

PUM series Multi-loop Module Temperature Controller

Smart!

- Optimum multiple-zone control
- PLC function (by plug-in module:option)
- Programless host communication

User friendly!

- Detachable terminal
- Simple loader operation

Fast!

- High-speed data communication (230.4kbps)
- High-speed data sampling



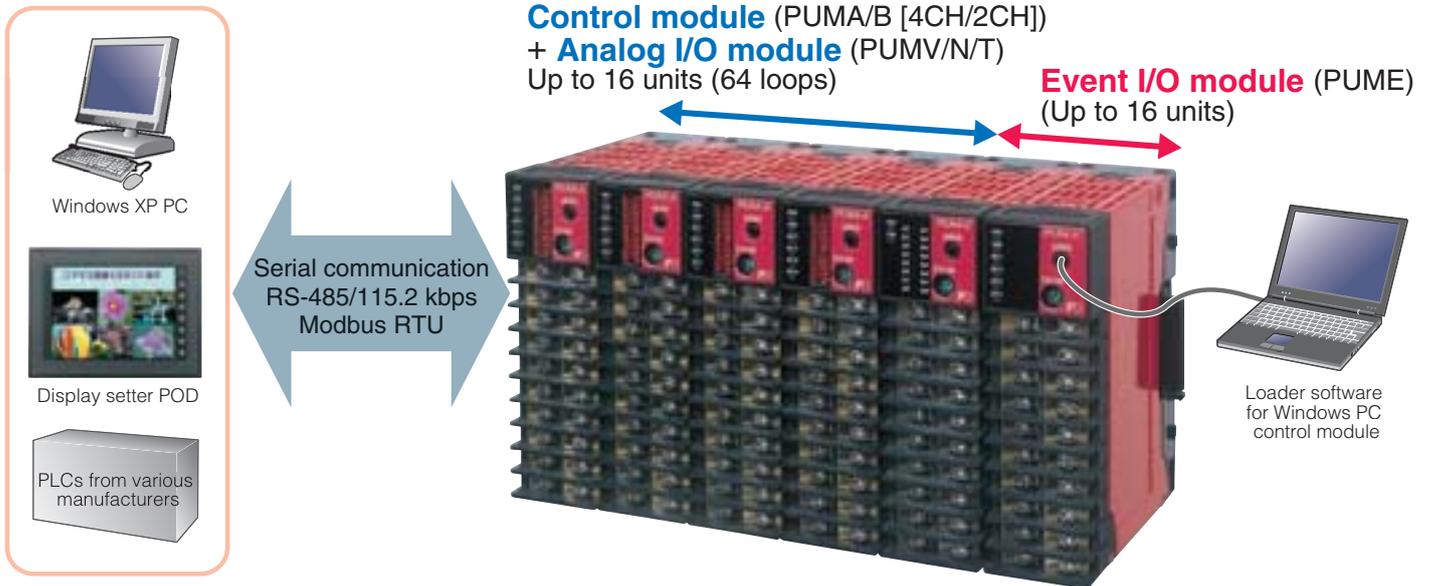
The PUM-series multi-loop module temperature controller optimizes your mechanical equipment by its high-performance based on the **three concepts** of “Smart”, “User-friendly”, and “Fast”.

Smart!

