

Digital I/O

Input Modules

Model Number	RX10	RX10-TS	RX28	RX40C7	RX40C7-TS
Stocked Item	S	S	S	S	S
Certification	UL • cUL • CE				
Number of Input Points	16 points	16 points	8 points	16 points	16 points
Input Type	AC			DC (positive/negative common)	
Rated Input Voltage/Rated Frequency	100 to 120 VAC (+10%/-15%), 50/60Hz (±3Hz)	100 to 120VAC (+10%/-15%), 50/60Hz (±3Hz)	100 to 240VAC (+10%/-15%), 50/60Hz (±3Hz)	24 VDC (ripple ratio: within 5%) (allowable voltage range: 20.4 to 28.8 VDC)	
Input Voltage Distortion Ratio	Within 5%			-	
Rated Input Current	8.2mA (100 VAC, 60Hz), 6.8mA (100 VAC, 50Hz)	8.2mA (100VAC, 60Hz), 6.8mA (100VAC, 50Hz)	16.4mA (200VAC, 60Hz) 13.7mA (200VAC, 50Hz) 8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	7.0mA TYP. (at 24VDC)	
Inrush Current	200mA maximum within 1ms		950mA maximum within 1ms	-	
ON Voltage/ON Current	80 VAC or higher/5mA or higher (50Hz, 60Hz)			15V or higher/4mA or higher	
OFF Voltage/OFF Current	30 VAC or lower/1.7mA or lower (50Hz, 60Hz)			8V or lower/2mA or lower	
Input Resistance	12.2kΩ (60Hz), 14.6kΩ (50Hz)		12.1kΩ (60Hz), 14.5kΩ (50Hz)	3.3kΩ	
Response Time	OFF – ON	15ms or less (100 VAC 50Hz, 60Hz)		10ms or less (200VAC 50Hz, 60Hz)	
	ON – OFF	20ms or less (100 VAC 50Hz, 60Hz)		20ms or less (200VAC 50Hz, 60Hz)	
Wiring Method for Common	16 points/common (common terminal: TB17)	16 points/common (common terminal: 9)	8 points/common (common terminal: TB17)	16 points/common (common terminal: TB17)	16 points/common (common terminal: 9) Positive/negative common shared type
Interrupt Function	Available (can be set in the parameters of the CPU module)				
External Connections	18-point screw terminal block (M3 x 6 screw)	Two-piece spring clamp terminal block	18-point screw terminal block (M3 x 6 screw)	18-point screw terminal block (M3 x 6 screw)	Two-piece spring clamp terminal block
Internal Current Consumption (5 VDC)	110mA (TYP. all points ON)		90mA (TYP. all points ON)	110mA (TYP. all points ON)	
Dimensions (H x W x D) mm	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131
Weight (kg)	0.18	0.14	0.18	0.16	0.12

