MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

SDV541-S63/PRP S3

DIGITAL CURRENT-SOURCE OUTPUT MODULE

Used with the applicable ProSafe-RS FIO configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Yokogawa SDV541-S63-PRP S3

General Specifications

Digital I/O Modules (for FIO)

ProSafe-RS

GS 32Q06K40-31E

■ GENERAL

This GS provides the hardware specifications of the digital I/O modules that can be installed in the Safety Node Unit and Safety Control Units.

■ STANDARD SPECIFICATIONS

● Input Module

Input modules accept contact signals from the field. SDV144 can be made dual-redundant.

Item	Specifications
Model	SDV144
Number of inputs	16-channel, module isolation (*3)
Input signal	No-voltage contact ON: 1 kΩ maximum OFF: 100 kΩ minimum
Input current	6 mA ± 20 % (External power supply, 24 V DC at 0 Ω input)
Contact rating	24 V DC +20 % / -10 % (*4), 10 mA or greater
External power supply	24 V DC +20 % / -10 % (*3) (*4) Current capacity: 200 mA
Instantaneous maximum permissible input voltage	30.0 V DC
Input response time	40 ms maximum
Withstand voltage (*1) (*2)	2 kV AC between input signal and system for 1 minute, 16-input line collectively connected (*5)
Current consumption	290 mA maximum (5 V DC) 140 mA maximum (24 V DC)
Weight	Approx. 0.36 kg (For pressure clamp terminal block or MIL cable) Approx. 0.41 kg (With signal cable interface adapter)
External connection	Pressure clamp terminal MIL cable Dedicated signal cable (AKB331)

*1: These voltages show the case using the field power supply floating. When the field power supply is grounded, the system (functional) ground is connected to the field ground, which is not isolated. For the higher noise immunity, floating the field power supply is recommended.
*2: When the withstanding voltage of the field power supply between the secondary side and the ground is lower than the value shown in the table above, these voltages are adopted as the withstanding voltage of the field power supply.
*3: Number of input channels which a user can use and external power supply are restricted in case of SDV144-S□C. Refer to “ProSafe-RS Outline of I/O Modules (for FIO)” (GS 32P06K60-01EN).
*4: The contact rating and the external power supply of SDV144 style code S1, S2 and S3 are 24 V DC ± 5 %.
*5: When connecting SDV144 and SED4D terminal board using the dedicated signal cable, the withstand voltage is 500 V AC (between input signal lines and system). If MIL connector cables are used, the withstand voltage depends on their cable’s electrical specifications.

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GS 32Q06K40-31E
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● Output Module

Output modules output on/off status signals to field equipment.

The output modules can be made dual-redundant respectively. They incorporate field wiring diagnostic functions, so they require no wiring diagnosis elements.

Item	Specifications
Model	SDV531
Number of outputs	8-channel, module isolation (*3)
Output voltage	24 V DC
Output voltage drop	1 V maximum
External power supply rating	24 V DC, 5 A minimum
External power supply	24 V DC +20 %/–10 % (*4) Current capacity: 5 A
Maximum leak current at output off status	1.6 mA
Output format	Current source
Maximum load current	0.6 A/output line (4.8 A in total output lines) (*3) (*5)
Minimum load current	35 mA
Load resistance range	40 to 685 Ω (*6)
Output response time	30 ms maximum
Withstand voltage (*1) (*2)	2 kV AC between output signal lines and system for 1 minute, 8-point input lines collectively connected (negative lines) (*7)
Current consumption	280 mA maximum (5 V DC) 140 mA maximum (24 V DC)
Weight	Approx. 0.28 kg (For pressure clamp terminal block or MIL cable) Approx. 0.34 kg (With dedicated signal cable interface adapter)
External connection	Pressure clamp terminal MIL cable Dedicated signal cable (AKB331, AKB651 (*8))

*1: These voltages show the case using the field power supply floating. When the field power supply is grounded, the system (functional) ground is connected to the field ground, which is not isolated. For the higher noise immunity, floating the field power supply is recommended.

*2: When the withstanding voltage of the field power supply between the secondary side and the ground is lower than the value shown in the table above, these voltages are adopted as the withstanding voltage of the field power supply.