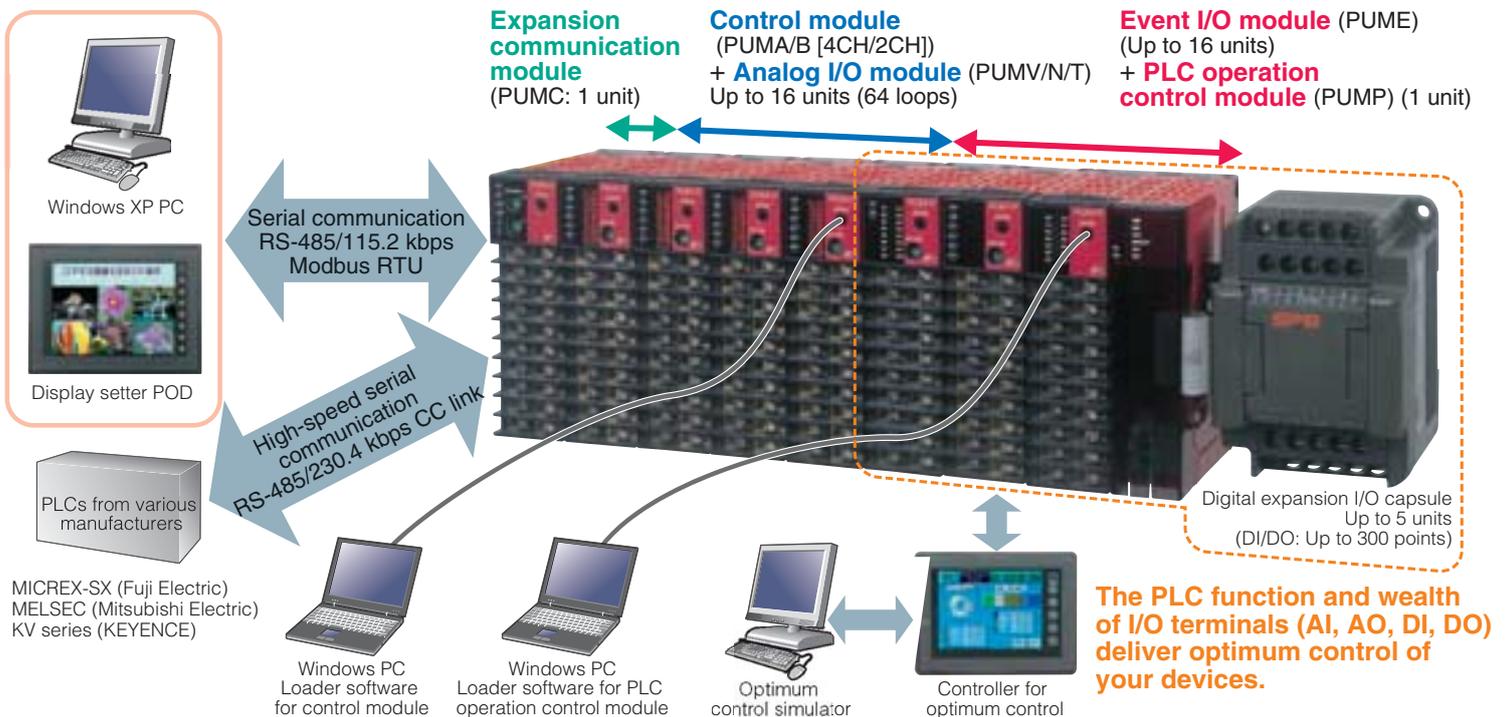
User friendly!

Fast!

Basic system Control module Event/Analog I/O module



Expansion system Basic system+Expansion communication module+PLC operation control module



Smart!

① Various control functions

Basic PID control (including fuzzy PID control), dual PID control (heating, cooling), and coordinated PLC operation control

② Heater break alarm CT (8 points), alarm, and operation

A break in a three-phase heater can be detected. The various alarms and sequence operation do not rely on transmission.

③ Optimum multiple-zone control

Our unique algorithm maintains stable and highly precise temperature control in multiple zones where interference is unavoidable.

④ Integration of PLC function

Digital I/O signal processing of up to 16-k steps and 300 points is allowed.

⑤ Programless host communication

Communication can be established with PLCs from various manufacturers without having to write complex programs.

⑥ Intelligent loader

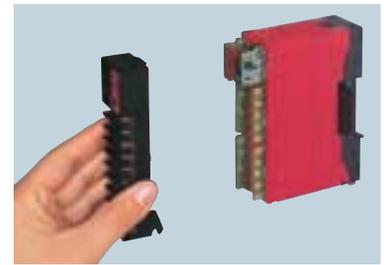
All the modules can be set from the loader port of the control module without removing and reinserting cables. Parameter display, settings, and control status can be monitored to assess the overall control status.

User friendly!

① Detachable terminal structure

<See the photo at right>

The terminal attachable/detachable without a screwdriver significantly reduces wiring work.



② Simple operation

The loader can be operated easily without consulting the manual.

The hierarchical screen with pull-down menus and detailed descriptions facilitates parameter search.

