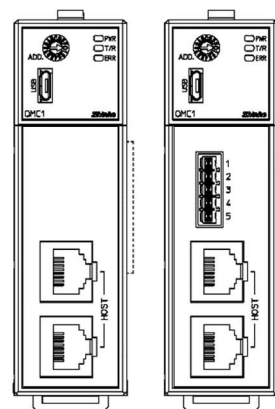


# Communication Expansion Module

 Model: **QMC1**


## Model

(e.g.) QMC1 — C5 3 — 0

Communication type: RS-485  
 Event input/output option: Event input 2 points, Event output 2 points  
 Communication protocol: Console selection (MODBUS RTU / SIF)

| QMC1—                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                         |
|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------------------------------|
| Communication type         | C4                       |                          |                          | RS-422A                                          |
|                            | C5                       |                          |                          | RS-485 (*1)                                      |
| Event input/output options |                          | 0                        |                          | No options                                       |
|                            |                          | 1                        |                          | Event input 4 points (*2)                        |
|                            |                          | 2                        |                          | Event output 4 points (*2)                       |
|                            |                          | 3                        |                          | Event input 2 points, Event output 2 points (*2) |
| Communication protocol     |                          | 0                        |                          | Console selection (MODBUS RTU / SIF) (*1)        |
|                            |                          | 1                        |                          | C series compatible                              |

(\*1): When connecting to an OMRON PLC using the SIF function (Smart InterFace, programless communication function), it cannot be connected using the RS-485 communication type (QMC1-C5□). Use communication type RS-422A (QMC1-C4□).

(\*2): The plug side connector of the event input/output connector is sold separately.

## Accessories Sold Separately

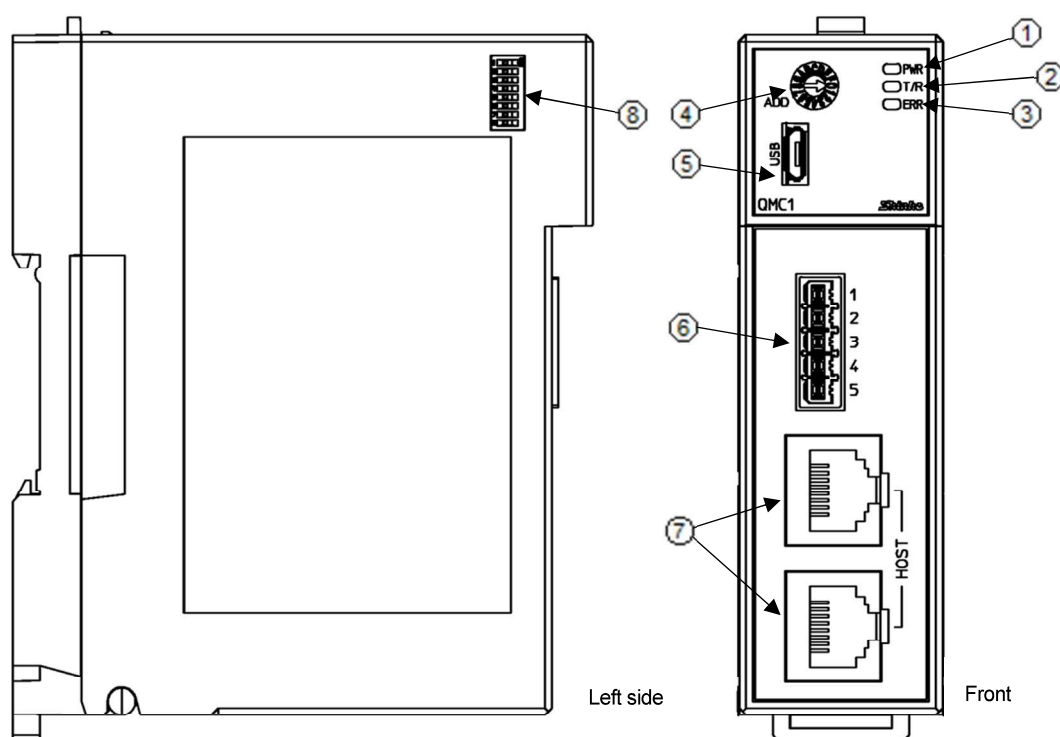
| Product Name                                                 | Model         |
|--------------------------------------------------------------|---------------|
| Communication cable (USB Type-A- Modular)                    | CMC-001-4     |
| Communication cable [Modular - Y terminal (RS-485, 3-wire)]  | CQM-001       |
| Communication cable [Modular - Y terminal (RS-422A, 5-wire)] | CQM-002       |
| Communication cable (Modular - Modular)                      | CQQ-001       |
| Wiring connector                                             | 0225-0805 (*) |

