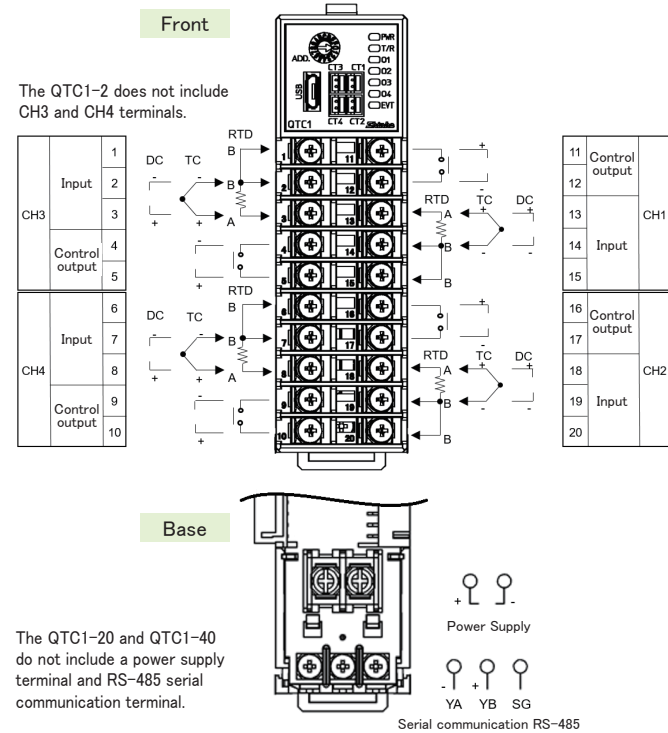
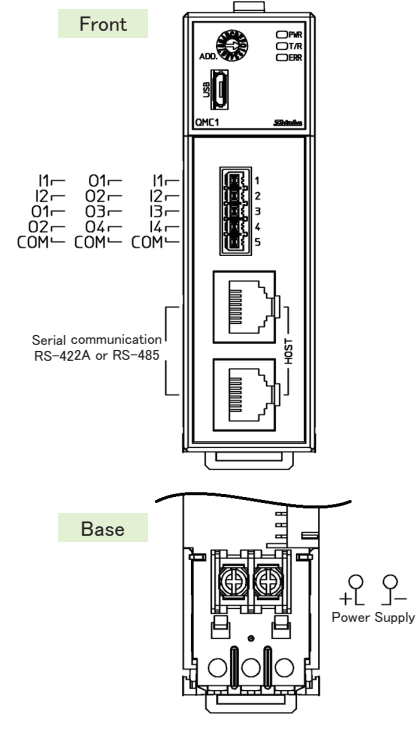