③ Multilingual loader

The display language can be switched between multiple languages for global use.

④ Parameter editing into names to your specifications

Frequently used parameters can be edited preferentially, using the "My Favorite" function. The parameter names can even be freely changed, so you can create your own screens.

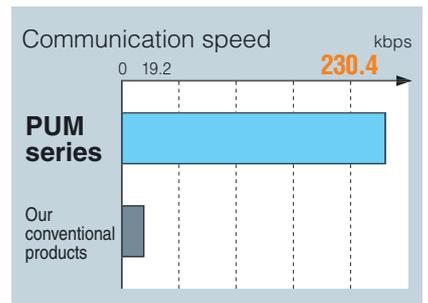
Fast!

① High-speed host data communication

The 230.4-kbps high-speed data communication means the system runs smoothly, without having to be concerned about the time required for data transmission.

② High-speed data sampling

The PUM series can be used not only for temperature measurement but also for process measurement such as pressure and flow rate thanks to 200-msec high-speed data sampling.



Wide range of modules

Control module

PUMA/B
4/2-loop control



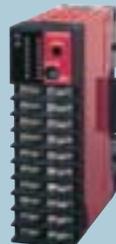
Expansion communication module

PUMC RS485



Event I/O module

PUME
DI / points/DO8 points



Analog I/O module

PUMV/NT
AI 4 points/AO 4 points



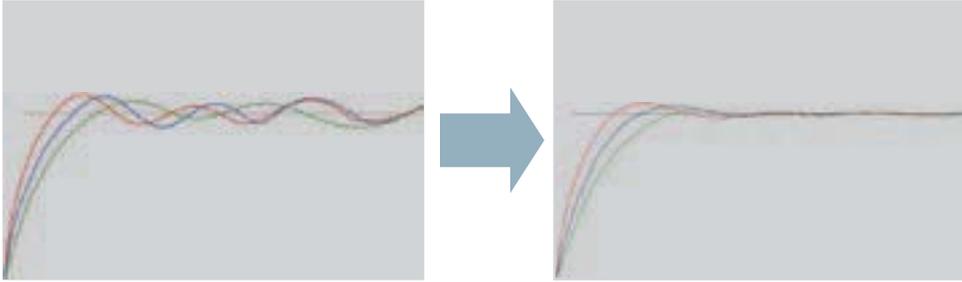
PLC operation control module

PUMP 16-k steps



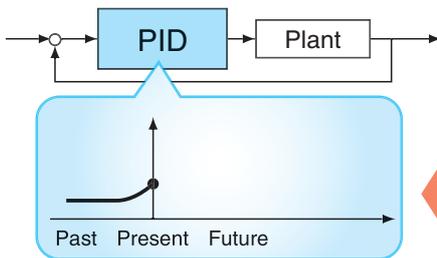
Optimum multiple-zone control (Patent pending)

Suitable for a control system where mutual interference between multiple zones is inevitable.
 The controller is ideal for a system in which interference occurs between separate zones such as in the case of reflow furnace control.



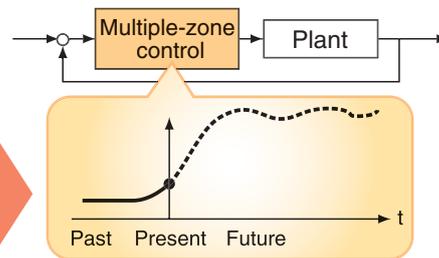
Control based on our unique optimum multiple-zone control algorithm

PID control

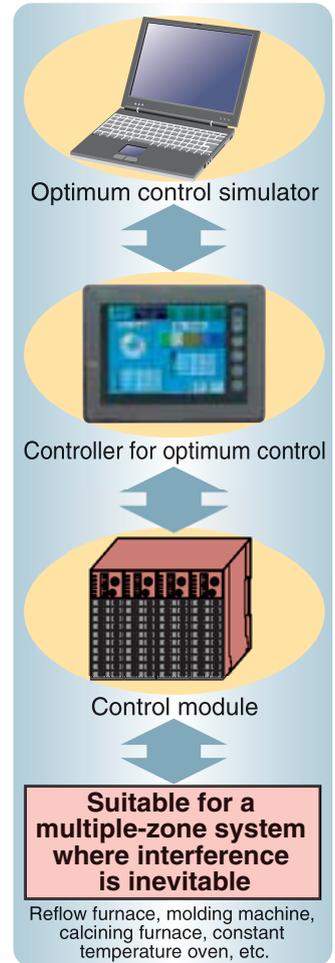


Control is performed based on calculations carried out using the **past and present values**.

