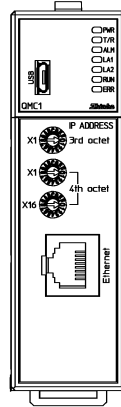


Communication Expansion Module (Ethernet communication)

Model: **QMC1-MT**



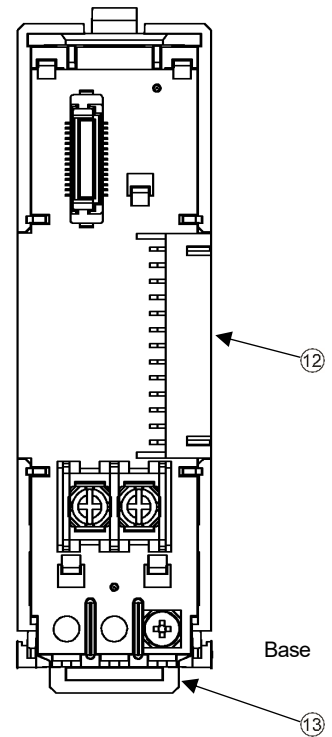
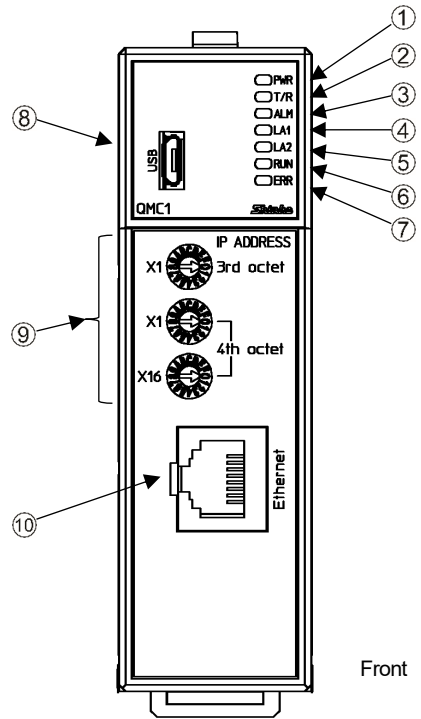
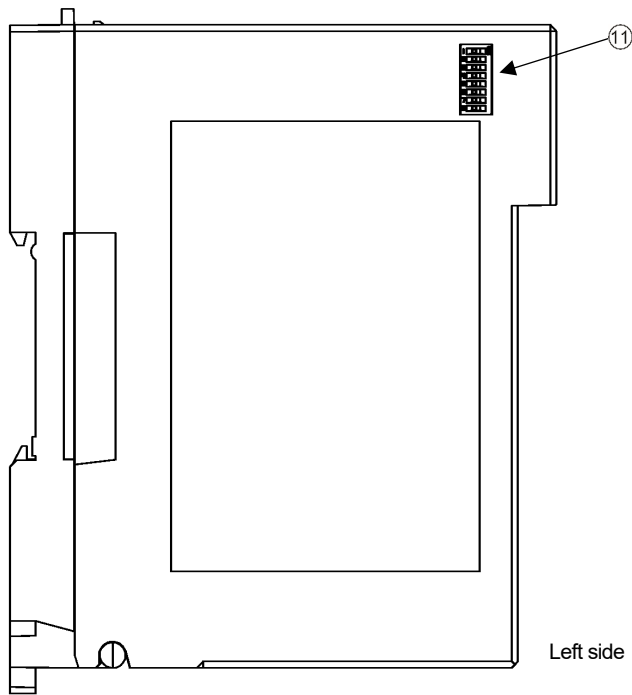
■ **Model**

