Fuji Electric

Multi-Loop Module Type
Temperature Controller
PUM Series

COMMUNICATION MODULE (ETHERNET)

DATA SHEET

PUMCE

PUMCE is a communication module, which connects module type temperature controller PUM series with Ethernet. The Modbus bridge function allows PUM series controllers to connect to Ethernet network. In addition, programless communication with MICREX-SX is available by using loader commands for MICREX-SX.

FEATURES

I. Connection to Ethernet network
1. Supporting 10BASE-T/100BASE-TX, auto-switchover for Ethernet connection
2. Access to all parameters of control module (PUMA/PUMB) , Analog Input/Output Module (PUMV/N/T), and Event Input/Output Module (PUME)
3. High-speed data communication with connected PUMs
- Quick data importing and setting data reflection

II. User-friendly structure and functions
1. Lateral connection : Max.16 units (64 channels) + event input/output module 16 units = total 32 units
Simple wiring for power supply and communication
2. Detachable structure: Terminal block, main unit, and the base part
→ Easy wiring with detachable terminal blcok
→ Main units exchangeable without re-wiring

SYSTEM SPECIFICATION

1. Product type: Multi-loop module type temperature controller
2. Module types
1) Analog module: 16 units maximum
- Control module (4 loops per unit)
- Analog input/output module (4 points each per unit)
Analog input module (4 points per unit)
Analog output module (4 points per unit)
2) Digital module: 16 units maximum
Event input/output module (8 points each per unit)
3) Communication module: 1 unit
3. Connecting method:
Lateral connecting with connectors
- For power supply and communication, any one of connected modules is required to be connected.
4. No. of loop, input/output
1) Control loop: Max. 64
2) No.of input/output: DI 128 points / DO 128 points

MODULE SPECIFICATION

1. General specification

(1) Power supply: 24V DC ±10%
(2) Power consumption: Max. 3.2 W (135 mA)
[when 24V DC is applied]
(3) Insulation resistance: 20MΩ or more (500V DC)
(4) Withstand voltage:
Power supply ↔ loader communication
1000V AC 1 min.
Power supply ↔ Ethernet communication
500V AC 1 min.

2. Ethernet communication module

2.1 Ethernet communication

(1) Communication speed: 10/100Mbps Auto-negotiation
(2) Network topology: star
(3) Communication distance: 100m (between hub and node)
(4) Communication protocol:
conforms to IEEE802.3/IEEE802.3u
(5) Recommended hub: industrial switching hub
(6) Connecting method: RJ-45
(7) IP address: IPv4 supported (IPv6 not supported)
(8) DHCP: unsupported
(9) Multiple operation: Full and Half duplex
(10) Port number: 502

2.2 Communication function

(1) Bridge communication

PUMs can connect to Ethernet network with PUMCE which functions as a converter between Modbus/TCP and Modbus/RTU. A host device can monitor or configure most of the parameters of connected PUMA/B, PUMV/N/T, and PUME by designating the station numbers and the register numbers of these devices.

(2) Mapping communication

PUMs can connect to Ethernet network with PUMCE which functions as a repeater between Modbus/TCP and Modbus/RTU. PUMCE periodically updates designated parameters (station numbers and register numbers) of PUMA/B, PUMV/N/T, and PUME. A host device can monitor or configure parameters of PUMA/B, PUMV/N/T, and PUME by accessing the register of PUMCE. Monitoring area and setting area can be set within 712 words(*1) each.

(3) MICREX-SX programless communication

PUMCE can communicate with MICREX-SX without program, by controlling MICREX-SX loader commands. In programless communication, by changing registers in MICREX-SX you can monitor or configure parameters (station numbers and register numbers) of PUMA/B, PUMV/N/T, and PUME that have been set in PUMCE. Since this function requires no communication program for MICREX-SX, it can save memory and reduce workload. Monitoring area and setting area can be set within 712 words(*1) each.

Connectable devices

CPU unit
SPH2000 series
NP1PM-48R/NP1PM-48E/NP1PM-256E
SPH3000 series
NP1PU-048E/NP1PU-256E
Number of connectable devices: Max. 10

Communication module

NP1L-ET1
Number of connectable devices: Max. 8

*1 PUMA/B, PUMV/N/T: 32 words per unit
PUME: 8 words per unit

3 Display, configuration

(1) Display: Status display LED (2 colors × 2 points + 1 point)

(2) Display contents:

RUN/FAULT (PWR), connection status between modules (BUS), Ethernet status (LINK), Ethernet communication data transmission/reception (TX/RX)

(3) Setting device and set contents

Setting device		Set contents
Inside	Dip SW (6bits) × 1	Setting of communication

4. Power outage

(1) Impact of power outage:

