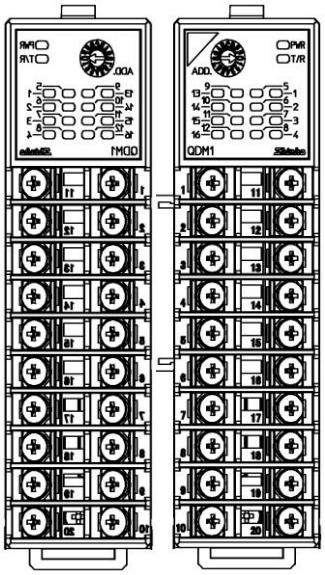
Digital I/O Module

Model: **QDM1**



Features

- Digital I/O module with input 16 points and output 16 points
- Selectable from input 16 points, output 16 points, or input/output 8 points each
- MODBUS/RTU or CUnet selectable for host communication
- USB bus power is available for device operation when using configuration software

■ Model

(e.g.) QDM1 DI16 A P T

Points:	Input 16 points
Common:	Input: plus common, Output: minus common (NPN)
Power supply / communication option:	Power supply / host communication function
Wiring type:	Terminal block type

QDM1-	□	□	□	□	
Points	DI16				Input: 16 points
	DO16				Output: 16 points
	DIO8				Input: 8 points / Output: 8 points
Plus / Minus common		A			Input: plus common Output: minus common (NPN)
		B			Input: minus common Output: plus common (PNP)
Power supply / communication option			0		No option
			P		With power supply / host communication function
			C		With power supply / CUnet communication function
Wiring type				T	Terminal block type
				C	Connector type

■ Accessories Sold Separately

Product Name	Model
Front terminal cover	TC-QTC
Termination resistor 100 Ω	RES-S07-100

■ Rating

Input

Common	Plus/minus common
Input points	8 points/16 points
Input status indicator	Green (LED) lights up when ON
Allowable supply voltage for input	24 V DC 10%, ripple content less than 5 %p-p
ON voltage/ON current	15 V DC or more/3.5 mA or more
OFF voltage/OFF current	5 V DC or less / 1 mA or less
Input current	5.5 mA or less (at 24 V DC)
Input resistance	Approx. 4.7 kΩ
ON delay time	0.2 ms or less
OFF delay time	0.5 ms or less
Take-in cycle setting	Setting range 1 to 100 ms at 1 ms, 5 ms by communication

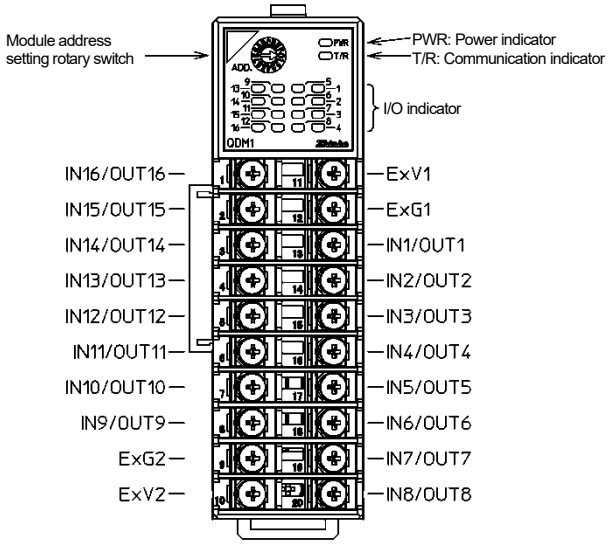
Output

Common	Minus common (NPN)/Plus common (PNP)
Output points	8 points/16 points
Output status indicator	Green (LED) lights up when ON
Allowable supply voltage for output	24 V DC 10%, ripple content less than 5 %p-p
Rated output current	0.1 A/point, 1.6 A/common
Residual voltage	1.2 V or less
Leakage current	0.1 mA or less
ON delay time	0.2 ms or less
OFF delay time	0.5 ms or less
Overcurrent protection function	Limit current value when overcurrent is detected
Output setting at communication error	Output status (hold or OFF) can be set until normal data is received in the event of communication error (lasting 1 minute or longer) (factory default: hold)

