

# ENHANCED COMMUNICATION MODULE (PROFIBUS) [PUMCP]

## DATA SHEET

PUMCP

PUMCP is a communication module, which connects module type temperature controller PUM series with PROFIBUS system. Compatible with PROFIBUS DP-V0, and designed for high-speed communication at the maximum speed of 12Mbps. Being able to up to 16 units (64 channel) of PUMA (control module), PUMCP requires minimum wiring, less space, and saves labor for engineering.



## FEATURES

- I. Program-less connection to PROFIBUS
  1. PROFIBUS DP-V0 compatible
    - High-speed communication at max.12Mbps
  2. Access to all parameters of control module (PUMA/PUMB) via PROFIBUS
  3. High-speed data communication with connected control modules (PUMA/PUMB)
    - 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 block
    - Main units exchangeable without re-wiring

## SYSTEM SPECIFICATION

1. Product type: Multi-loop module type temperature controller
2. Module type
  - 1) Analog module: Total maximum 16 units
    - a) Control module (4 loop/unit)
    - b) Extended input/output module
      - Analog input/output module (Input/output 4 points/unit)
      - Analog input module (Input 4 points/unit)
      - Analog output module (output 4 points/unit)
  - 2) Extended input/output (digital) module:
    - Maximum 16 units
    - Event input/output module (Input/output ; 8 points/unit)
  - 3) Enhanced communication module: 1 unit
3. Connecting method:
  - Lateral connecting with connectors
  - For power supply and RS-485 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

## ENHANCED COMMUNICATION MODULE (PROFIBUS) SPECIFICATION

### 1. General specification

- (1) Power supply: 24V DC  $\pm 10\%$
- (2) Power consumption: Max. 3.2 W (135 mA)
  - [when 24V DC is applied]
- (3) Insulation resistance: 20M $\Omega$  or more (500V DC)
- (4) Withstand voltage:
  - Power supply  $\leftrightarrow$  loader communication 1000V AC 1 min.
  - Power supply  $\leftrightarrow$  SLD/FG terminal, PROFIBUS communication 1000V AC 1 min.
- (5) Applied standards:
  - UL, C-UL, CE Marking, RoHS directive [Pending for UL and C-UL]

### 2. PROFIBUS communication module

#### 2.1 PROFIBUS communication

- (1) Compliant version: PROFIBUS DP-V0 (Cyclic communication)
- (2) Station type: Slave device
- (3) Communication speed and distance

Speed	9.6, 19.2, 93.75 kbps	187.5 kbps	500 kbps	1.5Mbps	3M, 6M, 12Mbps
Distance	1200m or less	100m or less	400m or less	200m or less	100m or less

- (4) Station number: Settable station number 1 to 99
- (5) Communication data length (Cyclic communication)

Remote input/output bits	Remote input/output words
64 bits	8 words
128 bits	16 words
256 bits	32 words
512 bits	64 words
864 bits	108 words

- (6) Connecting cable: Type A compatible cable for PROFIBUS
- (7) Connecting method: M3 screw terminal block
- (8) Termination resistance: External (220 $\Omega$ , 1/2W) or depends on the internal SW setting.

## 2.2 Display, configuration

- (1) Display: Status display LED  
(2 colors × 2 points + 1 point)
- (2) Display contents: RUN/FAULT, control module connection status (TX/RX), PROFIBUS status (ONL)

### (3) Setting device and set contents

Setting device		Set contents
Front	Rotary SW × 2	PROFIBUS Station No. setting
Inside	Dip SW (3bits) × 1	Word setting of data exchange

## 3. 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

## 4. Self diagnosis

- Diagnosis method:  
Program error monitoring by watch dog timer

## 5. 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. 200 g
- (4) External terminal
  - PROFIBUS communication: Detachable terminal block (M3 screw × 20 terminals)
  - 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: Case ; red  
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, terminal cover is available as an option

## 6. Normal operating condition

- (1) Ambient temperature\*: -10 to 50°C  
\* "Ambient temperature" is the temperature underneath the controller inside the equipment 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<sup>2</sup> (1G) or less