Optimum multiple-zone control



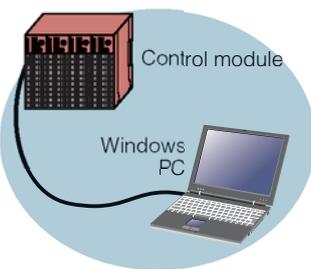
The controller has a plant model inside. Control is performed based on calculations carried out using the **past, present, and assumed future values**.



Program loader

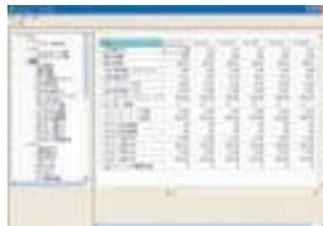
Loader software exclusive for Windows PC is available both for the control module and PLC operation control module.

Loader for control module

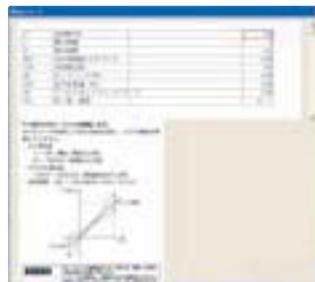


The hierarchical screen of the loader features the "My Favorite" function, which displays parameters you tend to need most. Parameters can be registered and displayed with freely-set names to suit your system. The multilingual program loader is ideal for today's globalized world.

Temperature control parameter screen



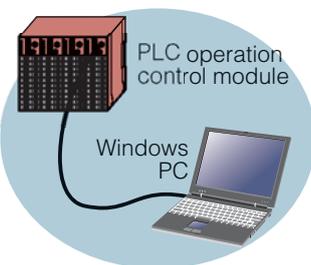
Parameter interpretation screen



Trend display screen



PLC operation loader



Programs created using ladder language are supported. Data integration with control modules is easy.