## Terminal Arrangement

Control Module QTC1-2/QTC1-4

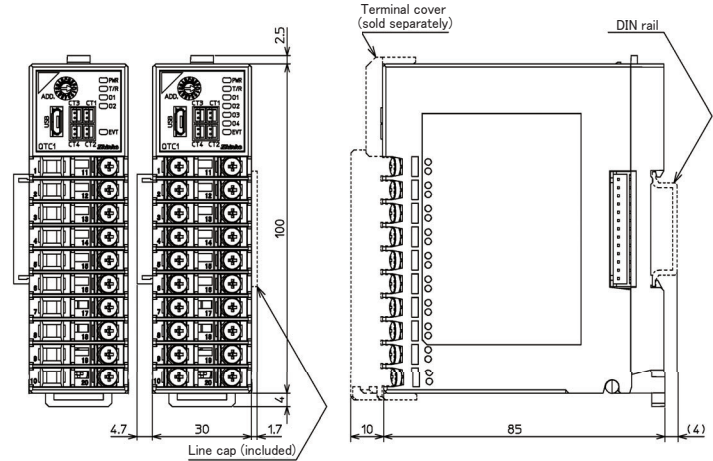


Communication Expansion Module QMC1

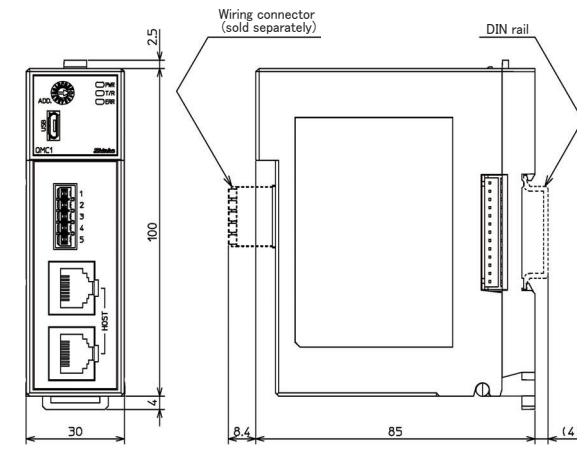


## Dimensions (Scale: mm)

Control Module QTC1-2/QTC1-4



Communication Expansion Module QMC1



**SAFETY PRECAUTIONS**

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting with our agency or main office regarding the purpose of use. (Never use this instrument for medical purposes in which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as a malfunction of this product could result in serious damage to the system or injury to personnel. Also, proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

**Caution with respect to Export Trade Control Ordinance**

To avoid this instrument from being used as a component in or being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.

- This catalog is current as of April 2021, and its contents are subject to change without notice.
- If you would like to place an order or have any inquiries, please consult your nearest sales office or retail store.

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Max. 1024-point measurement, control,  
and monitoring

# MODULAR CONTROLLERS

QX1 series



Internally mounted control system for multi-point measurement,  
control, and monitoring functionality