Outage of 2ms or less ; no impact

(2) Operation after power outage:

Start from the first step (cold start)

(3) Memory backup:

Nonvolatile memory (EEPROM)
No. of update ; 100,000

5. Self diagnosis

Diagnosis method:

Program error monitoring by watch dog timer

6. Structure

(1) Installation method:

DIN rail mounting or mounting with M3 screws inside a cabinet

(2) Dimensions: 30 (W) × 100 (H) × 85 (D) mm (excluding terminal cover and projected part)

(3) Weight: Approx. 110 g

(4) Extrenal terminal

- Ethernet connection:
  RJ-45 connector on front panel
- Power supply connection:
  Terminal block on the base part (M3 screw × 2 terminals)
  Power is supplied via side connectors in case of lateral connecting. (Max. 33 units)
- Loader communication port:
  2.5 diameter mini-plug/jack [on the front of the module]

(5) Case material: Polyphenylene oxide (flame retardant grade : UL94V-0 equivalent)

(6) Case color: Body ; black
Terminal, base part ; black

(7) Protection

- Body: IP20 grade protection (ventilation slits on the top and the bottom of the body)
- Terminal: IP00 grade protection

7. Normal operating condition

(1) Ambient temperature*: -10 to 50°C

* "Ambient temperature" is the temperature underneath the controller inside the equpiment or the cabinet where the controller is installed.

(2) Ambient humidity:

90% RH or less (non condensing)

(3) Vibration: 10 to 70Hz, 9.8m/s^2 (1G) or less

8. Transporting, storage condition (packing condition)

(1) Storage temperature: -20 to 60°C

(2) Ambient humidity: 90%RH or less (no condensing)

9. Packing list

Temperature controller: 1unit
Instruction manual: 1 copy

10. Loader software

(1) Distribution medium:

Free download from Fuji Electric website (http://www.fujielectric.com/products/instruments/)

(2) Recommended operating environment

PC: DOS/V (PC-AT compatible)
OS: Windows XP / 7 / 8 (operation confirmed in Japanese / English)
RAM: 256M bytes or more
Free space on the hardware: 500M bytes or more
Display resolution: 1024 × 768 dots or over
Serial interface: RS-232C 1 port
(without RS-232C, USB serial converter cable required)

(3) Connection with PUM

Via loader interface on the front face of the module (special cable available from Fuji is required)

11. EU Directive Compliance CE

LVD (2014/35/EU)
EN 61010-1
EN 61010-2-030
EMC (2014/30/EU)
EN 61326-1 (Table 2)
EN 55011 (Group 1 Class A)
EN 61000-3-2 (Class A)
EN 61000-3-3
RoHS (2011/65/EU)
EN 50581

CODE SYMBOLS

[Enhanced communication module]

Digit → 1 2 3 4 5 6 7 8 9 10

P U M C E Y Y 1 – 0 C

Digit	Description
4	< Module type > Enhanced communication module → C
5	< Communication function > Ethernet communication → E

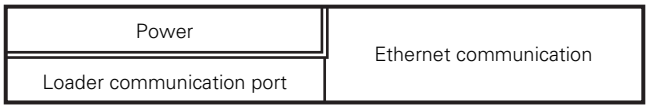
[Accessories]

Digit → 1 2 3 4 5 6 7 8

P U M Z * | | |

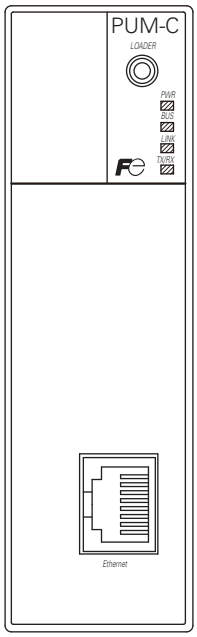
Digit	Description			
6	DIN rail mounting end plate	A	0	2
7	Side conneting terminal cover	A	0	3
8	(right & left 1 set)			
	Loader connecting cable (RS-232C)	L	0	1

[Table 1] Insulation block diagram

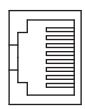


Functional insulation (1000VAC)
Functional insulation (500VAC)

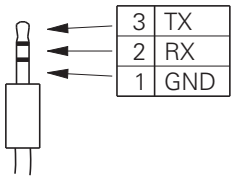
TERMINAL CONNECTION DIAGRAM



Ethernet
RJ-45 Connector

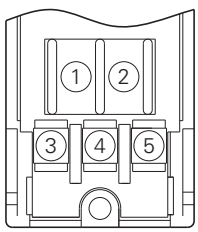


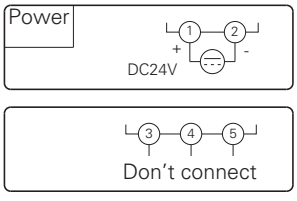
Loader interface plug (RS-232C)