(\*): For event input/output (event input/output option symbols: 1, 2, 3)

## General Structure

|                      |                       |                                                                                                                                                               |
|----------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight               |                       | Approx. 130 g                                                                                                                                                 |
| Dimensions           |                       | 30 × 100 × 85 mm (W × H × D)                                                                                                                                  |
| Mounting method      |                       | DIN rail mounting                                                                                                                                             |
| Case material, color |                       | Case material: Flame-resistant resin, Color: Black                                                                                                            |
| Panel                |                       | Polycarbonate sheet                                                                                                                                           |
| Standards (*)        | EN                    | EN61010-1 (Pollution degree 2, Overvoltage category II)                                                                                                       |
|                      | EC<br>(EMC directive) | EMI: EN61326<br>Electric-field strength of radiated disturbance: EN55011 Group 1, Class A<br>Terminal noise voltage: EN55011 Group 1, Class A<br>EMS: EN61326 |

## ■ Indication Structure / Settings Structure



### Action Indicator

| No. | Symbol (color) | Name, Task                                                                                                                                                                                                                                                   |
|-----|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | PWR (green)    | Power indicator<br>Off: No power supplied to module<br>On: Power supplied to module<br>Flashing for 500 ms (3 seconds): Warming up the instrument<br>Flashing for 500 ms (always): Non-voltage IC memory error                                               |
| ②   | T/R (yellow)   | Communication indicator<br>On: Serial communication TX output                                                                                                                                                                                                |
| ③   | ERR (red)      | ERR indicator<br>Off: Normal communication<br>On (1 second): When communication with the slave unit is abnormal<br>(when communication is not established continuously after warm-up)<br>Flashing for 250 ms (always): When powered by bus power from the PC |