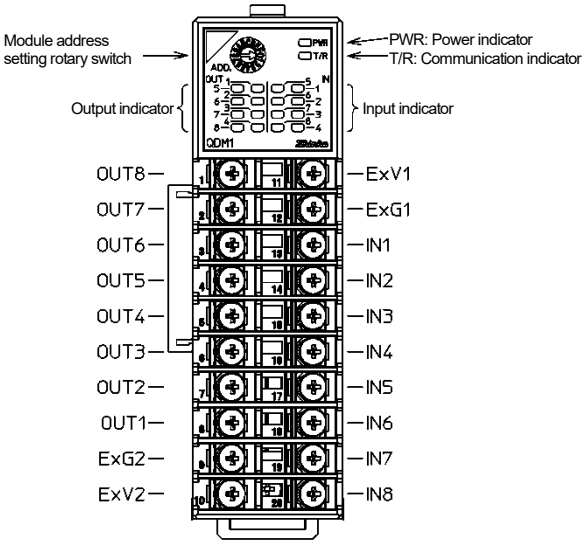
■ General Structure

Weight		Approx. 160 g
Dimensions		30 × 100 × 85 mm (W × H × D) (excl. protrusions) Depth with terminal cover attached: 95 mm Depth with wiring connector attached:101.9 mm
Mounting method		DIN rail mounting
Case		Flame-resistant resin, Color: Black
Panel		Polycarbonate sheet
Standards	EN	EN61010-1 (Pollution degree 2)
	EC EMC Directive	EMI: EN61326 Radiated interference field strength: EN55011 Group1 ClassA EMS: EN61326