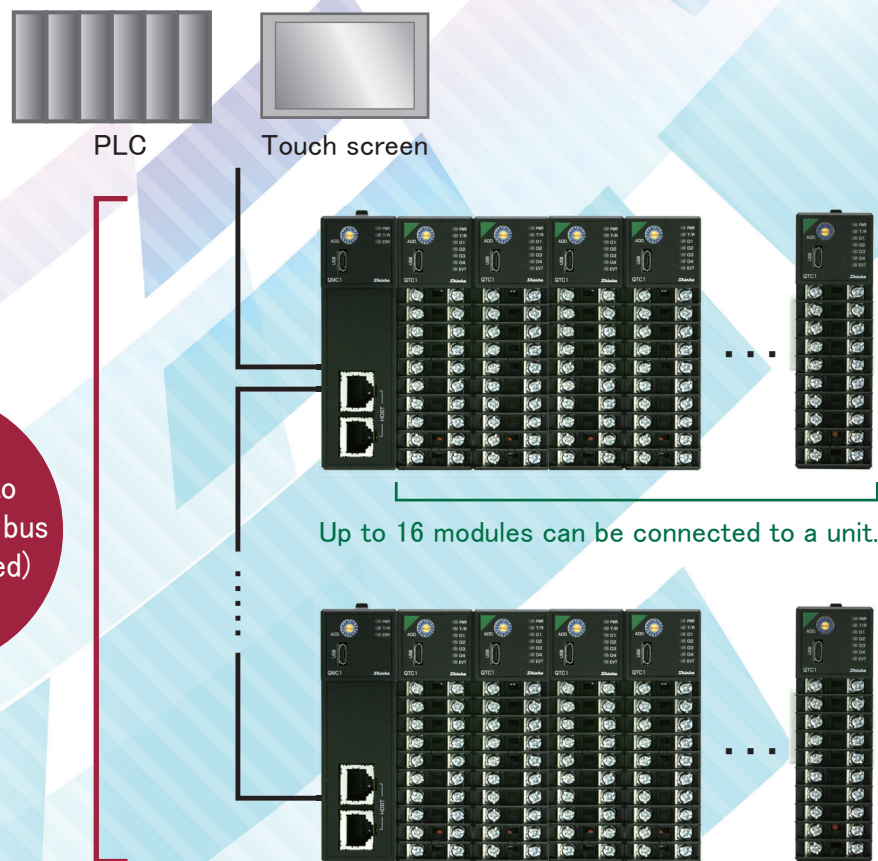
**Shinko**



# Multi-point controller for infinite possibilities



Max. 1024-point measurement and control

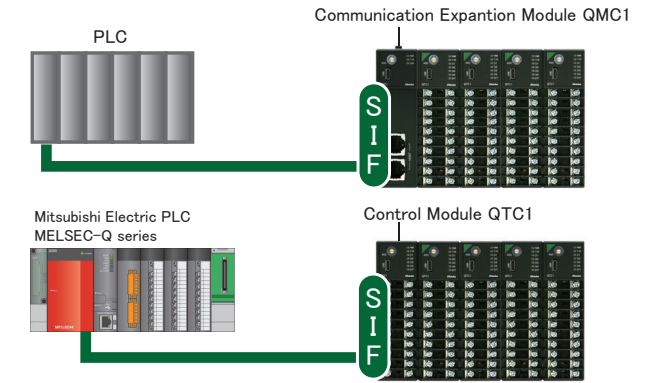


## 1 Program-less connections to PLCs for reduced work (SIF function)

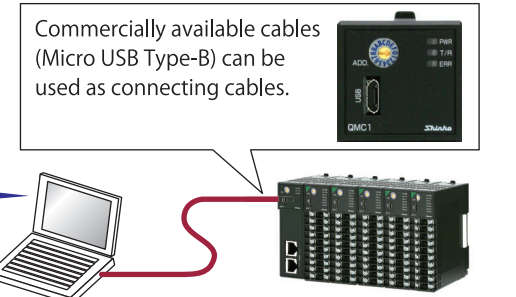
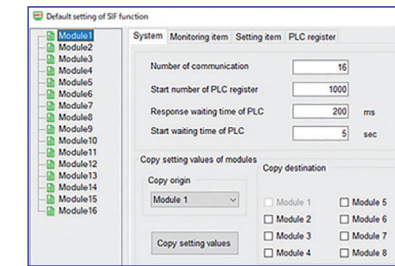
The Smart InterFace (SIF) function (program-less PLC communication function) enables direct connectivity to PLCs from various manufacturers. (Connect up to 1 unit to one bus)

Supported PLC	Manufacturer	Resister	Communication command
	Mitsubishi Electric	D resister	QR/QW (*)
	Mitsubishi Electric	R resister	QR/QW
	Mitsubishi Electric	D resister	WR/WW
	Mitsubishi Electric	R resister	WR/WW
	OMRON	DM resister	FINS command
	KEYENCE	DM resister	RDS/WRS

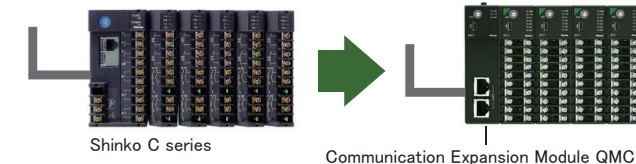
(\*) The SIF function of the control module QTC1 is exclusively for Mitsubishi Electric Corporation PLC D register QR/QW.



Settings can be easily changed using the console software, making it possible to manage multiple modules at once. OS: Windows 10 (Japanese/English)