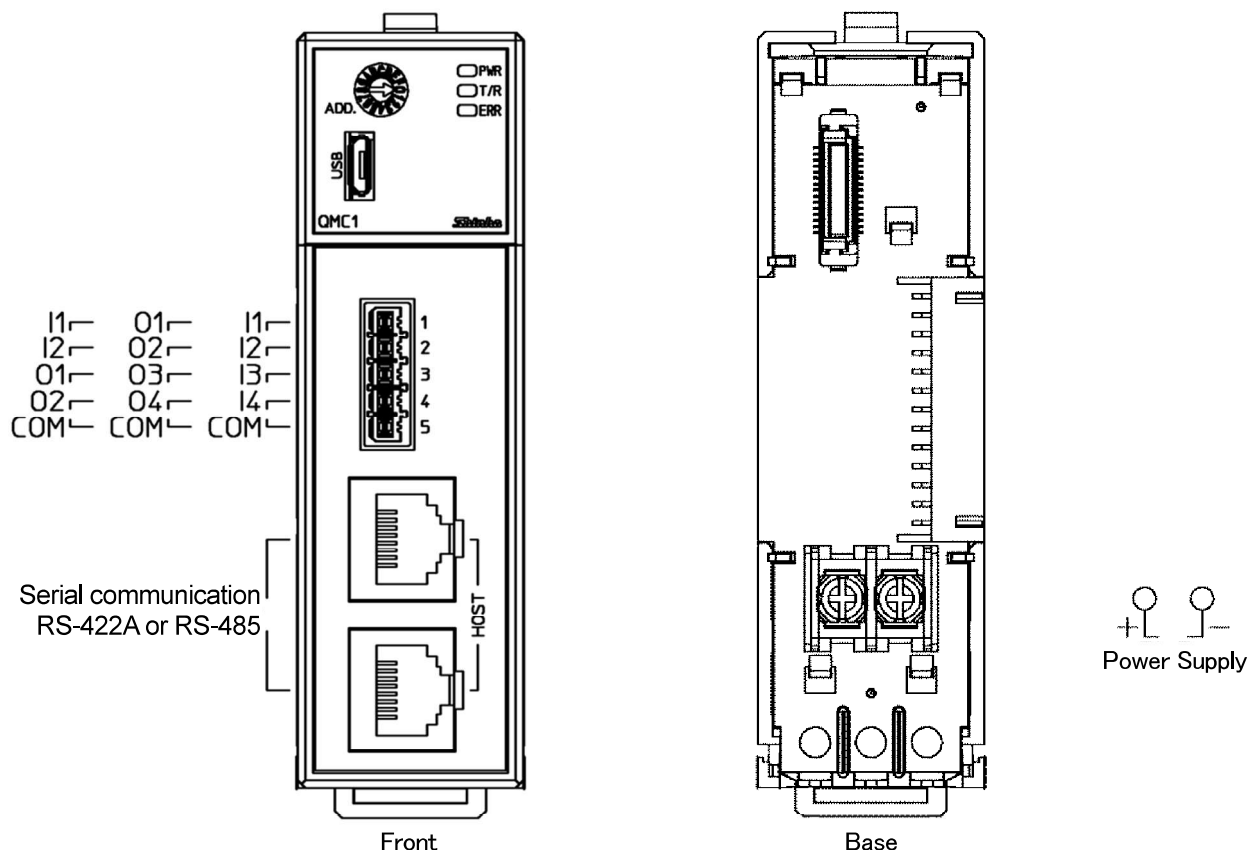
### Switches, Connectors

| No. | Symbol | Name, Task                                                                                                                                                                                                                                  |
|-----|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ④   | ADD.   | Rotary switch for module address selection<br>Use the rotary switch to select the module address from 0 to F (1 to 16).<br>When QMC1-□□□-1 (C series compatible specification), the selected 0 to F (0 to 15) is the address of the module. |
| ⑤   | USB    | Micro USB Type-B console communication connector                                                                                                                                                                                            |
| ⑥   |        | Event input/output connector (*)                                                                                                                                                                                                            |
| ⑦   |        | Communication connector to PLC or host (RJ-45)                                                                                                                                                                                              |
| ⑧   |        | DIP switches for selecting communications specification<br>Use the DIP switches for selecting the communication speed, data bit, parity and stop bit.                                                                                       |

(\*): When using the event input/output option (event input/output option symbols: 1, 2, 3)

## ■ Terminal Arrangement

QMC1-□□□-□



## ■ Standard Functions

Inter-host communication

| Relays communication between host computer or PLCs made by each manufacturer and functional modules. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|----------|-----------------------|--------|---|---|-----------------------------|------------|-------|-----------------------------|------------|-------|-----------------------------|------------|-------|-----------------------------|------------|-------|---------------|-------------|--------------|-----------------|-------------|---------|
| Communication lines                                                                                  | EIA RS-422A compliant<br>EIA RS-485 compliant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Communication method                                                                                 | Half-duplex communication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Synchronization method                                                                               | Start-stop synchronization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Communication speed                                                                                  | Selecting 9600, 19200, 38400, or 57600 bps is possible using the DIP switches. (Factory default: 9600 bps)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Data bit/parity                                                                                      | Data bit: 7 bits, 8 bits (Factory default: 8 bits)<br>Parity bit: With parity, No parity (Factory default: With parity)<br>Parity: Even, Odd (Factory default: Even)<br>Select by communication specification selection DIP switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Stop bit                                                                                             | Selecting 1 or 2 is possible using the communication specification selection DIP switch. (Factory default: 1 bit)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Response delay time setting                                                                          | 0 to 1000 ms (Factory default: 0 ms)<br>The response from the module after receiving a command from the host can be delayed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Communication protocol<br>(Set with console software)                                                | <table border="1"> <thead> <tr> <th>Communication protocol</th><th>Register</th><th>Communication command</th></tr> </thead> <tbody> <tr> <td>MODBUS</td><td>—</td><td>—</td></tr> <tr> <td>Made by Mitsubishi Electric</td><td>D register</td><td>QR/QW</td></tr> <tr> <td>Made by Mitsubishi Electric</td><td>R register</td><td>QR/QW</td></tr> <tr> <td>Made by Mitsubishi Electric</td><td>D register</td><td>WR/WW</td></tr> <tr> <td>Made by Mitsubishi Electric</td><td>R register</td><td>WR/WW</td></tr> <tr> <td>Made by OMRON</td><td>DM register</td><td>FINS command</td></tr> <tr> <td>Made by Keyence</td><td>DM register</td><td>RDS/WRS</td></tr> </tbody> </table> <p>C series compatible protocols are selected by model name.</p> |                       | Communication protocol | Register | Communication command | MODBUS | — | — | Made by Mitsubishi Electric | D register | QR/QW | Made by Mitsubishi Electric | R register | QR/QW | Made by Mitsubishi Electric | D register | WR/WW | Made by Mitsubishi Electric | R register | WR/WW | Made by OMRON | DM register | FINS command | Made by Keyence | DM register | RDS/WRS |
| Communication protocol                                                                               | Register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Communication command |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| MODBUS                                                                                               | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | —                     |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Made by Mitsubishi Electric                                                                          | D register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | QR/QW                 |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Made by Mitsubishi Electric                                                                          | R register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | QR/QW                 |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Made by Mitsubishi Electric                                                                          | D register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | WR/WW                 |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Made by Mitsubishi Electric                                                                          | R register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | WR/WW                 |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Made by OMRON                                                                                        | DM register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | FINS command          |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Made by Keyence                                                                                      | DM register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | RDS/WRS               |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| Number of connections                                                                                | Control module: Max 16 modules<br>For C SERIES COMPATIBLE, max 5 modules                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |
| SIF function (Smart InterFace, programless communication function)                                   | A function that writes and reads various data into and out of PLC registers using the communication protocols of PLCs from each manufacturer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |                        |          |                       |        |   |   |                             |            |       |                             |            |       |                             |            |       |                             |            |       |               |             |              |                 |             |         |