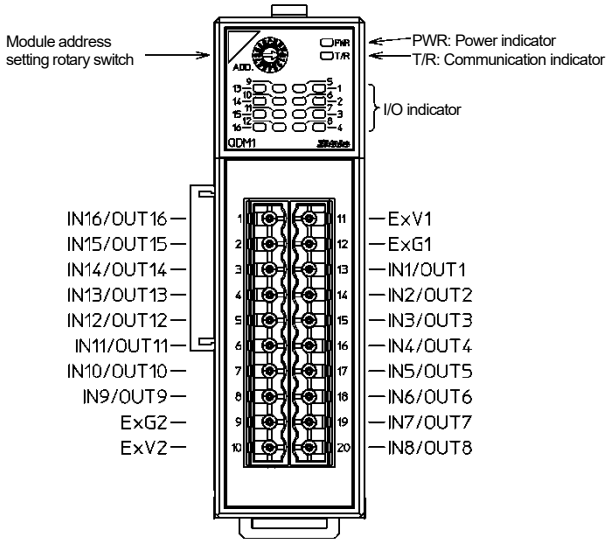
■ Terminal Arrangement



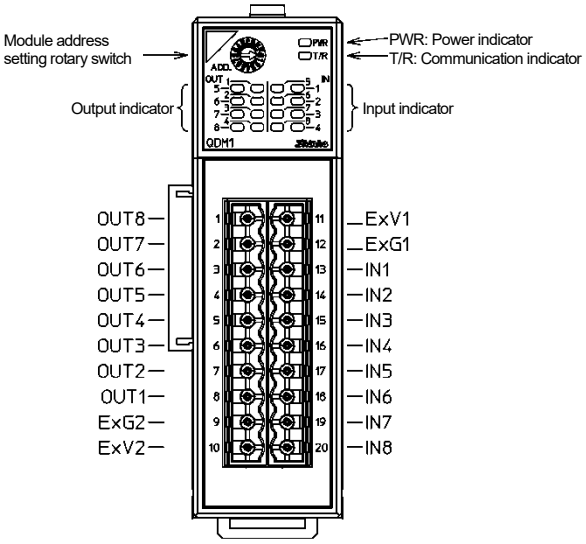
QDM1-D□16□□T



QDM1-DI08□□T

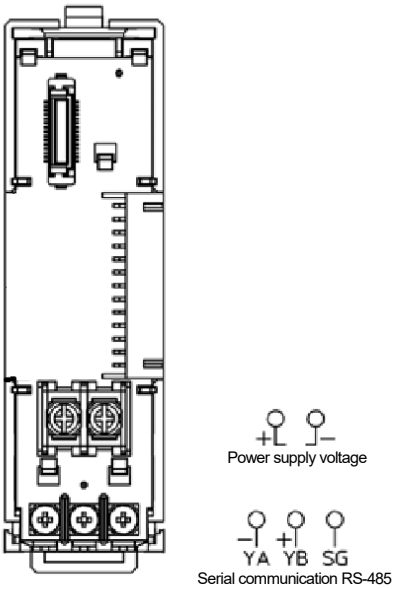


QDM1-D□16□□C

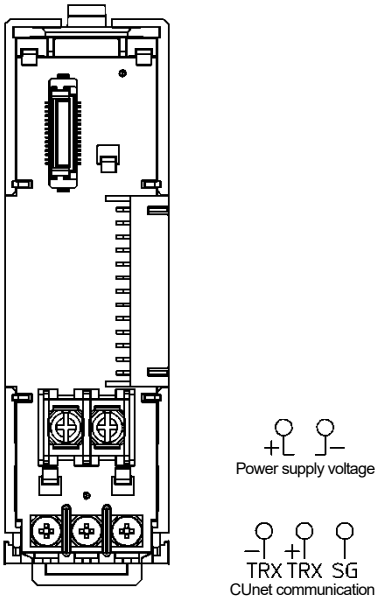


QDM1-DI08□□C

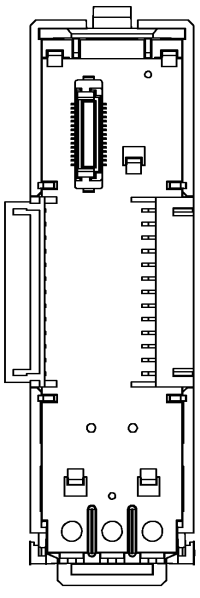
[Base part]QDM1-□□P□



[Base part]QDM1-□□C□



[Base part]QDM1-□□0□



■ Indication Structure / Settings Structure

Action indicator

Symbol (color)	Name and Function
PWR (Green)	Power indicator Lights off: No power supply to the instrument Lights up: Power supply to the instrument Flashing: Warming up the instrument, when non-volatile IC memory error
T/R (Yellow)	Communication indicator Flashing: Communication is normal, Communication error (reception error) Lights off: Communication error (no response) or USB communication
INx/OUTx (Green)	I/O indicator Lights off (always): Digital I/O OFF (1 point/1 CH) Lights up (always): Digital I/O ON (1 point/1 CH)

Switch and connnector

Symbol	Name and Function
ADD.	Module address setting rotary switch Use the rotary switch to select module addresses 0 to F (1 to 16). The module address is the value of the selected rotary switch plus one.
	Communication specification setting dip switch Set the communication specifications such as communication speed, data bit, parity, stop bit and communication protocol.
	CUnet communication specification setting dip switch Set the station address, communication speed, master address, and number of occupied (OWN) items.

■Communication Function

Power supply / host communication function (Power supply / communication option symbol: P)

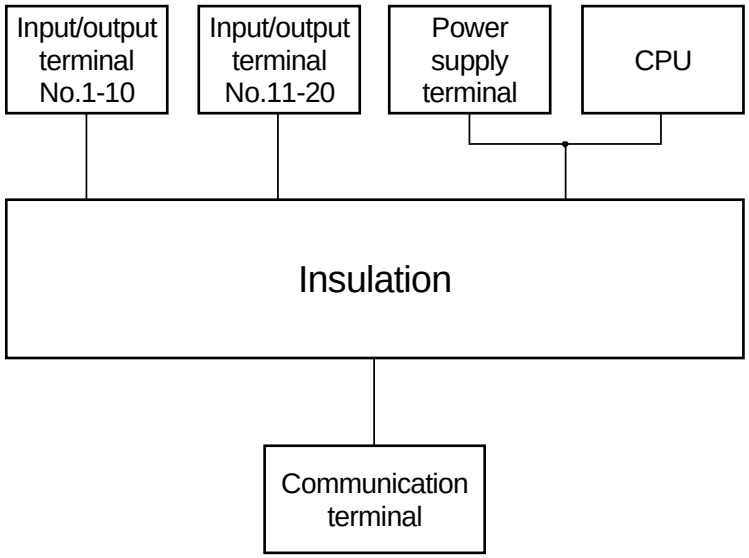
Communication line	EIA RS-485
Communication method	Half-duplex communication
Communication speed	9600 bps, 19200 bps, 38400 bps or 57600 bps can be selected by DIP switch (Factory default: 57600 bps)
Synchronization method	Start-stop synchronization
Data bit/Parity/Stop bit	Data bit: 8 Parity: Even, Odd or No parity Stop bit: 1 or 2 Selected by DIP switch (Factory default: 8 bits, Even, 1 bit)
Response delay time setting	0 to 1000 ms (Factory default: 0 ms) Set the delay time to return the response from the module after receiving the command from the host.
Take-in cycle setting	1 to 100 ms (Factory default: 1 ms)