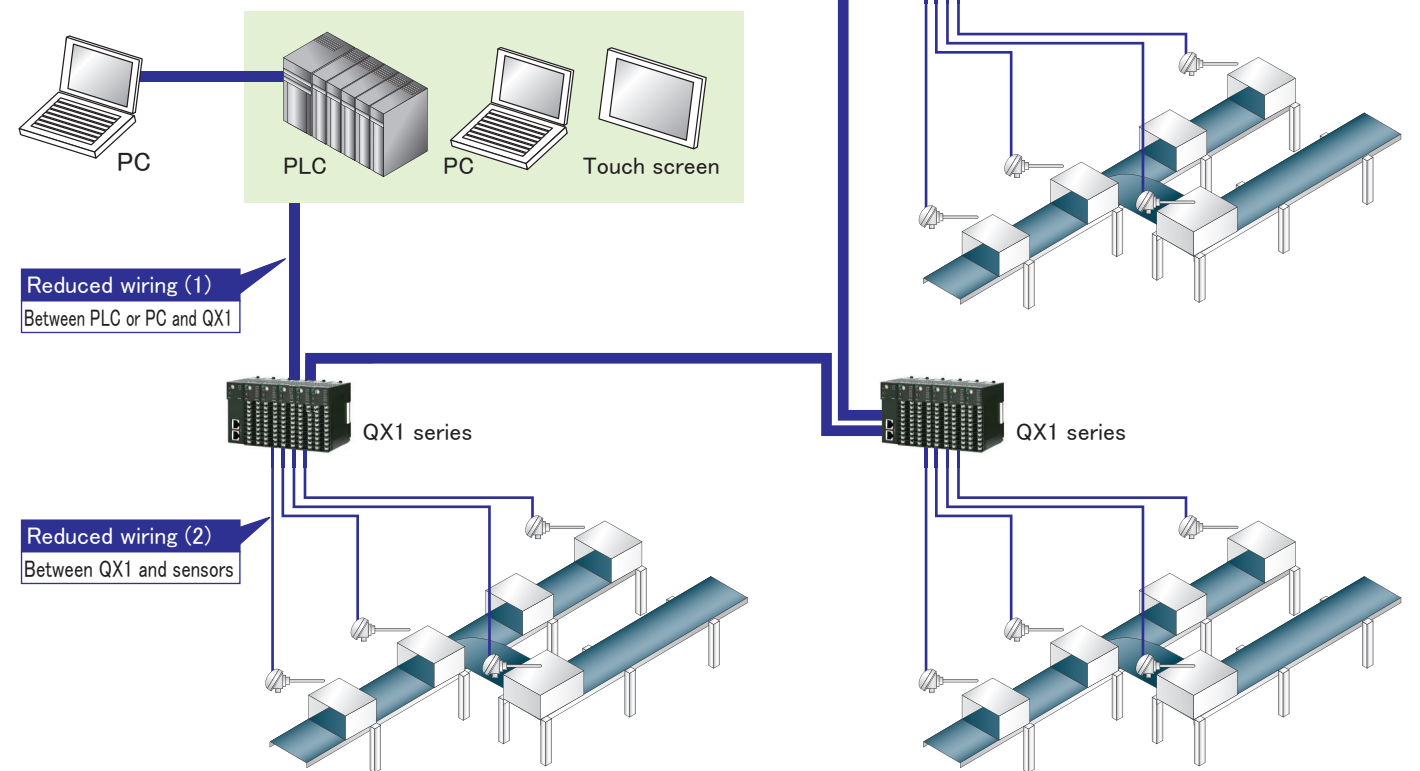
Please use Communication Expansion Module QMC1 when replacing Shinko C series devices.



Some communication commands are different. When replacing the C series with the QX1 series, please contact us.

## 2 Usable as an analog module for reducing initial costs and wiring

The QX1 series can be used as an analog module, helping to reduce initial costs and required wiring work.





# Administrative support

## 3 Failure prediction maintenance

### Failure prediction maintenance

Check usage statuses using the following measurement functions.

1. Cumulative heater energization time (QTC1)
2. Cumulative module energization time (QMC1, QTC1)
3. Cumulative relay contact open/close count (QTC1)

In the event of an error, the error number and energization time are saved. The 10 most recent errors are saved. (Error history: Can be checked with console software) (QTC1)