#### Inter-module communication

|                        |                                  |
|------------------------|----------------------------------|
| Communication line     | Internal bus                     |
| Communication method   | Half-duplex communication        |
| Synchronization method | Start-stop synchronization       |
| Communication speed    | 57600 bps                        |
| Data bit/parity        | Data bit: 8 bits<br>Parity: Even |
| Stop bit               | 1 bit                            |

#### Console communication

|                                                                                                                                                                                                                                                                                                                                                           |                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <p>The following operations are performed from an external computer using the tool cable connector.</p> <p>(1) Read and select host communication protocols, event input assignments, and event output assignments</p> <p>(2) Operation status reading</p> <p>(3) Read and set the each setting value of the SIF function</p> <p>(4) Function changes</p> |                                                      |
| Communication specifications                                                                                                                                                                                                                                                                                                                              | Cable used Commercially available (micro USB Type-B) |

## ■ Optional Functions

Event Input (Event input/output option symbol: 1, 3)

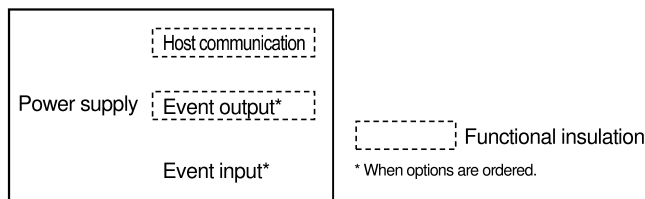
|                                                                                                                                                             |                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| When an event input is input, the operations selected by the QMC1 event input assignment selection are performed. Non-existent event input will be invalid. |                                                           |
| Event input assignment selection                                                                                                                            | Status read by communication, control allowed/ prohibited |
| No. of inputs                                                                                                                                               | 4 or 2                                                    |
| Input method                                                                                                                                                | Voltage contact input sink method                         |
| Circuit current when closed                                                                                                                                 | Approx. 6 mA                                              |
| Reading judgment time                                                                                                                                       | Approx. 100 ms                                            |

Event Output (Event input/output option symbol: 2, 3)

|                                                                                                                                 |                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| The operations selected by the QMC1 event output assignment selection are performed. Non-existent event output will be invalid. |                                                                                                                        |
| Event output assignment selection                                                                                               | Output ON/OFF designation by communication, Alarm 1, Alarm 2, Alarm 3, Alarm 4, Heater burnout alarm, Loop break alarm |
| No. of outputs                                                                                                                  | 4 or 2                                                                                                                 |
| Circuit                                                                                                                         | NPN open collector                                                                                                     |
| Maximum load voltage                                                                                                            | 30 V DC                                                                                                                |
| Maximum load capacity                                                                                                           | 50 mA                                                                                                                  |

## ■ Insulation / Dielectric Resistance

Circuit Insulation Configuration



When event input/output is added simultaneously, the connection between event output and power supply is not isolated.

|                       |                                                                                                                               |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Insulation resistance | 500 V DC, 10 MΩ or more                                                                                                       |
| Dielectric resistance | Between Power terminal and ground: 1.5 kV AC for 1 minute<br>Between Power terminal and Communication: 1.5 kV AC for 1 minute |

## ■ Environmental Conditions

|                              |                                               |
|------------------------------|-----------------------------------------------|
| Ambient temperature          | -10 to 55°C (Non-condensing, no icing)        |
| Ambient humidity             | 35 to 85% RH (Non-condensing)                 |
| Environmental specifications | Compliant with revised RoHS Directive (RoHS2) |