QMC1 - MT

■ **General Structure**

Weight	Approx. 140 g					
Dimensions	30 × 100 × 85 mm (W × H × D)					
Mounting method	DIN rail mounting type					
Case	Flame-resistant resin, Color: Black					
Panel	Polycarbonate sheet					
Applicable standards	<table border="1"> <tr> <td>EN</td> <td>EN61010-1 (Pollution degree 2)</td> </tr> <tr> <td>EC Directive</td> <td>EMI: EN61326 Radiated interference field strength: EN55011 Group1 ClassA EMS: EN61326</td> </tr> </table>		EN	EN61010-1 (Pollution degree 2)	EC Directive	EMI: EN61326 Radiated interference field strength: EN55011 Group1 ClassA EMS: EN61326
EN	EN61010-1 (Pollution degree 2)					
EC Directive	EMI: EN61326 Radiated interference field strength: EN55011 Group1 ClassA EMS: EN61326					

■ Indication Structure / Settings Structure



Operation indicator

No.	Symbol (color)	Name and Function
①	PWR (Green)	Power indicator (*1) <ul style="list-style-type: none"> Lights off (always): No power supply to the instrument. Lights up (always): Power supply to the instrument. Flashing (500 ms lights up/500 ms lights off): Non-volatile IC memory error.
②	T/R (Yellow)	Communication indicator (*1) <ul style="list-style-type: none"> Lights off (always): Ethernet communication error (no response) or USB communication. Flashing (slow): Ethernet communication error (reception error). Flashing (fast): Ethernet communication is normal.
③	ALM (Red)	Alarm indicator (*1) <ul style="list-style-type: none"> Lights up (1 sec.): When communication with the slave [control module (QTC1-□)] is error. (*2) Flashing (250 ms lights up/250 ms lights off): When power is supplied from a PC via USB.
④	LA1 (Yellow)	Link indicator (LA1) <ul style="list-style-type: none"> Lights up (always): When link is established. Lights off (always): When link is not established.
⑤	LA2 (Yellow)	Link indicator (LA2) <ul style="list-style-type: none"> Always lights off
⑥	RUN (Green)	Line connection indicator (*1) <ul style="list-style-type: none"> Lights up: When Ethernet connection.
⑦	ERR (Red)	Communication error indicator (*1) <ul style="list-style-type: none"> Lights off (always): No errors. Lights up (1 sec.): When communication error occurs in SLMP communication (*3) of Ethernet. (e.g.) When data outside the setting range is sent from the PLC The ERR indicator lights up for 1 second in response to a negative-acknowledgement from the connected module.

(*1): Each operation indicator (except LA1 and LA2) lights up sequentially during warm-up after power-on.

(*2): Does not light up in the SIF function.

(*3) Communication protocol for Mitsubishi Electric Corporation PLC MELSEC.