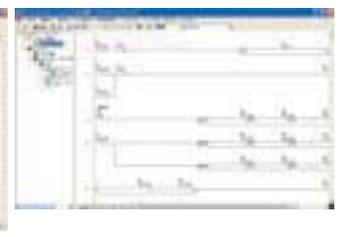
PLC system structure screen



PLC address information screen



PLC program screen

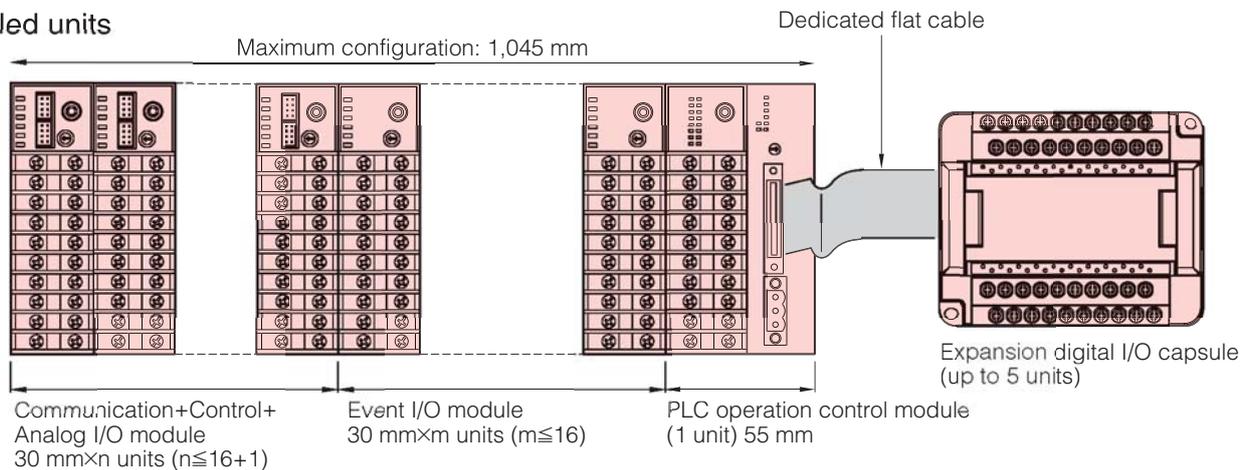


Unit specifications

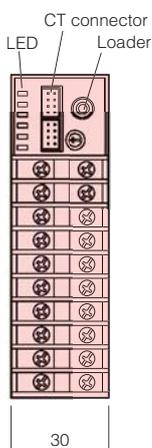
Name/Classifications	Type	Specifications
Control module <Features> 4ch and 2ch Three-phase heater break detection 8-point measurement	PUMA/B 	Controlled channels : 4ch (PUMA), 2ch (PUMB) Type of input signals : Thermocouple/Resistance bulb, Voltage/Current Control operation function : PID control, PID heating/cooling control, 8-type parameter setting Control output type : Relay output, SSR drive output, Current output 4-20 mA DC CT input exclusive for heater break detection : 8 points (additional spec.) Communication function : RS-485, Modbus RTU, 115.2 kbps Loader communication port : RS-232C, Accuracy : $\pm 0.3\%$ FS Sampling interval : 200 msec., Power supply : 24 VDC $\pm 10\%$
Event I/O module <Features> 8-point alarm DO output DI input for switching external settings	PUME 	Number of input points : 8 (4/common \times 2 blocks) Type of input signals : Voltage contact input, Common for sink and source (bidirectional) Number of output points : 8 (4/common \times 2 blocks) Output type : Relay output, Transistor open collector (Sink output) Input read interval (minimum pulse width) : 200 msec. Power supply : 24 VDC $\pm 10\%$
Analog I/O module <Features> External analog measurement transfer to flowmeter and pressure gage	PUMV 	Input : 4 points Input type : Thermocouple/resistance bulb, Voltage/current Output : 4 points Output type : Current output : 4-20 mA DC Accuracy : $\pm 0.3\%$ FS Sampling interval : 200 msec. Power supply : 24 VDC $\pm 10\%$
Analog input module <Features> Input for remote SV	PUMN 	Input : 4 points Input type : Thermocouple/resistance bulb, Voltage/current Accuracy : $\pm 0.3\%$ FS Sampling interval : 200 msec. Power supply : 24 VDC $\pm 10\%$
Analog output module <Features> For transfer output	PUMT 	Output : 4 points Output type : Current output : 4-20 mA DC Accuracy : $\pm 0.3\%$ FS Power supply : 24 VDC $\pm 10\%$
Expansion communication module	PUMC□ 	Transmission standard : RS-485/CC-LINK Transmission speed : 19.2, 38.4, 115.2, 230.4 kbps Communication function (specified) : Modbus RTU, Mitsubishi Electric PLC ladderless communication, CC-LINK Power supply : 24 VDC $\pm 10\%$
PLC operation control module	PUMP□ 	Connection status : RS-485 (1 port), Expansion PIO unit (with dedicated cable) Program capacity : 16-k step Programming language : LD (Number of commands: Over 200) Fastest command speed : 0.38 μ s (Contact command) Number of I/O points : 300, with calendar function (Backup battery) Built-in digital I/O points : DI: 7 points (4 points of those also used as PI) DO: 7 points (4 points of those also used as PI) Power supply : 24 VDC $\pm 10\%$
Expansion digital I/O capsule		Fuji PLC (SPB-series expansion PIO) can be connected. 16-point I/O expansion unit, 16-point input expansion unit, 16-point output expansion unit, 32-point I/O expansion unit, 60-point I/O expansion unit
Display setter	UG30 series 	LC touch panel (With connection cable exclusively for POD by Fuji) With standard template screen for control modules Items displayed : Temperature setting, temperature measurement, alarm status
Optional cables		End plate for mounting RS-485 terminating resistor DIN rail End cover for side connector (One pair for both sides) Front screw terminal cover Loader connection cable (RS-232C) Exclusive CT input terminal connection cable (For 4 input points) (Length : 1,3,5m) Exclusive CT (For 1-30 A or 20-50 A)