## ■ Attached Functions

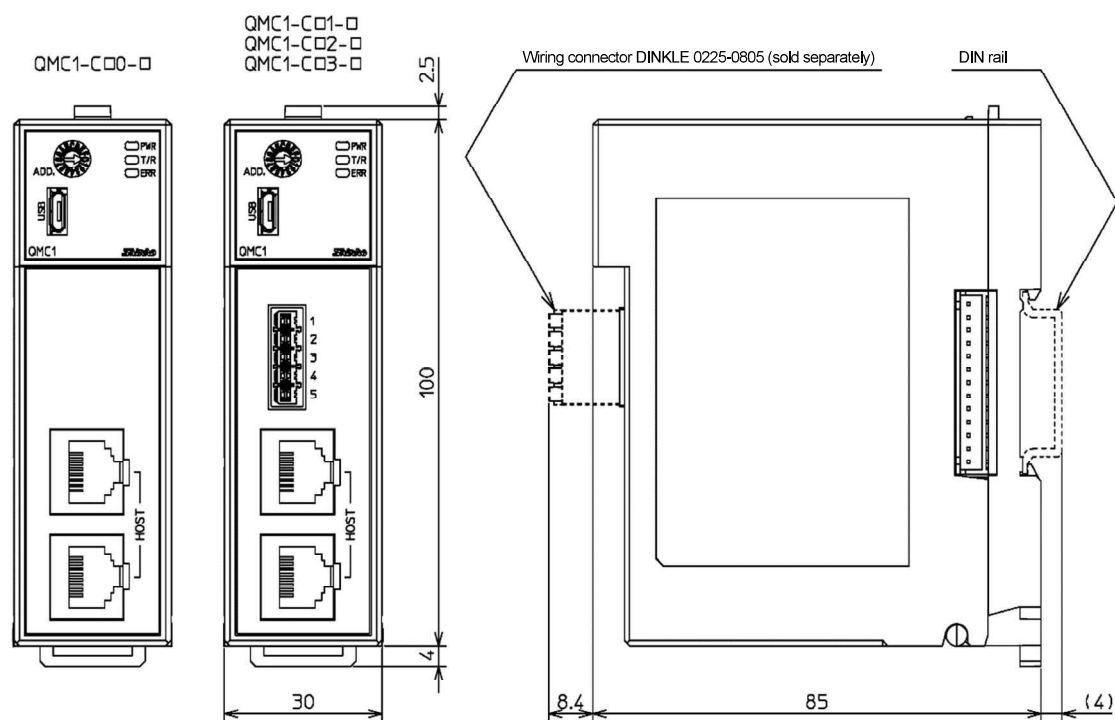
|                                            |                                                                                                                            |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Power failure countermeasures              | Setting data is backed up to non-volatile IC memory.                                                                       |
| Self-diagnosis                             | The watchdog timer monitors the CPU, and if an error occurs, all outputs are turned OFF and the instrument is initialized. |
| Warm-up display                            | After the power is turned on, the power indicator flashes every 500 ms for about 3 seconds.                                |
| Total energizing time measurement function | It can check and set the time that the power is on.                                                                        |

## ■ Other

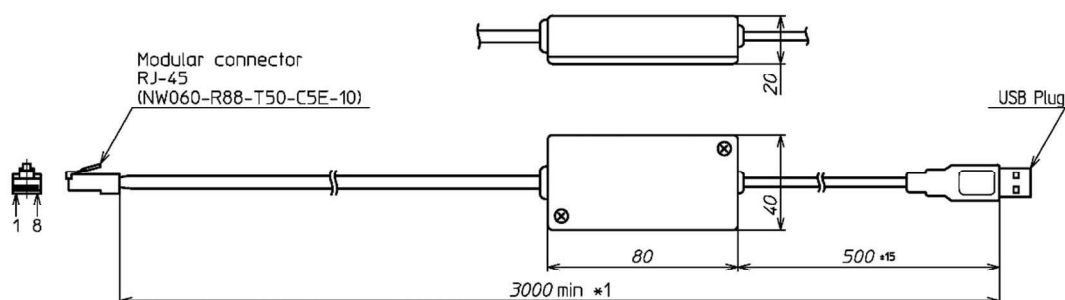
|                             |                                                                                                                                                                                                                                                                                                |                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Power supply voltage        | 24 V DC                                                                                                                                                                                                                                                                                        | Allowable fluctuation range: 20 to 28 V DC |
| Power consumption           | 3 W or less                                                                                                                                                                                                                                                                                    |                                            |
| Rush current                | Max. 10 A                                                                                                                                                                                                                                                                                      |                                            |
| Accessories included        | Power supply terminal cover (1)<br>Mounting and wiring instruction manual (1)                                                                                                                                                                                                                  |                                            |
| Accessories sold separately | Communication cable (USB Type-A - Modular) (CMC-001-4)<br>Communication cable [Modular - Y terminal (RS-485, 3-wire)] (CQM-001)<br>Communication cable [Modular - Y terminal (RS-422A, 5-wire)] (CQM-002)<br>Communication cable (Modular - Modular) (CQQ-001)<br>Wiring connector (0225-0805) |                                            |
| Instruction manual          | Please download the full Instruction Manual from the Shinko website.<br><a href="http://www.shinko-technos.co.jp/e/">http://www.shinko-technos.co.jp/e/</a>                                                                                                                                    |                                            |