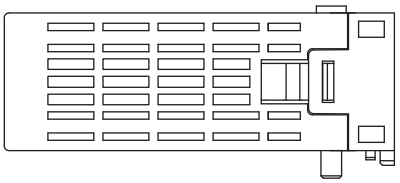
ϕ2.5 3-pole miniature plug

Base part

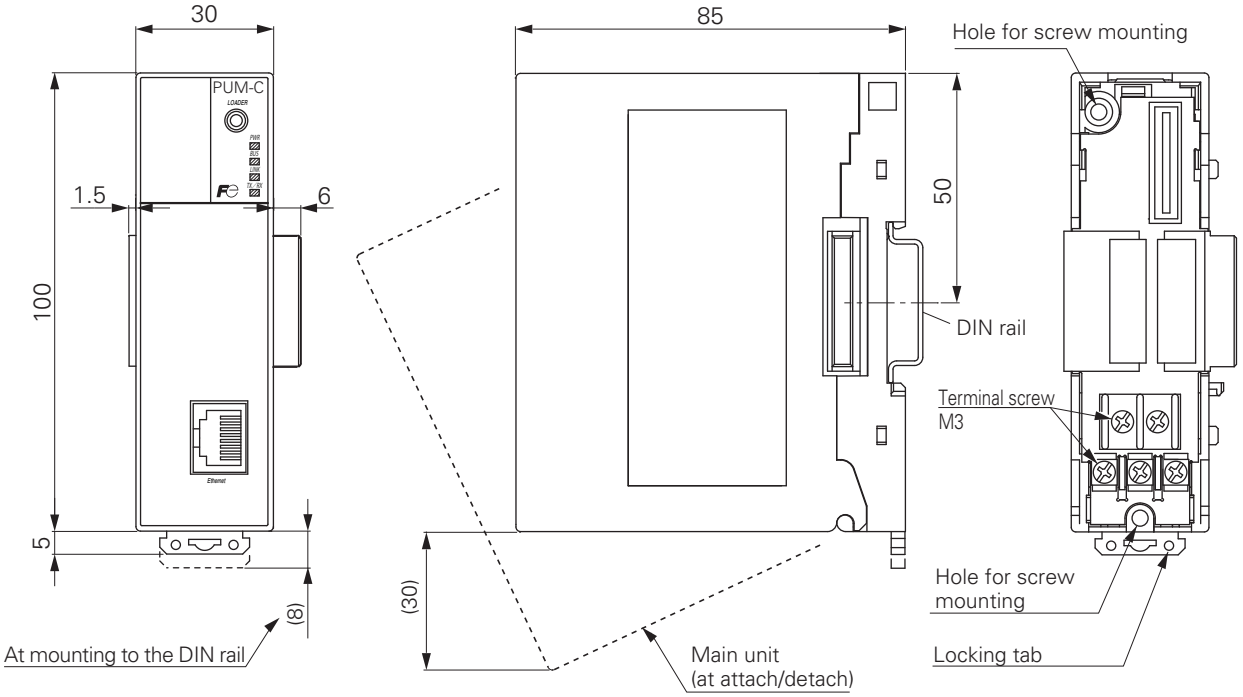




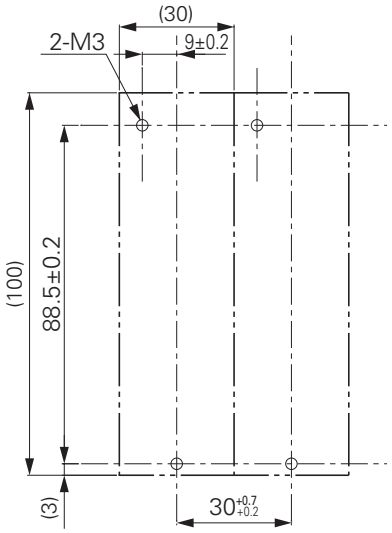
OUTLINE DIAGRAM (Unit : mm)



Base part
(Main unit is detached)

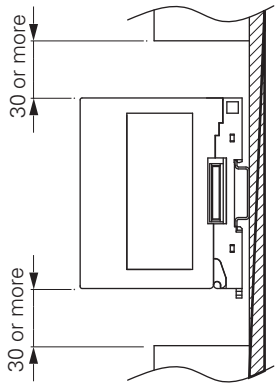


Dimensions for screw mounting



Notice at the installation

Please keep the distance of 30mm from this instrument to radiate.
[50mm is recommended]



⚠ Caution on Safety

*Before using this product, be sure to read its instruction manual.

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