## 7. Transporting, storage condition (packing condition)

- (1) Storage temperature: -20 to 60°C
- (2) Ambient humidity: 90%RH or less (no condensing)
- (3) Vibration: 10 to 70Hz, 9.8m/s<sup>2</sup> (1G) or less
- (4) Shock: 294m/s<sup>2</sup> (30G) or less

## 8. Packing list

- Temperature controller: 1 unit
- Instruction manual: 1 copy

## 9. Loader software

- (1) Distribution medium: Free download from Fuji Electric Systems HP (<http://www.fic-net.jp/eng/index.html>)
- (2) Recommended operating environment
  - PC: DOS/V (PC-AT compatible)
  - OS: Windows XP (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)

## CODE SYMBOLS

### [Enhanced communication module]

		Digit → 1 2 3 4 5 6 7 8 9 10									
		PUM     Y Y 1 - 0									
Digit	Description										
4	< Module type > Enhanced communication module	C									
5	< Communication function > PROFIBUS communication	P									
10	< Operation manual > Japanese English	A B									

### [Accessories]

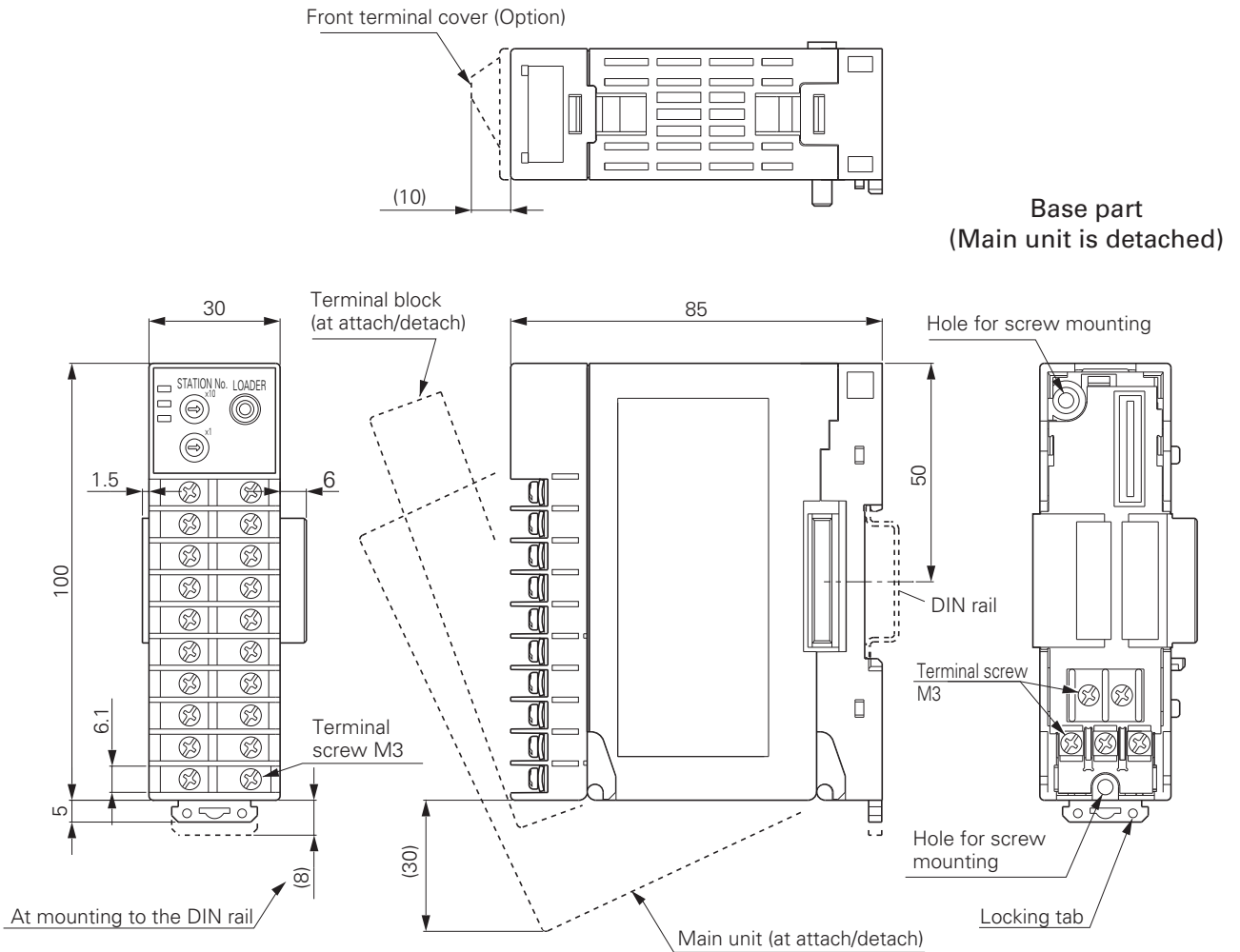
		Digit → 1 2 3 4 5 6 7 8							
		PUMZ *							
Digit	Description								
6	DIN rail mounting end plate	A 0 2							
7	Side connecting terminal cover (right & left 1 set)	A 0 3							
8	Front face screw terminal cover	A 0 4							
	Loader connecting cable (RS-232C)	L 0 1							