## ■ Dimensions (Scale: mm)

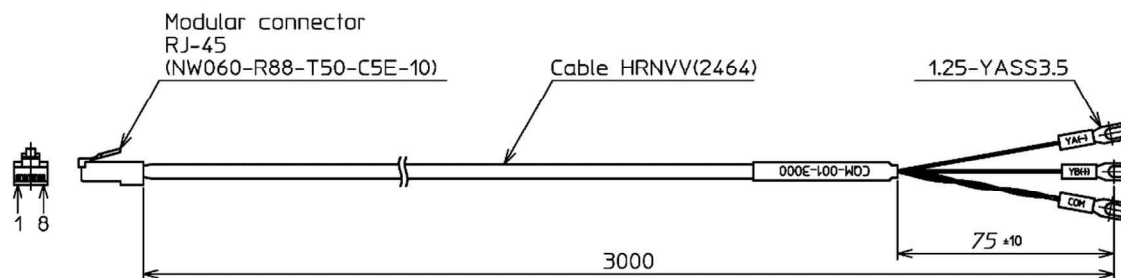
Main Unit



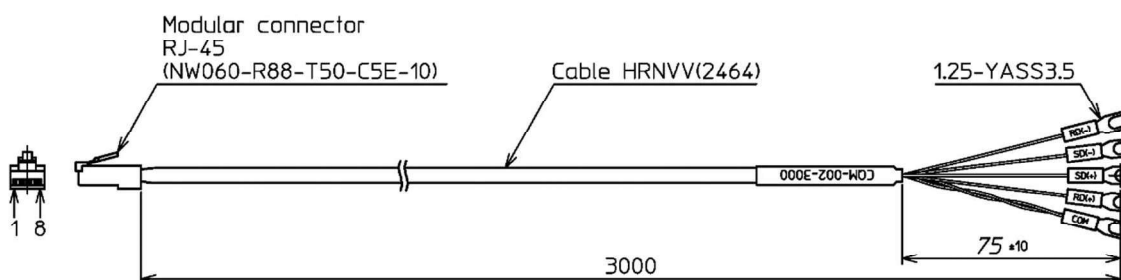
Communication cable (USB Type-A - Modular) CMC-001-4



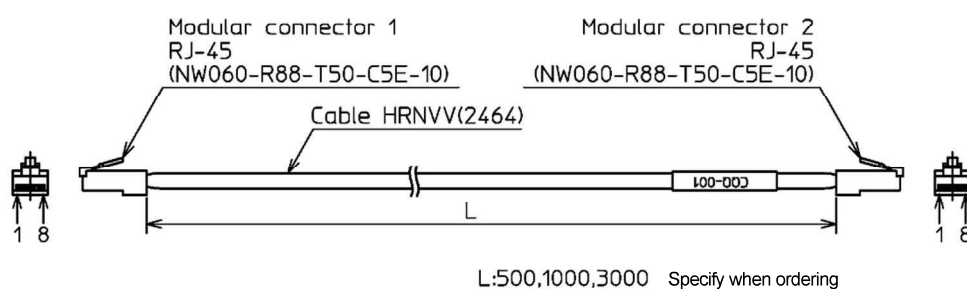
Communication cable [Modular - Y terminal (RS-485, 3-wire)] CQM-001



Communication cable [Modular - Y terminal (RS-422A, 5-wire)] CQM-002



Communication cable (Modular - Modular) CQQ-001



Wiring connector 0225-0805

