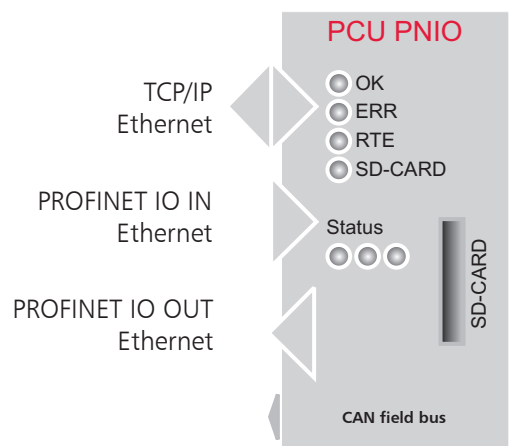


Peripheral Control Unit - PROFINET IO

flexotemp®

PCU 128 PNIO
 PCU 48 PNIO
 PCU 24 PNIO



Features

- Temperature controller unit for up to 24/48/128 zones
- Modular configuration: with I/O modules adaptable to any application
- Peripheral configuration: Modules in I/O nodes near sensors and actuators placeable
- Function scope configurable
- SoftPLC with IEC 61131-3 compatible programming
- CAN-Bus/CAN field bus: CANopen master for I/O modules
- Ethernet interface TCP/IP
- Ethernet interface PROFINET IO
- μ -SD card slot for data backup and firmware update
- Configuration and project setup with tool flexotempMANAGER

Function

- 24/48/128 control channels
- Measurement registration and signal output by I/O modules
- Expandable function scope by customer specific SoftPLC programmable functions
- Automatic calculation of control parameters
- Universal control algorithm
- Two set of control parameters - switchable
- Actuating signal output Cooling alternatively Standard PWM or impulse cooling
- Remote control by Ethernet/TCP/IP
- Status-LED's for signaling of status of module and of interface operation

Benefits

- Economical
- Compact structure
- Easy expansion
- Open communication
- Savings potential by replacing small PLC machines
- Load-reduction of plant PLC
- Flexible combination possibilities due to modular configuration
- Precise control algorithm guarantees optimal and constant product quality
- High plant and production safety
- Economic and low material stressing heating up
- Applications oriented array of functions

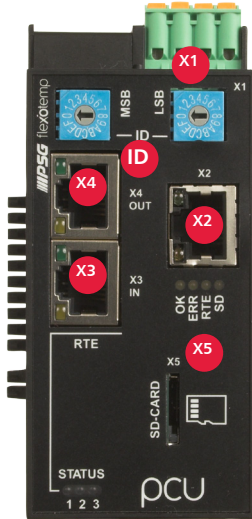
Ordering designations	Order number
flexotemp® PCU 24 PNIO	025 017
flexotemp® PCU 24 PNIO / SoftPLC	025 017-2
flexotemp® PCU 48 PNIO	025 027
flexotemp® PCU 48 PNIO / SoftPLC	025 027-2
flexotemp® PCU 128 PNIO	025 077
flexotemp® PCU 128 PNIO / SoftPLC	025 077-2



Technical Data

Protection equipment	Reversed polarity of power supply: diode, over voltage of power supply: varistor	
Data interfaces		
CAN field bus	CANopen master for I/O modules	
	Transfer rate	250 KByte fixed
	Max. tolerable bus length (m)	250
	Device internal terminating resistor	Internal automatic
	Protocol	CANopen
Ethernet TCP/IP	10/100 Base-T, RJ45 connection	
	Address range	1...254
	Available connections	TCP/IP, Web server for configuration and status
Ethernet PROFINET IO	Full-duplex mode, 100 Mbits/s, RJ45 connection	
SoftPLC	With IEC 61131-3 compatible programming in CoDeSys	
PLC cycle time	50 ms	
PLC code storage	128 KB	
PLC RAM data	64 KB	
PLC retain data	4 KB - power failure save	
Power supply		
Rated voltage / max. power consumption	18...30 VDC / 8 W	
External mains supply	24 V Class 2	
Fuse protection	4 A M	
Ambient temperature limit	Operation: 0...55 °C, transport, storage: -20...70 °C, operation limit: 0...60 °C	
Atmospheric humidity limit	Operation: 0..90 % relative atmospheric humidity, no condensation, Transport, storage: 0...95 % relative atmospheric humidity, no condensation	
Mounting	Installation on DIN rail (DIN 50022); horizontal installation position; see installation	
Dimensions (H x W x D in mm)	99 x 45 x 114.5	
Housing	Phoenix ME 45 Bus 10/2	
Weight	0.4 kg	
Electrical security	Class 3, safety extra-low voltage; complies with EN61010	
Protection type	Housing and terminals: IP 20, D-SUB without PVC cover: IP 00	
Standards	Complies with EN61326-1	
CE marking	The device complies with the European Directives for electromagnetic compatibility (complies with EN 61326-1)	
General		
Operating elements	Rotary switch	
LED displays	Refer to status display of LED's	
Data backup	Data backup of all parameters in EEPROM (power failure save)	
Software update	By Ethernet interface X2	