Model Number	RX41C4	RX41C4-TS	RX42C4	RX70C4	RX71C4	RX72C4
Stocked Item	S	S	S	S	S	S
Certification	UL • cUL • CE					
Number of Input Points	32 points	32 points	64 points	16 points	32 points	64 points
Input Type	DC (positive/negative common)			DC (positive/negative common)		
Rated Input Voltage/Rated Frequency	24 VDC (ripple ratio: within 5%) / (allowable voltage range: 20.4 to 28.8 VDC)			5VDC (ripple ratio: within 5%) (allowable voltage range: 4.25 to 6VDC); 12VDC (ripple ratio: within 5%) (allowable voltage range: 10.2 to 14.4VDC)		
Rated Input Current	4.0mA TYP. (at 24 VDC)			1.7mA TYP. (at 5VDC); 4.8mA TYP. (at 12VDC)		
ON Voltage/ON Current	19V or higher/3mA or higher			3.5V or higher/1mA or higher		
OFF Voltage/OFF Current	6V or lower/1.0mA or lower			1V or lower/0.1mA or lower		
Input Resistance	5.3kΩ			2.3kΩ		
Response Time	OFF – ON	0.1/0.2/0.4/0.6/1/5/10/20/70 ms		0.2/0.3/0.5/0.6/1/5/10/20/70 ms		
	ON – OFF	0.2/0.3/0.5/0.7/1/5/10/20/70 ms		0.41/0.5/0.6/0.7/1/5/10/20/70 ms		0.21/0.3/0.5/0.6/1/5/10/20 ms
Wiring Method for Common	32 points/common (common terminal: B01, B02)	32 points/common (common terminal: 17) Positive/negative common shared type	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	16 points/common (common terminal: TB17) Positive/negative common shared type	32 points/common (common terminal: B01, B02) Positive/negative common shared type	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02) Positive/negative common shared type
Interrupt Function	Available (can be set in the parameters of the CPU module)					
External Connections	40-pin connector	Two-piece spring clamp terminal block	40-pin connector	18-point screw terminal block (M3x6 screw)	40-pin connector	
Internal Current Consumption (5 VDC)	150mA (TYP. all points ON)		180mA (TYP. all points ON)	100mA (TYP. all points ON)	140mA (TYP. all points ON)	150mA (TYP. all points ON)
Dimensions (H x W x D) mm	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 110
Weight (kg)	0.11	0.13	0.13	0.16	0.12	0.14

Output Modules

Model Number	RY10R2	RY10R2-TS	RY18R2A	RY20S6	RY40NT5P	RY40NT5P-TS	RY40PT5P-TS
Stocked Item	S	S	S	S	S	S	S
Certification	UL • cUL • CE						
Number of Output Points	16	16	8	16	16	16	16
Output Type	Relay	Relay	Relay (isolated)	Triac	Sink Transistor	Sink Transistor	Source Transistor
Rated Load Voltage	24 VDC/240 VAC	24VDC 2A (resistive load)/point, 8A/common	24VDC/ 240VAC	100 to 240VAC (+10%/-15%), 50/60Hz (±3Hz)	12/24 VDC (allowable voltage range: 10.2 to 28.8 VDC)		
Maximum Load Current	2A/point, 8A/common	240VAC 2A (COS φ = 1)/point, 8A/common	2A/point, 8A/module	0.6A/point, 4.8A/common	0.5A/point, 5A/common	0.5A/point, Pilot Duty, 5A/common	0.5A/point, Pilot Duty, 5A/common
Maximum Voltage Drop at ON	-			1.5V or lower (at load current of 0.6A)	0.2 VDC (TYP.) 0.5A, 0.3 VDC (MAX.) 0.5A		
Response Time	OFF – ON	10ms or less		Total of 1ms and 0.5 cycles or less	0.5ms or less		
	ON – OFF	12ms or less		Total of 1ms and 0.5 cycles or less (rated load, resistive load)	1ms or less (rated load, resistive load)		
External Power Supply	Voltage	-			12/24 VDC (ripple ratio: within 5%) (allowable voltage range: 10.2 to 28.8 VDC)		
	Current	-			4mA (at 24 VDC)	6mA (at 24VDC)	20mA (at 24VDC)
Wiring Method for Common	16 points/common (common terminal: TB17)	16 points/common (common terminal: 9)	No common	16 points/common (common terminal: TB17)	16 points/common (common terminal: TB18)		16 points/common (common terminal: 9)
External Connections	18-point screw terminal block (M3 x 6 screw)	Two-piece spring clamp terminal block	18-point screw terminal block (M3 x 6 screw)		Two-piece spring clamp terminal block	Two-piece spring clamp terminal block	
Internal Current Consumption (5 VDC)	450mA (TYP. all points ON)		260mA (TYP. all points ON)		140mA (TYP. all points ON)	140mA (TYP. all points ON)	130mA
Dimensions (H x W x D) mm	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131	106 x 27.8 x 131
Weight (kg)	0.22	0.19	0.19	0.24	0.16	0.12	0.12