Switch and connector

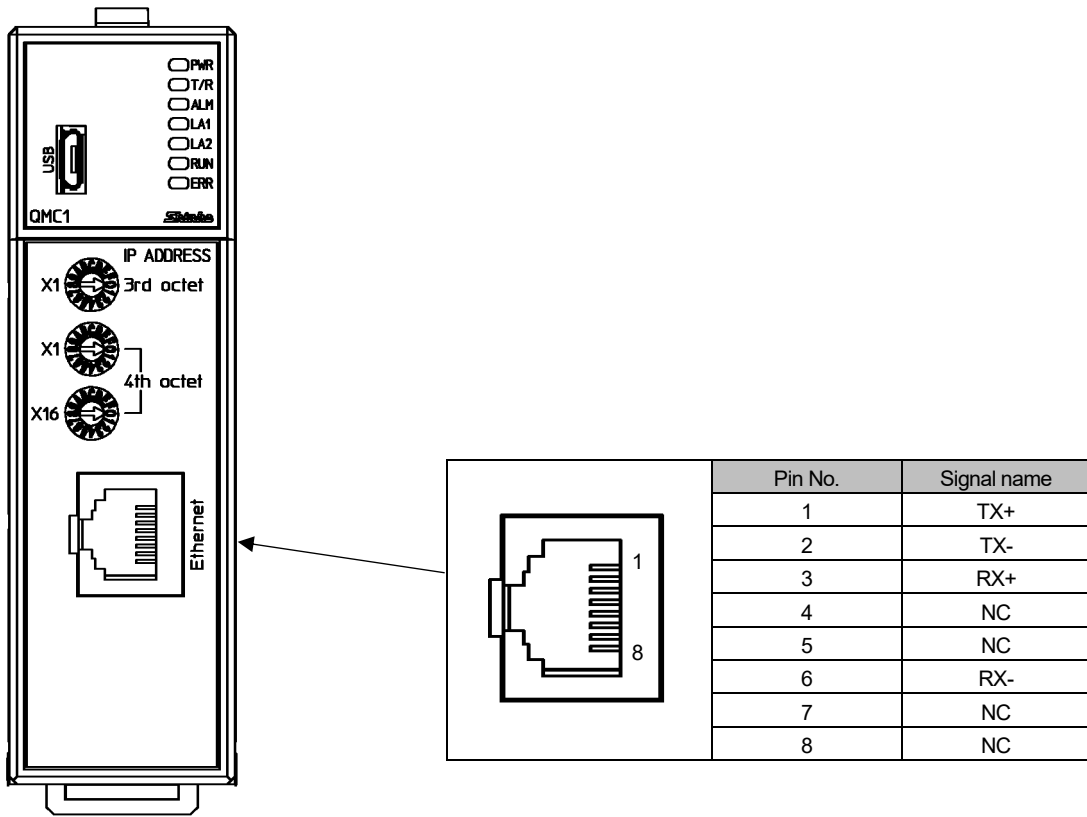
No.	Symbol	Name and Function
⑧	USB	Console communication connector Connector for console communication tool cable.
⑨	IP ADDRESS	QMC1-MT IP address setting rotary switch
⑩	Ethernet	Ethernet communication connector [Modular jack (RJ45)]
⑪		DIP switch Not used in this instrument. Please leave all switches OFF.
⑫		Connector Connector for connection to control module QTC1-□0.
⑬		Lock lever Lever for fixing or releasing when mounting or dismounting on a DIN rail.

Setting Structure

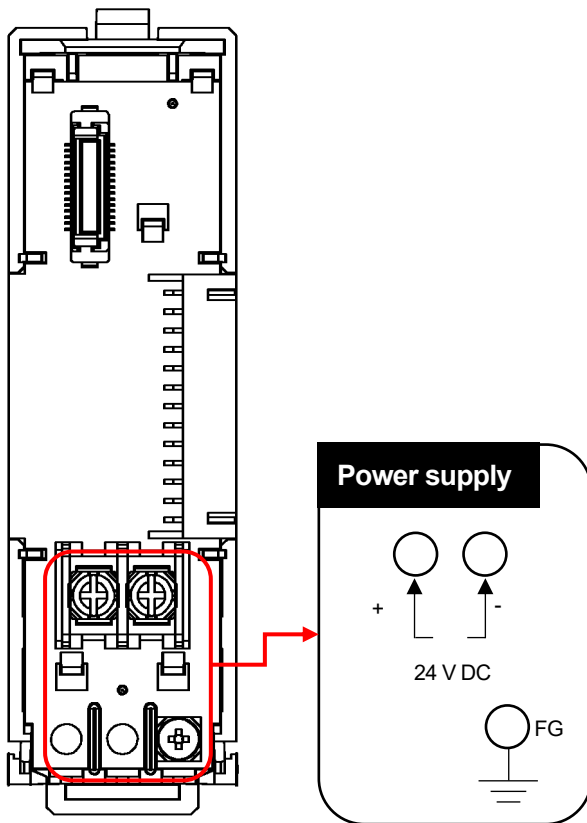
QMC1-MT IP address setting	Set the third and fourth bytes of the QMC1-MT IP address using a rotary switch.
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■ Pin Assignment and Terminal Arrangement