Connection overview



X1	Power supply
ID	Setting MSB (Most Significant Bit) for device ID
	Setting LSB (Least Significant Bit) for device ID
X2	TCP/IP (interface Ethernet)
X3	PROFINET IO IN (interface Ethernet)
X4	PROFINET IO OUT (interface Ethernet)
X5	μ -SD-CARD
	Jumper for termination of CAN network below housing cover
	Notice Before removing the housing cover disconnect the device from the power supply.
LED OK	Operation display
LED ERR	Signalizes fault/operation mode
LED RTE	Signalizes data transfer PROFINET IO
LED SD	Signalizes Status of μ -SD-CARD R/W
RTE Status LED 1	Signalizes communication control/bus module
RTE Status LED 2	n.a.
RTE Status LED 3	Operation display bus module

Pin assignment

X1 Power supply

4-pole spring-force terminal

Pin	X1	
1	U1	Power supply *)
2	U2	Power supply *)
3	0V1	Ground Power supply
4	0V2	Ground Power supply

*) External fuse protection necessary

Notice: U1/U2 internally bridged

X2 TCP/IP (interface Ethernet)

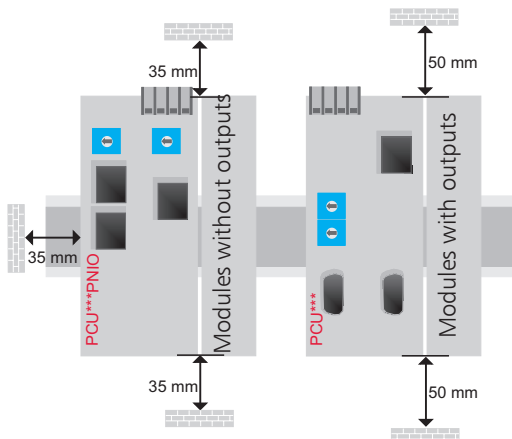
Standard assignment, automatic Cross-over

X3, X4 PROFINET IO (interface Ethernet)

D-SUB, plug

Pin	X3 IN	X4 OUT
1	TD+	TD+
2	TD-	TD-
3	RD+	RD+
4	Termination	Termination
5	Termination	Termination
6	RD-	RD-
7	Termination	Termination
8	Termination	Termination

Installation



Setting of Address/IP

The resulting Address/IP is a combination of the interface depending base part and the device ID (binary coded). The base part is configured, the device ID is set by rotary switch.

Interface

Resulting Address/IP

Base part of Address/IP

Ethernet

IP 1. - 3.Octet of IP (0...255) = Base IP [CP18].[CP19].[CP20].
 IP 4.Octet of IP (1...254) =

[CP21] + Device ID

The PROFINET IO addressing is done by configuration in control system.

The device ID, that can be set by rotary switch SW1/2, is binary coded and can be set between 00_{hex} and 7F_{hex} (equals 0-127_{dec}).

Example how to convert DEC in HEX

SW1 (MSB - Most Significant Bit) can be set between **0 up to 7**, SW2 (LSB - Least Significant Bit) can be set between **0 up to F**.

To convert a decimal device ID (e.g. 46_{dec}) into a hexadecimal device ID, divide the decimal value by 16 until an integer remainder less than 16 remains. The integer quotient is set by SW1, the integer remainder is set by SW2.

The decimal values up to 9 comply with the hexadecimal values.

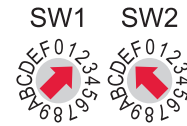
10_{dec} equals A_{hex}, 11_{dec} equals B_{hex}, etc.,
 15_{dec} equals F_{hex}.

Example device ID 46_{dec}

46_{dec} / 16 = 2_{dec} (quotient) remainder 14_{dec}

SW1 -> 2_{dec} (quotient) -> 2_{hex}

SW2 -> 14_{dec} (remainder) -> E_{hex}



Device ID 46_{dec} equals device ID 2E_{hex}.

Set address for slave modules

The addresses for the slave modules are assigned starting with 1 consecutively by PCU PNIO.

Status display of LED's

OK (yellow)	ERR (yellow)	Status
flashing (1 Hz)	OFF	Boot mode
flashing (2 Hz)	Continuous light	Fault CAN or component fault
Continuous light	OFF	Firmware loaded, no fault
Synchronous flashing (2 Hz)		Update firmware flash programming after download
flashing (10 Hz)	Continuous light	Memory access fault
250 ms ON 250 ms OFF 250 ms ON 1250 ms ON		Project setup (i.e. processing of CAN slaves) stopped

RTE (yellow) displays by continuous light the data transfer of PROFINET IO.

RTE Status LED 1	Status
OFF	OK
red	Error

RTE Status LED 3	Status
green	OK
otherwise	Error

Alternative Connections