Model Number	RY41PT1P-TS	RY41NT2P	RY41NT2P-TS	RY42NT2P	RY40PT5P	RY41PT1P	RY42PT1P
Stocked Item	S	S	S	S	S	S	S
Certification	UL • cUL • CE						
Number of Output Points	32	32	32	64	16	32	64
Output Type	Source Transistor	Sink Transistor	Sink Transistor	Sink Transistor	Source Transistor	Source Transistor	Source Transistor
Rated Load Voltage	12/24 VDC (allowable voltage range: 10.2 to 28.8 VDC)						
Maximum Load Current	0.1A/point, Pilot Duty, 2A/common	0.2A/point, 2A/common	0.2A/point, Pilot Duty, 2A/common	0.2A/point, 2A/common	0.5A/point, 5A/common	0.1A/point, 2A/common	
Maximum Voltage Drop at ON	0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A	0.2 VDC (TYP.) 0.2A, 0.3 VDC (MAX.) 0.2A			0.2 VDC (TYP.) 0.5A, 0.3 VDC (MAX.) 0.5A	0.1 VDC (TYP.) 0.1A, 0.2 VDC (MAX.) 0.1A	
Response Time	OFF – ON	0.5ms or less					
	ON – OFF	1ms or less (rated load, resistive load)					
External Power Supply	Voltage	12/24 VDC (ripple ratio: within 5%) (allowable voltage range: 10.2 to 28.8 VDC)					
	Current	19mA (at 24VDC)	16mA (at 24 VDC)	17mA (at 24VDC)	16mA (at 24 VDC)	19mA (at 24 VDC)	
Wiring Method for Common	32 points/common (common terminal: 17)	32 points/common (common terminal: A01, A02)	32 points/common (common terminal: 34)	32 points/common (common terminal: 1A01, 1A02, 2A01, 2A02)	16 points/common (common terminal: TB17)	32 points/common (common terminal: B01, B02)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)
External Connections	Two-piece spring clamp terminal block	40-pin connector	Two-piece spring clamp terminal block	40-pin connector	18-point screw terminal block (M3 x 6 screw)	40-pin connector	
Internal Current Consumption (5 VDC)	190mA (TYP. all points ON)	180mA (TYP. all points ON)		250mA (TYP. all points ON)	130mA (TYP. all points ON)	190mA (TYP. all points ON)	290mA (TYP. all points ON)
Dimensions (H x W x D) mm	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 110	106 x 27.8 x 131	106 x 27.8 x 110	
Weight (kg)	0.13	0.11	0.13	0.13	0.16	0.11	0.13

Input/Output Combined Modules

RH42C4NT2P DC Input/Transistor Output Combined Module (Sink Type)

Model Number	RH42C4NT2P	
Stocked Item	S	
Certification	UL • cUL • CE	
Input Specifications		
Number of Input Points	32 points	
Rated Input Voltage	24 VDC (ripple ratio: within 5%) (allowable voltage range: 20.4 to 28.8 VDC)	
Rated Input Current	4.0mA TYP. (at 24 VDC)	
ON Voltage/ON Current	19V or higher/3mA or higher	
OFF Voltage/OFF Current	6V or lower/1.0mA or lower	
Wiring Method for Common	32 points/common (common terminal: 1B01, 1B02)	
Interrupt Function	Available (can be set in the parameters of the CPU module)	
Output Specifications		
Number of Output Points	32 points	
Rated Load Voltage	12/24 VDC (allowable voltage range: 10.2 to 28.8 VDC)	
Maximum Load Current	0.2A/point, 2A/common	
Maximum Voltage Drop at ON	0.2 VDC (TYP.) 0.2A, 0.3 VDC (MAX.) 0.2A	
Response Time	OFF – ON	0.5ms or less
	ON – OFF	1ms or less (rated load, resistive load)
External Power Supply	Voltage	12/24 VDC (ripple ratio: within 5%) (allowable voltage range: 10.2 to 28.8 VDC)
	Current	16mA (at 24 VDC)/common
Wiring Method for Common	32 points/common (common terminal: 2A01, 2A02)	
Common Specifications		
Number of Occupied I/O Points	32 points (I/O assignment: I/O combined 32 points)	
External Connections	40-pin connector	
Internal Current Consumption (5 VDC)	220mA	
Weight (kg)	0.13	

I/O Module with Diagnostic Functions

The following input and output module offer diagnostic functions such as input disconnection detection, output disconnection detection, and short-circuit detection.

