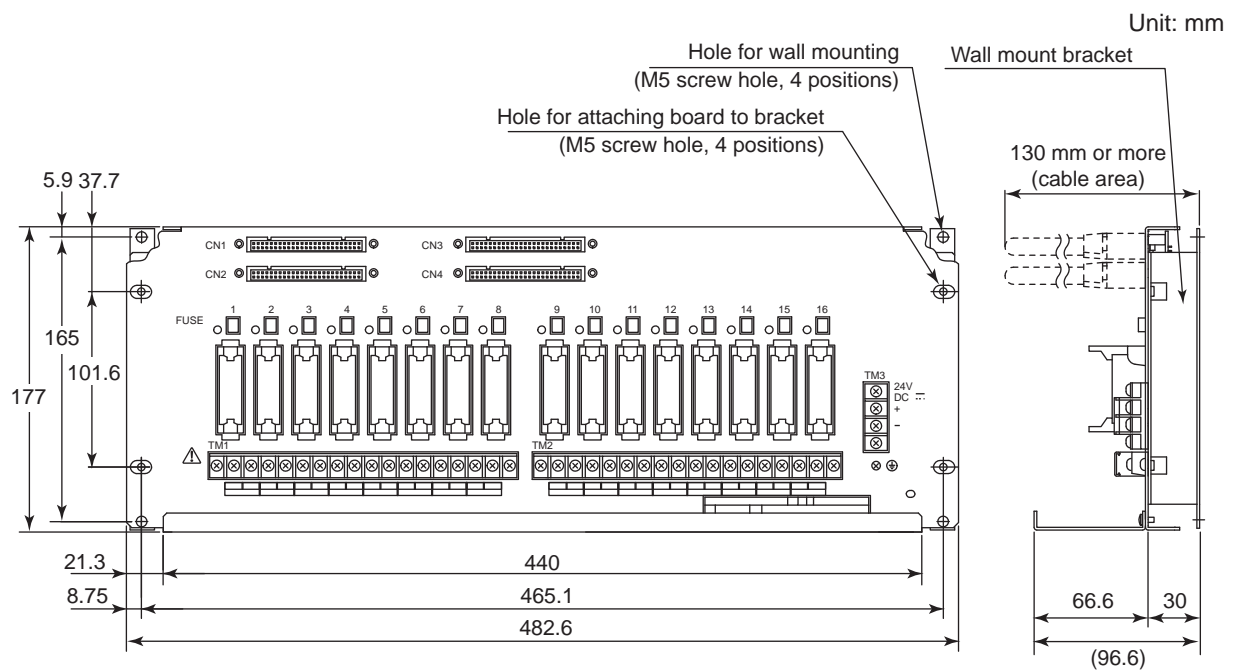
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Nominal tolerance:

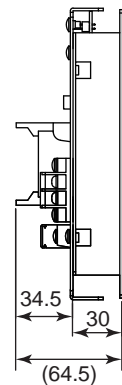
Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

For /BR4



When option code is "/NTRY"



F06E.ai

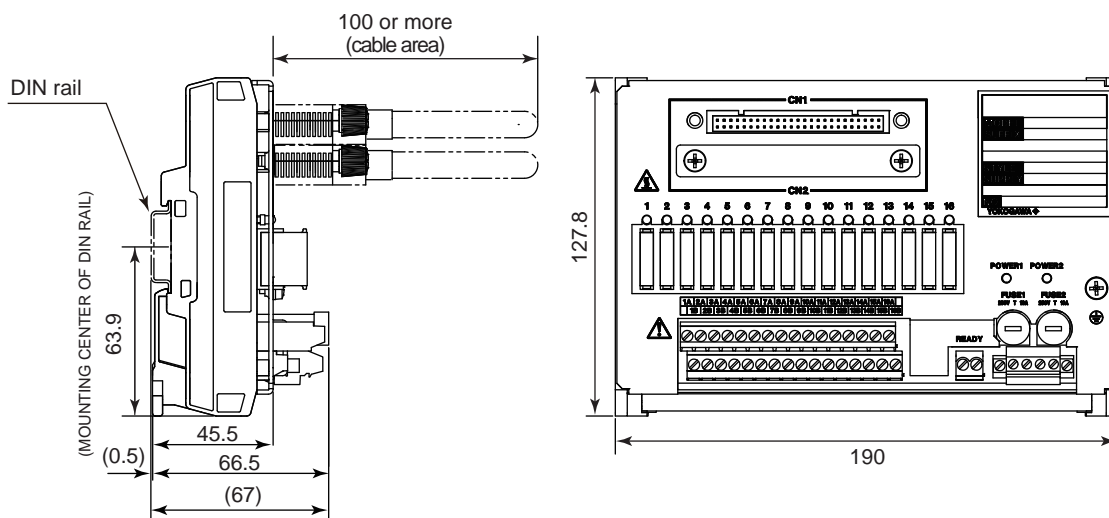
Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