Outline diagram

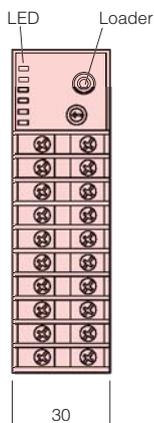
Coupled units



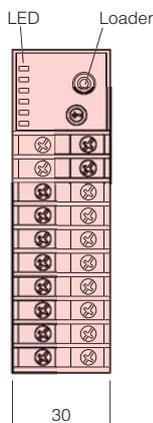
Control module PUMA



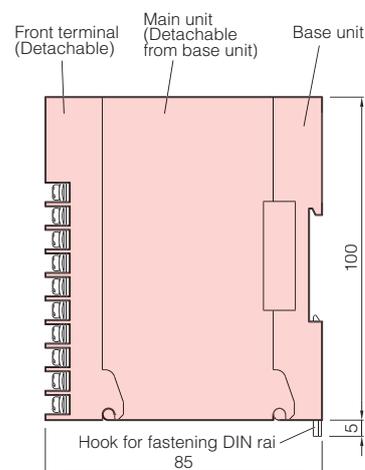
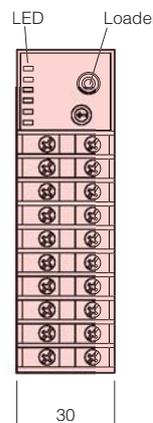
Expansion communication module PUMC



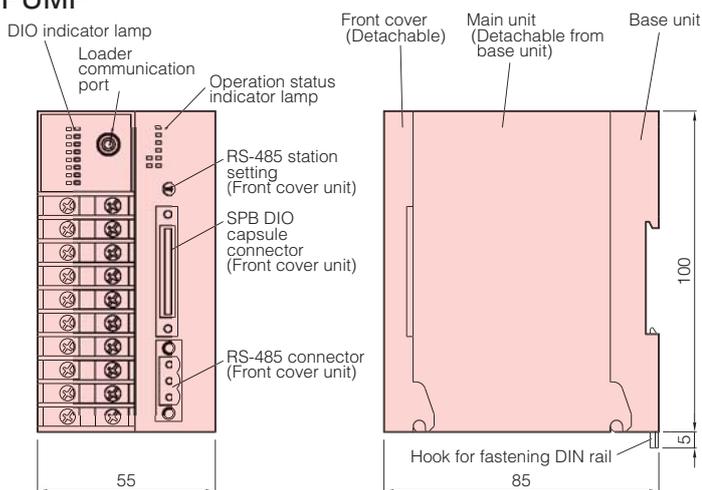
Event I/O module PUME



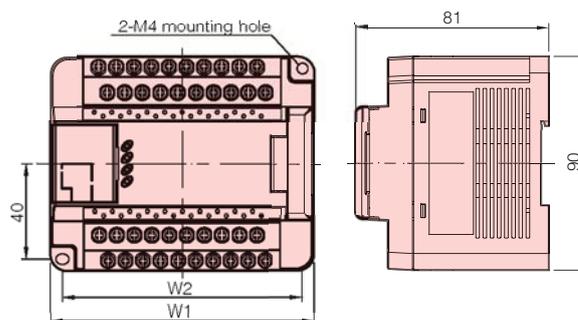
Analog I/O module PUMV/N/T



PLC operation control module PUMP



Expansion digital I/O capsule



	W1(mm)	W2(mm)
16-point expansion unit	64	54
32-point expansion unit	110	100
60-point expansion unit	180	170

Fuji Electric Systems Co., Ltd.

Head office

Gate City Ohsaki, East Tower,
11-2, Osaki 1-chome, Shinagawa-ku, Tokyo, 141-0032, Japan
<http://www.fesys.co.jp/eng>

Instrumentation Div.

International Sales Dept.

No.1, Fuji-machi, Hino-city, Tokyo, 191-8502 Japan
Phone : 81-42-585-6201,6202
Fax : 81-42-585-6187
<http://www.fic-net.co.jp/eng>