Pin Assignment of Ethernet Communication Connector



Power supply terminal and FG terminal arrangement



■ Standard Functions

Ethernet communication	Connects to the control module (QTC1-□) for Ethernet communication (MODBUS/TCP or SIF function). MODBUS/TCP		
	Physical layer	10BASE-T/100BASE-TX automatic recognition	
	User layer	MODBUS/TCP Number of connections: 1	
SIF function (Smart InterFace, programless communication function)	This function reads and writes various data to PLC registers using the communication protocol of Mitsubishi Electric Corporation's PLC MELSEC.		
	User layer	TCP/IP Mitsubishi Electric Corporation PLC MELSEC Communication Protocol Frame: QnA compatible 3E frame (SLMP 3E frame) Code: Binary or ASCII Connectable PLC: 1 unit	
Module-to-module communication	Communication line	Internal Bus	
	Communication method	Half-duplex communication	
	Synchronization method	Start-stop synchronization	
	Communication speed	57600 bps	
	Data bit/Parity/Stop bit	Data bit:	8
		Parity:	Even
Stop bit:		1	

■ Insulation Resistance and Dielectric strength

Circuit insulation configuration	<pre> graph TD PT[Power terminal] --- I[Insulation] CPU[CPU] --- I I --- FT[FG terminal] I --- C[Communication] </pre>
Insulation resistance	500 V DC 10 MΩ or more
Dielectric strength	Between Power terminal – FG terminal: 1.5 kV AC for 1 minute Between Power terminal – Communication: 750 V AC for 1 minute

■ Communication interface

Ethernet communication	10BASE-T/100BASE-TX automatic recognition
Between modules	Internal bus

■ Environmental Conditions

Ambient temperature	-10 to 50 °C (no condensation or freezing)
Ambient humidity	35 to 85 %RH (no condensation)
Altitude	2,000 m or less
Installation environment	Pollution Degree 2 (according to EN61010-1)
Memory protection	Non-volatile IC memory (write cycles: 1 million)
Environmental specification	RoHS directive compliant

■ Attached Functions

Power failure countermeasure	The setting data is backed up in the non-volatile IC memory.						
Watchdog timer	Monitors program runaway and halt with a watchdog timer, and resets the MCU and the instrument to the initial state when an abnormality is detected.						
Warm up indication	After power-on, each operation indicator (except LA1 and LA2) lights up sequentially.						
Total energizing time measurement function	It can check the time that the power is on. If the accumulated time exceeds 65535 hours, it will be added from 0 hours. It can grasp the approximate usage time from the accumulated time. However, since the save cycle is 1 hour, the time within 1 hour may not be saved due to a power failure. Total energizing time: 1 hour/count						
Console communication	<p>Connect USB communication cable (commercial item) to the console communication connector, and the following operations can be performed from an external computer using the console software (SWC-QMC101M).</p> <p>(1) Reading and setting items required for Ethernet communication (protocol selection, QMC1-MT IP address setting, etc.)</p> <p>(2) Operation status reading</p> <p>(3) Read and set the each setting value of the SIF function</p> <p>(4) Change of function</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Communication protocol</td> <td>Shinko protocol</td> </tr> <tr> <td>Communication cable</td> <td>USB - micro USB Type-B (commercial item)</td> </tr> <tr> <td>Software</td> <td>Console software (SWC-QMC101M)</td> </tr> </table>	Communication protocol	Shinko protocol	Communication cable	USB - micro USB Type-B (commercial item)	Software	Console software (SWC-QMC101M)
Communication protocol	Shinko protocol						
Communication cable	USB - micro USB Type-B (commercial item)						
Software	Console software (SWC-QMC101M)						
Firmware update function	Connect USB communication cable (commercial item) to the console communication connector, and the firmware can be updated from an external computer using the console software (SWC-QMC101M).						

■ Other

Power supply voltage	24 V DC Allowable fluctuation range: 20 to 28 V DC
Power consumption	4 W or less
Rush current	Max. 10 A
Accessories included	Mounting and wiring instruction manual: 1 Power supply terminal cover: 1
Instruction manual	Please download the full Instruction Manual from the Shinko website. https://shinko-technos.co.jp/e/

■ Dimensions (Scale: mm)