SBM54D

Unit: mm



F16E.ai

Nominal tolerance:

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

■ MODEL AND SUFFIX CODES

Analog terminal board for single/dual-redundant configuration

		Description
Model	SEA4D	Analog Terminal Board (Single and Dual-Redundant, 16 channels x 2)
Suffix Codes	-0	Without surge absorber
	-1	With surge absorber
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection
Option Code	/NTRY	Without cable tray

		Description
Model	SBA4D	Terminal Board for Analog: DIN rail mount type (Single and Dual-redundant, 16 channels x 1)
Suffix Codes	-0	Always 0
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

		Description
Model	S1BB4D	Terminal Board for Analog Input, 3-wire : DIN rail mount type
Suffix Codes	-0	Always 0
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

		Description
Model	SBT4D	Terminal Board for TC/mV: DIN rail mount type (Single and Dual-redundant, 16 channels x 1)
Suffix Codes	-0	Without surge absorber
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

		Description
Model	SBR4D	Terminal Board for RTD Input: DIN rail mount type (Single and Dual-redundant, 16 channels x 1)
Suffix Codes	-0	Without surge absorber
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

Digital terminal board for single/dual-redundant configuration

		Description
Model	SED2D	Digital Terminal Board (Single and Dual-Redundant, 4 channels x 4)
Suffix Codes	-0	Without surge absorber
	-1	With surge absorber
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection
Option Code	/NTRY	Without cable tray

		Description
Model	SED3D	Digital Terminal Board (Single and Dual-Redundant, 8 channels x 4)
Suffix Codes	-A	For 48 V DC output, without surge absorber
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection
Option Code	/NTRY	Without cable tray

		Description
Model	SED4D	Digital Terminal Board (Single and Dual-Redundant, 16 channels x 2)
Suffix Codes	-0	Without surge absorber
	-1	With surge absorber
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection
Option Code	/NTRY	Without cable tray

		Description
Model	SWD2D	Digital Terminal Board (Single and Dual-Redundant, 100 to 120 V AC, 4 channels x 4)
Suffix Codes	-2	For 100 to 120 V AC output
	1	With ISA Standard G3
Option Code	/NTRY	Without cable tray

		Description
Model	SBD2D	Terminal Board for Digital Output: DIN rail mount type (Single and Dual-redundant, 4 channels x 1, for SDV521/L1DV521)
Suffix Codes	-0	Always 0
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

		Description
Model	SBD3D	Terminal Board for Digital Output: DIN rail mount type (Single and Dual-redundant, 8 channels x 1, for SDV53□/L1DV53□)
Suffix Codes	-0	24 V DC (for SDV531/L1DV531)
	-A	48 V DC (for SDV53A/L1DV53A)
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

		Description
Model	SBD4D	Terminal Board for Digital: DIN rail mount type (Single and Dual-redundant, 16 channels x 1, for SDV144/L1DV144 and SDV541/L1DV541)
Suffix Codes	-0	Always 0
	6	With ISA Standard G3 and no explosion protection
	F	With ISA Standard G3 and explosion protection

Single or dual-redundant relay board with digital output

		Description
Model	SRM53D	Relay Board (8 × 2 Dry Contact Output)
Suffix Codes	-0	Always 0
	0	19-inch Rack mountable
	0	Basic
Option Codes	/BR4	Wall-mount bracket
	/NTRY	Without cable tray

		Description
Model	SRM54D	Relay Board (16 × 1 Dry Contact Output)
Suffix Codes	-0	Always 0
	0	19-inch Rack mountable
	0	Basic
Option Codes	/BR4	Wall-mount bracket
	/NTRY	Without cable tray

		Description
Model	SBM54D	Relay Board for Digital Output: DIN rail mount type (Single and Dual-redundant, 16 channels x 1, for SDV541/L1DV541)
Suffix Codes	-0	Always 0
	0	Always 0
	0	Standard type

■ CONFORMITY STANDARDS

Refer to “Standards Compliant Models (GS 32P01B60-01EN).”

■ ORDERING INFORMATION

Specify the model, suffix code(s), and option code(s).

For selecting the right products for explosion protection, please refer to TI 32S01J30-01E without fail.

■ TRADEMARK ACKNOWLEDGMENT

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