Model Number		RX40NC6B	RY40PT5B
Stocked Item		S	S
Certification		UL • cUL • CE	
Number of Input Points		16 points	-
Number of Output Points		-	16 points
Rated Input Voltage		24VDC (ripple ratio: within 5%) (allowable voltage range: 20.4 to 28.8VDC)	-
Rate Load Voltage		-	24VDC (allowable voltage range: 20.4 to 28.8VDC)
Rated Input Current		6.0mA TYP. (at 24VDC)	-
Maximum Inrush Current		-	Current is to be limited by the overload protection function
Maximum Load Current		-	0.5A/point, 4A/common
ON Voltage/ON Current		14V or higher/3.5mA or higher	-
OFF Voltage/OFF Current		6V or lower/1mA or lower	-
Leakage Current at OFF		-	0.3mA or lower
Maximum Voltage Drop at ON		-	1.0VDC (TYP.) 0.5A
Input Resistance		Approx. 4.0kΩ	-
Response Time	OFF – ON	See User's Manual for response times	0.5ms or less
	ON – OFF		1.5ms or less
Short-Circuit (Ground Fault) Detection Current		-	0.5A or higher/point (*3)
Surge Suppressor		-	Zener diode
Fuse		-	None
Disconnection (No Connection) Detection Current		0.3mA or lower/point (*1)	3mA or lower/point (*2)
External Power Supply	Voltage	24VDC (ripple ratio: within 5%) (allowable voltage range: 20.4 to 28.8VDC)	
	Current	130mA (at 24VDC)	87mA (at 24VDC)
Withstand Voltage		510VACrms, 1 minute	
Isolation Resistance		10MΩ or higher by isolation resistance tester	
Noise Immunity		Simulator noise 500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition)	
Protection Degree		IP2X	
Protection Function	Overload Protection	-	Limited current when detecting overcurrent: 1.0A or higher/point Activated to each point
	Overheat Protection	-	Activated to each point
Wiring Method for Common		16 points/common (common terminal: TB18)	
Number of Occupied I/O Points		32 points (I/O assignment: Input 32 points)	32 points (I/O assignment: Output 32 points)
Interrupt Function		Available (can be set in the parameters of the CPU module)	
External Interface		18-point screw terminal block (M3x6 screw)	
Internal Current Consumption (5VDC)		450mA (TYP. all points ON)	190mA (TYP. all points ON)
Weight (kg)		0.25	0.24
Dimensions (H x W x D) mm		106 x 27.8 x 131	106 x 27.8 x 131

Notes:

- When the input current is 0.3mA/point or lower, a disconnection (no connection) is detected. When the leakage current of the input device is 0.3mA/point or lower, connect a bleeder resistance (resistance value as a guide: approx. 56kΩ) in parallel near the device connected.
- The minimum load current (at output ON) of when the disconnection detection function is used is 3mA/point. A load of 3mA/point or lower is used, a disconnection is detected erroneously at output OFF.
- The detection is possible when the output is on. When the output current is 0.5A/point or higher, a short circuit is detected.