Power supply / CUnet communication function (Power supply / communication option symbol: C)

Connection type	Multi-drop	
Communication method	2-wire half-duplex	
Synchronization method	Bit-synchronous	
Error detection	CRC-16	
Number of occupied slave addresses	1	
Maximum number of connected nodes	64 nodes	
Communication speed (*), Communication distance	Communication speed	Maximum network length
	12 Mbps	100 m
	6 Mbps	200 m
	3 Mbps	300 m
Isolation method	Pulse transformer isolation	
Impedance	100 Ω	
Termination resistance	Last connection, set by CUnet slave This instrument is not equipped.	

■Insulation Resistance/Dielectric Strength

Circuit insulation configuration



Insulation resistance	10 MΩ or more at 500 V DC
Dielectric strength	Between Power terminal – Ground (GND): 1.5 kV AC for 1 minute Between Digital I/O terminal – Ground (GND): 1.5 kV AC for 1 minute Between Digital I/O terminal – Power terminal: 1.5 kV AC for 1 minute Between Communication terminal – Power terminal: 1.5 kV AC for 1 minute Between Digital I/O terminal – Communication terminal: 1.5 kV AC for 1 minute

■ Environmental Conditions

Ambient temperature	-10 to 50°C (no condensation or freezing)
Ambient humidity	35 to 85%RH (no condensation)
Environmental specification	RoHS directive compliant

■ Attached Functions

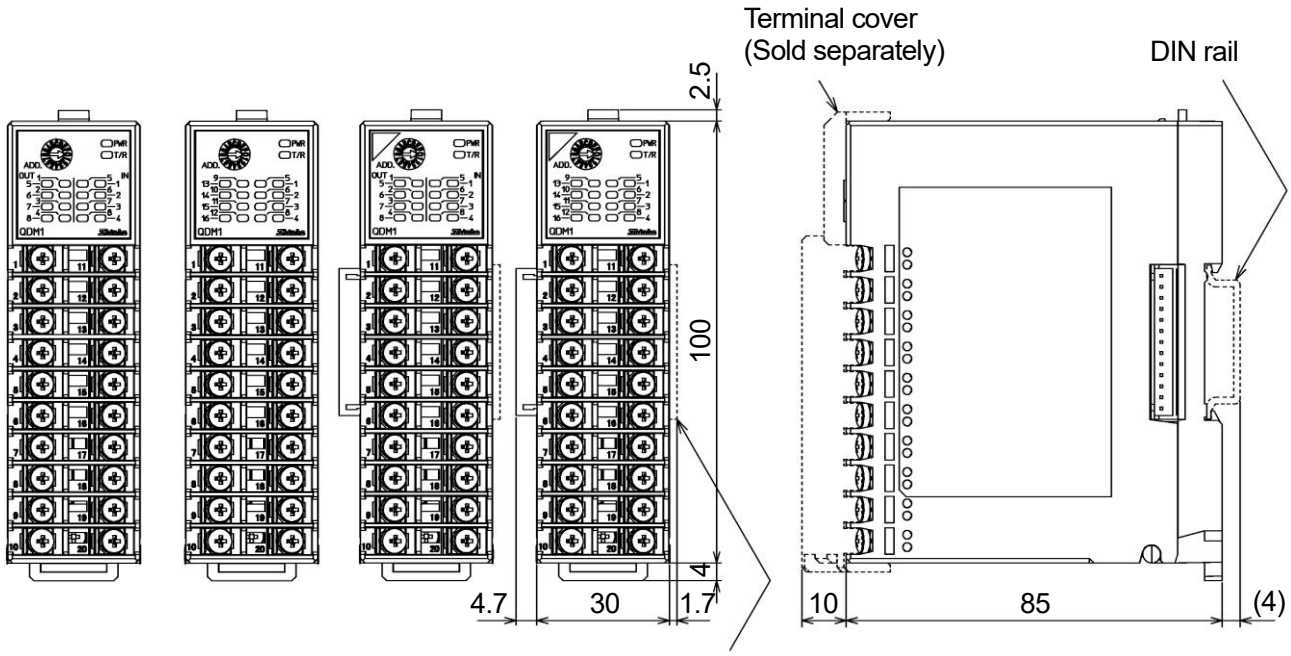
Watchdog timer	The watchdog timer monitors program runaway and halt, and resets the MCU and initializes the instrument when an error is detected.
Unapplied digital output power supply	When the digital output power supply is not applied or dropped, the output of the channel using the power supply is turned off. The output is reapplied 1 second after the power is restored.
Warm up indication	The power indicator flashes every 500 ms for about 3 seconds after the power is turned on.
Total energizing time measurement function	It can check the time that the power is on.
Power Failure Countermeasure	The non-volatile IC memory backs up the setting data.