*3: Number of output channels which a user can use and maximum load current are restricted in case of SDV531-L□C. Refer to “ProSafe-RS Outline of I/O Modules (for FIO)” (GS 32P06K60-01EN).

*4: External power supply of SDV531-S style code S1 and S2 is 24 V DC ± 5%.

*5: Do not exceed this value, including the case of inrush/variation of the load current.

*6: Resistance value of the load for both ON and OFF state, including the field wiring resistance.

*7: When connecting SDV531 and SED4D terminal board using AKB331 dedicated signal cable, the withstand voltage is 500 V AC (between output signal lines and system). If MIL connector cables are used, the withstand voltage depends on their cable’s electrical specifications.

*8: AKB651 can be used for connection with SDV531-L only.

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Item	Specifications
Model	SDV541
Number of outputs	16-channel, module isolation (*3)
Output voltage	24 V DC
Output voltage drop	1 V maximum
External power supply rating	24 V DC, 3.4 A minimum
External power supply	24 V DC + 20 % / -10 % (*4) Current capacity: 3.4 A
Maximum leak current at output off status	1.6 mA
Output format	Current source
Maximum load current	0.2 A/output line (3.2 A in total output line) (*3) (*5)
Minimum load current	35 mA
Load resistance range	120 to 685 Ω (*6)
Output response time	30 ms maximum
Withstand voltage (*1) (*2)	2 kV AC between output signal lines and system for 1 minute, 16-point input lines collectively connected (negative lines) (*7)
Current consumption	300 mA maximum (5 V DC) 150 mA maximum (24 V DC)
Weight	Approx. 0.29 kg (For pressure clamp terminal block or MIL cable) Approx. 0.31 kg (With dedicated signal cable interface adapter)
External connection	Pressure clamp terminal MIL cable Dedicated signal cable (AKB331, AKB651)

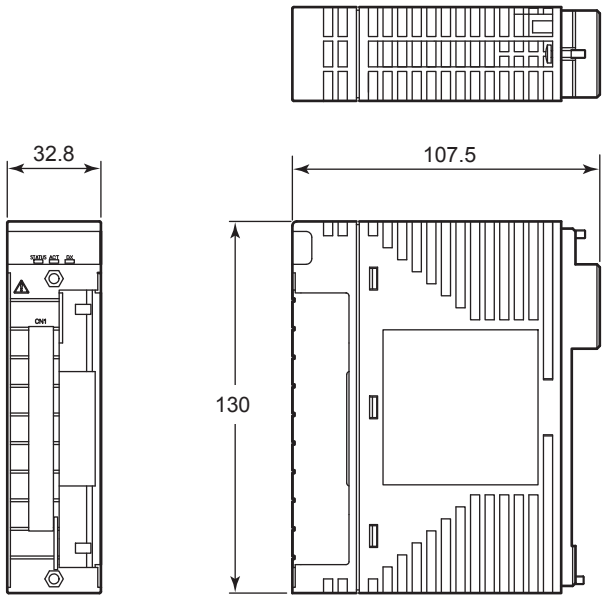
*1: These voltages show the case using the field power supply floating. When the field power supply is grounded, the system (functional) ground is connected to the field ground, which is not isolated. For the higher noise immunity, floating the field power supply is recommended.
*2: When the withstanding voltage of the field power supply between the secondary side and the ground is lower than the value shown in the table above, these voltages are adopted as the withstanding voltage of the field power supply.
*3: Number of output channels which a user can use and maximum load current are restricted in case of SDV541-S□C. Refer to “ProSafe-RS Outline of I/O Modules (for FIO)” (GS 32P06K60-01EN).
*4: External power supply of SDV541 style code S1 is 24 V DC ± 5%.
*5: Do not exceed this value, including the case of inrush/variation of the load current.
*6: Resistance value of the load for both ON and OFF state, including the field wiring resistance.
*7: When connecting SDV541 and SED4D terminal board using AKB331 dedicated signal cable, the withstand voltage is 500 V AC (between output signal lines and system). If MIL connector cables are used, the withstand voltage depends on their cable’s electrical specifications.