## [Table 1] Insulation block diagram

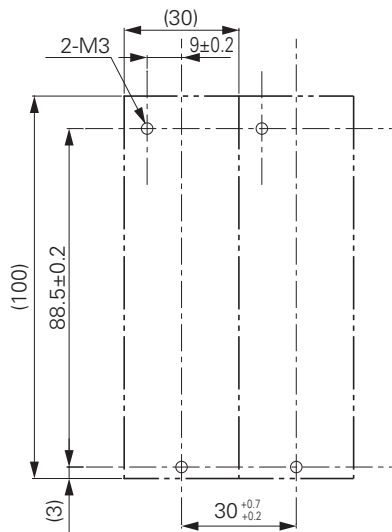


- Functional insulation (1000VAC)
- Functional insulation (500VAC)

# OUTLINE DIAGRAM (Unit : mm)

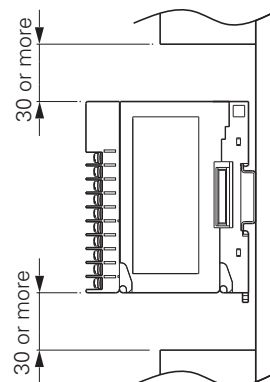


## Dimensions for screw mounting



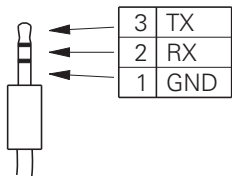
## Notice at the installation

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

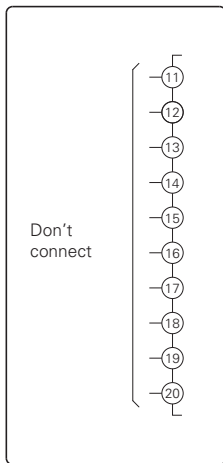
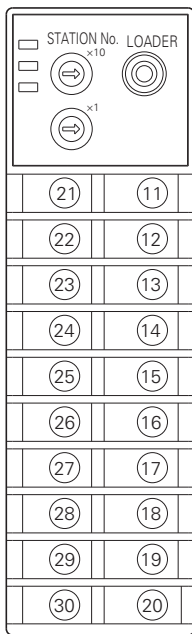
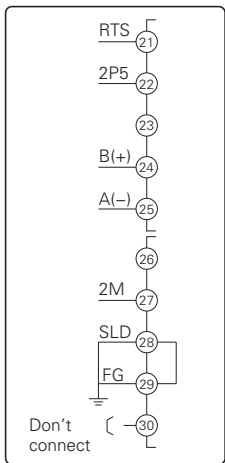


# TERMINAL CONNECTION DIAGRAM

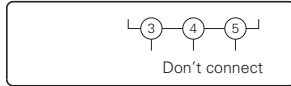
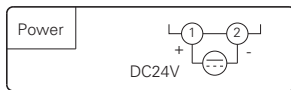
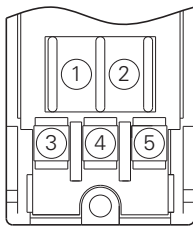
## Loader interface plug (RS-232C)