High Speed Digital Input Modules

Model Number		RX41C6HS	RX61C6HS
Stocked Item		S	S
Certification		UL • cUL • CE	
Number of Input Points		32 points	32 points
Input Type		24VDC Positive/negative Common	5VDC Positive/negative Common
Rated Input Voltage		24VDC (ripple ratio: within 5%) (allowable voltage range: 20.4 to 28.8VDC)	5VDC (ripple ratio: within 5%) (allowable voltage range: 4.25 to 6VDC)
Rated Input Current		6.0mA TYP. (at 24VDC)	6.0mA TYP. (at 5VDC)
ON Voltage/ON Current		19V or higher/4mA or higher	3.5V or higher/3mA or higher
OFF Voltage/OFF Current		6V or lower/1.7mA or lower	1V or lower/1mA or lower
Input Resistance		4kΩ	600Ω
Response Time		See User's Manual for response times	
Withstand Voltage		510VACrms, 1 minute	
Isolation Resistance		10MΩ or higher by isolation resistance tester	
Noise Immunity (*1)		Simulator noise 500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition)	
Protection Degree		IP2X	
Wiring Method for Common		32 points/common (common terminal: B01, B02) Positive/negative common shared type	
Number of Occupied I/O Points		32 points (I/O assignment: Input 32 points)	
Interrupt Function		Available (can be set in the "Module Parameter")	
External Interface		40-pin connector	
Internal Current Consumption (5VDC)		150mA (TYP. all points ON)	
Weight (kg)		0.12	0.12
Dimensions (H x W x D) mm		106 x 27.8 x 110	106 x 27.8 x 110

Note 1: The noise immunity is the value for when the input response time setting is set to 50μs or longer.

High Speed Digital Output Modules

Model Number	RY41NT2H		RY41PT2H
Stocked Item	S		S
Certification	UL • cUL • CE		
Number of Output Points	32		32
Output Type	Sink		Source
Rated Load Voltage	5/12/24 VDC (allowable voltage range: 4.25 to 28.8 VDC)		
Maximum Load Current	0.2 A/point, 2A common		
Maximum Inrush Current	0.7A, 10 ms or less		
Leakage Current At OFF	0.1 mA or lower		
Maximum Voltage Drop at ON	0.1 VDC (TYP.) 0.2 A, 0.2 VDC (MAX) 0.2A		
Response Time	OFF – ON	1 μs or less	
	ON – OFF	2 μs or less rated load, resistive load	
Surge Suppressor	Zener diode		
Withstand Voltage	510 VACrms, 1 minute		
Isolation Resistance	10MΩ or higher by isolation resistance tester		
Noise Immunity	Simulator noise 500 Vp-p, noise width 1μ, noise frequency 25 to 60 Hz (noise simulator condition)		
Protection Degree	IP2X		
Wiring Method for Common	32 points/common (common terminal: A01, A02)		32 points/common (common terminal: B01, B02)
Number of Occupied I/O Points	32 points		
Protection Functions	None		
External Connections	40 pin connector		
Internal Current Consumption	420 mA (TYP. All points ON)		410 mA (TYP. All points ON)
Dimensions (H x W x D) mm	106 x 27.8 x 131		
Weight (kg)	0.12		

High Speed Digital I/O Combination Module

Model Number	RD40PD01	
Stocked Item	S	
Certification	UL • cUL • CE	
Number of Input Points	12	
Output Type	Differential	DC
Number of Output Points	6	8 (5 to 24VDC, 0.1A/pt)
Number of Interrupts	8 points	
Input/output Response Time	1μs or less	
Pulse Input Speed	Max. 8Mpps (2MHz)	Max. 200kpps (200kHz)
Pulse Output Speed	Max. 8Mpps (2MHz)	Max. 200kpps (200kHz)
Internal Current Consumption (5VDC)	0.76A	
Applicable Wire Size	40-pin connector: 0.088 to 0.3 (28 to 22 AWG) (When the A6CON1 or A6CON4 is used), 0.088 to 0.24 (28 to 24 AWG) (When the A6CON2 is used)	
External Wiring Connector (Sold Separately)	A6CON1, A6CON2, A6CON4	
Number of Occupied I/O Points	32 points (I/O assignment: Intelligent, 32 points)	
Dimensions (H x W x D) mm	106 x 27.8 x 110	
Weight (kg)	0.16	