Items	CH1	CH2	CH3	CH4
Content of error history 1	384	384	384	384
Energizing integrated time of error history 1	790	790	790	767
Content of error history 2	384	384	384	384
Energizing integrated time of error history 2	790	790	790	767
Content of error history 3	384	384	384	384
Energizing integrated time of error history 3	793	793	793	767
Content of error history 4	384	384	384	256
Energizing integrated time of error history 4	766	769	766	767
Content of error history 5	384	384	384	384
Energizing integrated time of error history 5	795	793	766	767
Content of error history 6	640	384	384	256
Energizing integrated time of error history 6	764	787	763	767
Content of error history 7	384	384	256	384
Energizing integrated time of error history 7	764	766	763	767
Content of error history 8	384	256	384	384
Energizing integrated time of error history 8	763	786	763	766
Content of error history 9	256	384	384	384
Energizing integrated time of error history 9	763	785	758	766
Content of error history 10	384	256	256	384
Energizing integrated time of error history 10	762	785	758	766

### Risk avoidance in case of emergency

The output selection function can be used to switch between outputs. For example, in the event of a CH1 output failure, CH2 output is enabled.

A signal can be output if heater burnout is detected. (QTC1)  
[Heater burnout alarm options: Single-phase, 3-phase (3-phase: QTC1-2 only)]

Alarm output signals can be used to start or stop control. [Event input/output (optional)]

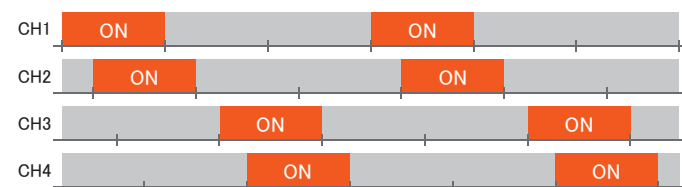
The input difference detection function makes it possible to monitor for input differences between channels.

## 4 Peak power suppression function for lower power equipment costs

### Peak power suppression function

The total current can be set for the module, and power suppression control can be performed when the sum of the current values set for each channel is less than or equal to the total current. This can help minimize investments in power equipment.

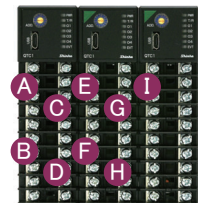
Example of peak power suppression function output timing



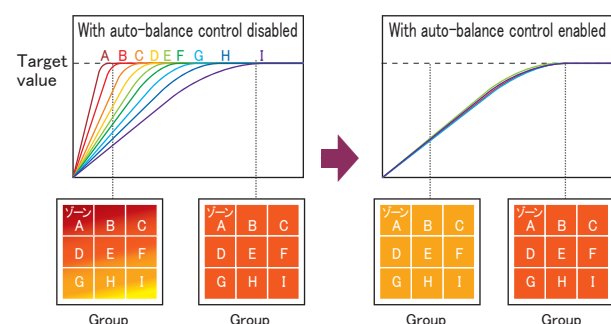
## 5 Improved product quality

### Multi-zone connection (Auto-balance control)

Take advantage of uniform control of multiple control locations (zones) of a control target (group) through linking. This helps prevent partial burning and mechanical distortion while also reducing adverse effects on product quality.

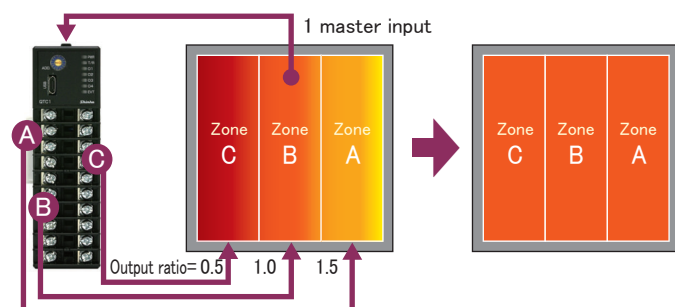


Auto-balance control works with multiple connected modules.



### Individual output amount settings (output gain, bias control)

If required output amounts are known in advance, such as when controlling heaters in multiple locations (zones) for a single input point, uniform control of multiple zones is possible. Combining output selection functions reduces the number of input terminals needed, initial costs can also be reduced.