φ2.5 3-pole miniature plug



## Base part



**PROFIBUS communication module status**

Contents	Readout/Write data setting range	Factory-set value	Register No.
Setting error	0101h: St. No. configuration SW (St. No.) is invalid value 0102h: DIP SW (No. of words to exchange data) is invalid value 0203h: St. No. stored in EEPROM is invalid value 0204h: No. of words to exchange data that is stored in EEPROM is invalid value 0205h: Exchange pattern of Output data is invalid value 0206h: Exchange pattern of Input data is invalid value 0207h: Output area device size is invalid value 0208h: Input area device size is invalid value 0209h: Window communication pattern is invalid value 020Ah: Output area St. No. is invalid value 020Bh: Output area register No. is invalid value 020Ch: Input area St. No. is invalid value 020Dh: Input area register No. is invalid value 0211h: Window communication (EEPROM) is invalid value	—	30232

## PROFIBUS communication setting

Contents	Readout/Write data setting range	Factory-set value	Register No.
PROFIBUS communication St. No.	1 to 125	1	40001
PROFIBUS communication setting for Output area	0 : 0 word 1 : 8 words 2 : 16 words 3 : 32 words 4 : 64 words 5 : 108 words	0	40003
PROFIBUS communication setting for Input area	0 : 0 word 1 : 8 words 2 : 16 words 3 : 32 words 4 : 64 words 5 : 108 words	0	40004
Output area device size	0 to 108 words	0	40104
Input area device size	0 to 108 words	0	40105
Window communication pattern	0: No Window communication 1: 1-word data communication 2: 2-word data communication 3: 4-word data communication 4: 8-word data communication *The above is the max. No. of words	0	40106

### Memory allocation (Output area)

Contents	Readout/Write data setting range	Factory-set value	Register No.
Output area entry St. No. (1st word)	0: Not used 1 to 16: Control/Analog module 17 to 32: Event module Note: Other than the above are not settable	0	41001
Output area entry Register No. (1st word)	0,40000 to 49999 (Note1)	0	41002
Output area entry St. No. (2nd word)	0: Not used 1 to 16: Control/Analog module 17 to 32: Event module Note: Other than the above are not settable	0	41003
Output area entry Register No. (2nd word)	0, 40000 to 49999 (Note1)	0	41004
⋮	⋮	⋮	⋮
Output area entry St. No. (108th word)	0: Not used 1 to 16: Control/Analog module 17 to 32: Event module Note: Other than the above are not settable	0	41215
Output area entry Register No. (108th word)	0, 40000 to 49999 (Note1)	0	41216

Note1: Only the addresses written in "Output/Input area register No." (User's manual: PROFIBUS communication module INP-TN5A0489-E) are settable. However, the parameters marked "\*" in "Entry ban" column are not settable.

### Memory allocation (Input area)

Contents	Readout/Write data setting range	Factory-set value	Register No.
Input area entry St. No. (1st word)	0: Not used 1 to 16: Control/Analog module 17 to 32: Event module Note: Other than the above are not settable	0	43001
Input area entry Register No. (1st word)	0, 30000 to 49999 (Note2)	0	43002
Input area entry St. No. (2nd word)	0: Not used 1 to 16: Control/Analog module 17 to 32: Event module Note: Other than the above are not settable	0	43003
Input area entry Register No. (2nd word)	0, 30000 to 49999 (Note2)	0	43004
⋮	⋮	⋮	⋮
Input area entry St. No. (108th word)	0: Not used 1 to 16: Control/Analog module 17 to 32: Event module Note: Other than the above are not settable	0	43215
Input area entry Register No. (108th word)	0, 30000 to 49999 (Note2)	0	43216

Note2: Only the addresses written in "Output/Input area register No." (User's manual: PROFIBUS communication module INP-TN5A0489-E) are settable. However, the parameters marked "\*" in "Entry ban" column are not settable.

⚠ Caution on Safety

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

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