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● SDV531 and SDV541 Digital Output Module

For pressure clamp and MIL cable

Unit: mm

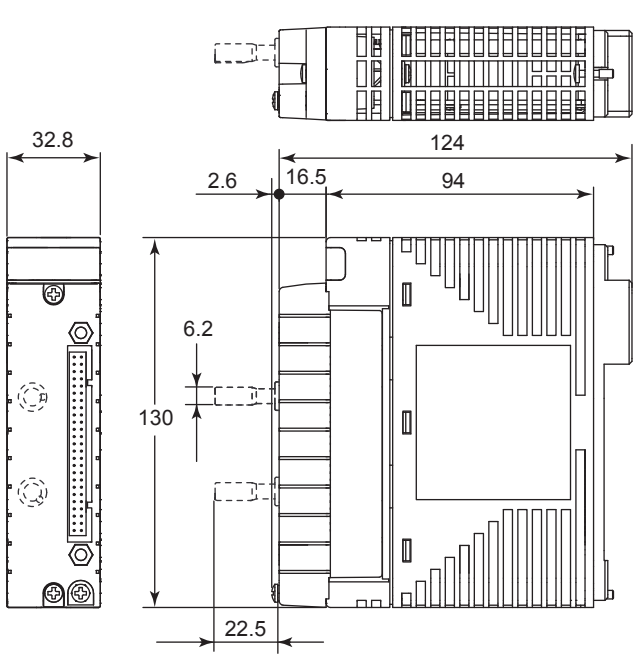


Nominal Tolerances:

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.
When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

With signal cable interface adapter

Unit: mm



Nominal Tolerances:

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.
When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

Note: Dash line expresses prevention pin of false insertion. This pin is added if option code /PRP is specified

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		Description
Model	SDV541	Digital Output Module (16-channel, 24 V DC, module isolation)
Suffix Codes	-S	Standard type
	5	For pressure clamp terminal block or MIL cable with no explosion protection
	6	With signal cable interface adapter and no explosion protection (*1)
	E	For pressure clamp terminal block or MIL cable with explosion protection
	F	With signal cable interface adapter and explosion protection (*1)
	3	With ISA Standard G3 and temperature (-20 to 70 °C)
	C	With ISA Standard G3 and high-density installation (-20 to 70 ºC)
Option Codes	/B4S00	With pressure clamp terminal block for digital output (without surge absorber) [Model: STB4S-00]
	/B4S10	With pressure clamp terminal block for digital output (with surge absorber) [Model: STB4S-10]
	/B4D00	With dual-redundant pressure clamp terminal block for digital output (without surge absorber) (*2) [Model: STB4D-00]
	/B4D10	With dual-redundant pressure clamp terminal block for digital output (with surge absorber) (*2) [Model: STB4D-10]
	/PRP	With prevention pin of false insertion (*3)
	/CCC01	With connector cover for MIL cable (for flat ribbon cable) [Model: SCCC01]
	/CCC02	With connector cover for MIL cable (for discrete wire cable) [Model: SCCC02]

*1: When SDV541-S6☐ or -SF☐ is selected, you cannot choose the option code for a pressure clamp terminal block and MIL cable connector.
*2: When this module is used in dual-redundant configuration, order an additional module with the same specification but without option codes.
*3: When SDV541-S6☐ or -SF☐ is selected, you can choose the option code for prevention pin of false insertion.
A mechanism to prevent wrong type I/O module insertion is supported with signal cable. The signal cable used with this I/O module must have option code /SDV541 or /DV541.

		Description
Model	SDV521	Digital Output Module (4-channel, 24 V DC/2 A, module isolation)
Suffix Codes	-S	Standard type
	6	With signal cable interface adapter and no explosion protection
	F	With signal cable interface adapter and explosion protection
	3	With ISA Standard G3 and temperature (-20 to 70 °C)
	C	With ISA Standard G3 and high-density installation (-20 to 70 ºC)
Option Codes	/PRP	With prevention pin of false insertion (*1)

*1: The signal cable used with this I/O module must have option code /SDV521.

		Description
Model	SDV526	Digital Output Module (4-channel, module isolation)
Suffix Codes	-S	Standard type (*1)
	3	With signal cable interface adapter
	3	With ISA Standard G3 and temperature (-20 to 70 °C)

*1: with prevention of false insertion

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