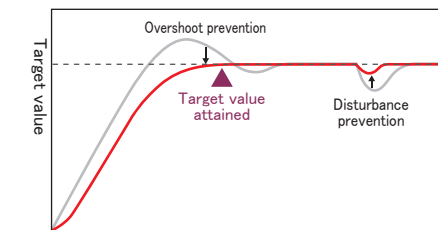
# Rich functions

## 6 Five included control methods for reduced manual labor

Control characteristics vary depending on the control target. The QX1 series includes five control methods to meet a variety of control characteristics.

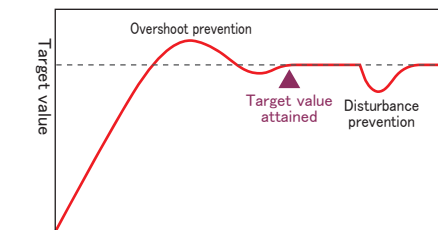
### 2DOF PID control

In addition to target value tracking and disturbance responsiveness, this well-balanced system reduces overshooting. (When using default control action.)



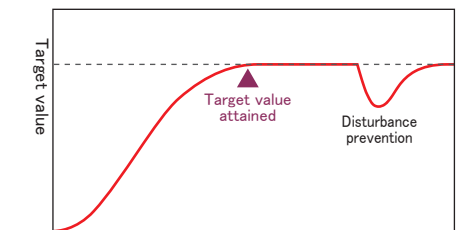
### Fast-PID control

This control method emphasizes target value tracking. This control method works best when replacing the controller with a Shinko product. (Doing so provides better performance.)



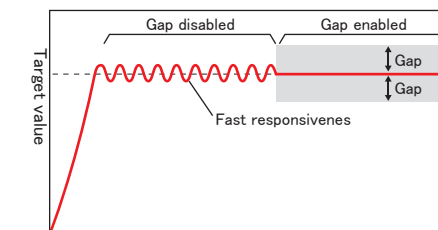
### Slow-PID control

This control method prioritizes preventing overshooting rather than attaining a target value.



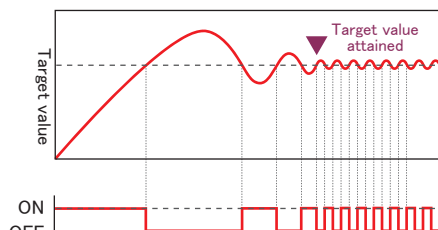
### Gap-PID control

This control method is effective with fast responses such as for flow rates and valves. (Deviation characteristics are provided within the gap.)



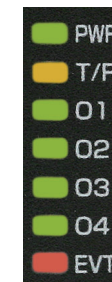
### ON-OFF control

This control method is selected for operating devices that turn heaters and other equipment on or off.

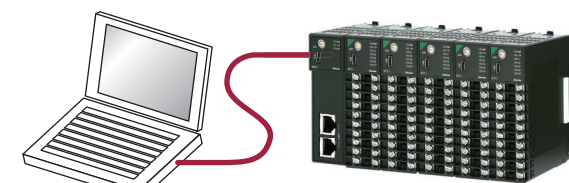


## 7 Maintenance improvements

The numerous LEDs allow users to visually check statuses and errors on-site.



Settings can be easily changed using the console software, making it possible to manage multiple modules at once. OS: Windows 10 (Japanese/English)



Commercially available cables (Micro USB Type-B) can be used as connecting cables.

## 8 Heating/cooling control

Heating and cooling are controlled with CH1 used as the heating-side input and CH2 as the cooling-side input. (Up to 2 loops are possible with the QTC1-4.)

## 9 Cascade control

The adjusted CH1 variable, obtained from the SV and PV of CH1, is substituted for the SV of CH2, enabling CH2 control calculation and outputting. (Up to 2 loops are possible with the QTC1-4.)

## 10 High functionality even when used independently

When used independently, the QTC1 can be used for control or to communicate with a host, and adding monitoring targets is easy.