■ Other

Power supply voltage	24 V DC Allowable fluctuation range: 20 to 28 V DC
Power consumption	Approx. 2 W or less
Rush current	Max. 10 A
Accessories included	Line cap (1), Power supply terminal cover (for devices with power supply / host communication function) (1), Wiring connector (2ESS-10P) (connector type) (2), Mounting and wiring instruction manual (1)
Instruction manual	Please download the full Instruction Manual from the Shinko website. https://shinko-technos.co.jp/e/

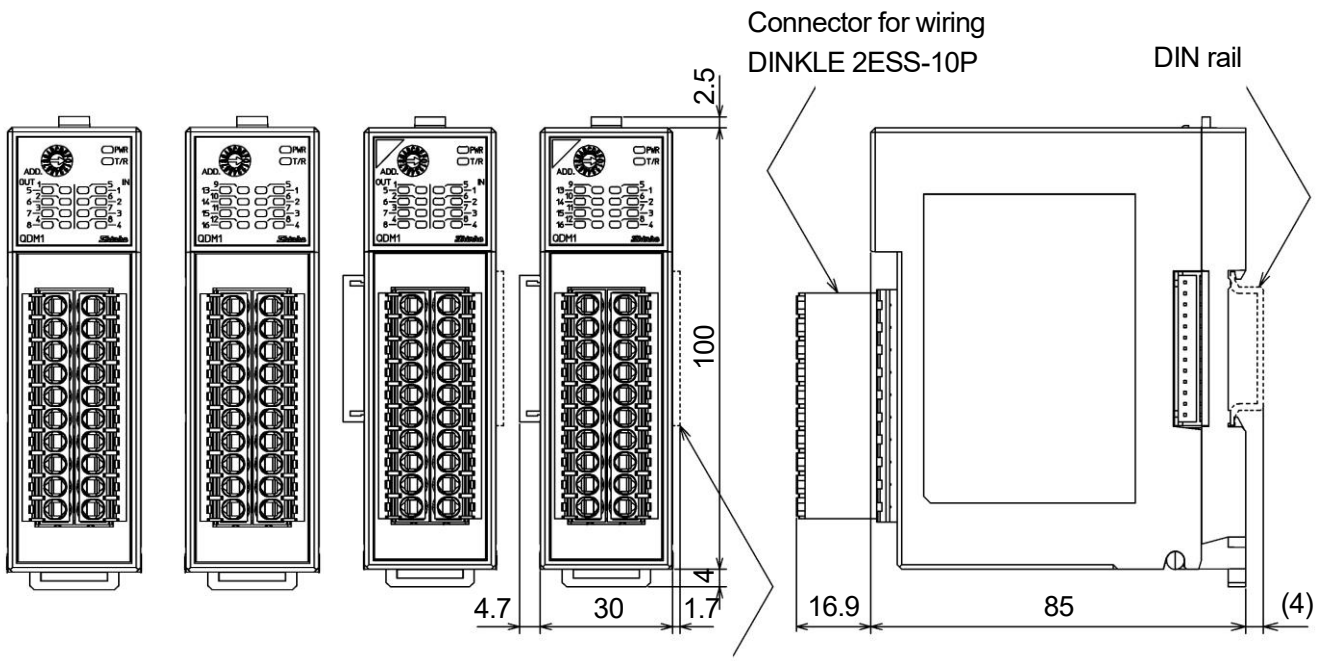
■ Dimensions (Scale: mm)

Terminal block type



Line cap (Accessories)

Connector type



Line cap (Accessories)

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