

DESIGO™ I/O modules

Measured value modules

PTM1.2P100 PTM1.2P1K

for temperature sensors or resistance transmitters

Measured value converters for connection to P-bus, with two separate inputs (double modules) for:

- **resistance transmitters 0...250 ohm or temperature sensors Pt100 or Ni100 (module type PTM1.2P100)**
- **resistance transmitters 0...2500 ohm or temperature sensors Pt1000 or Ni1000 (module type PTM1.2P1K)**

Use

- Measurement with resistance transmitters in the range of 0...250 ohm and in the range of 0...2500 ohm in the form of
 - setting potentiometers
 - potentiometer sensors
 - remote setting units
 - outside temperatures
- Temperature measurement with Pt100 or Pt1000 sensors (DIN IEC 751) up to 400 °C, and with Ni100 or Ni1000 sensors up to 150 °C to acquire
 - room temperatures
 - temperatures in pipework
 - temperatures in air ducts and exhaust gas ducts
 - outside temperatures

Notes Use of the two modules for temperature measurements requires intervention in the automation station's software. For details, refer to "Engineering notes".

For **LG-Ni 1000 sensors**, the use of measured value module type PTM1.2R1K or PTM1.4R1K is mandatory.

Functions

- Measured value conversion of analog sensor measuring signals from the plant to digital P-bus signals which are then handled by the automation station.
- Adjustment possibility for calibration of the sensors via the automation station.
- Interruption or short-circuit of sensors is recognized by the automation station.

Type summary

Measured value module for 0...250 ohm resistance transmitters or Pt100 or Ni100 temperature measuring sensors **PTM1.2P100**

Measured value module for 0...2500 ohm resistance transmitters or Pt1000 or Ni1000 temperature measuring sensors **PTM1.2P1K**

Delivery Base and electronic module are supplied together but in separate boxes that are attached to one another.

Accessories For general accessories that are used in connection with the I/O modules, refer to data sheet N8105. Such accessories must be ordered separately.

Equipment combinations

Automation stations Basically, the I/O modules can be connected to any automation station with P-bus if the automation station supports the I/O functions on the software side. Refer to document Z8102, "I/O module system".

Field units Any units of the Siemens product ranges can be connected if their signals are compatible with the module's inputs and outputs. It is also possible to use products of other manufacture if their signals are compatible and if they satisfy the relevant safety requirements.

Technical design

Four-wire link With the Pt100 and Ni100 sensors, the four-wire link between the sensor and the module offsets the effect of line resistance (refer to "Connection diagrams").

Conversion and linearization In the case of temperature measurements, the conversion of the sensor's resistance value to the temperature value and any linearization of the sensor's characteristics takes place in the automation station. The conversion parameters and characteristic factors are entered when the plant is configured.

Sensor calibration If required by special ambient or fitting conditions, the calibration of the sensor can also be readjusted on the function block.

Notes The whole functionality of the I/O module comprises the module itself (hardware) and handling of the signals in the automation station (software). For a full understanding of the scope of module functions, the relevant process sequences and possible choices available when configuring the user program must be taken into consideration.

For the technical features common to all I/O modules, refer to document Z8102, "I/O module system".

Mechanical design

Modular unit with plastic casing, consisting of terminal base and electronic module which are plugged onto the I/O bar. The signals and voltages are picked up from contacts on the I/O bar.

The connecting terminals of the I/O modules arranged on the I/O bar are used in place of the block terminals for the external wiring usually installed in the control panel. They comply with the relevant standards and regulations and provide the test terminal function. Also, they can be fitted with plant-specific labels.

Transparent module front for insertion of the plant-specific module labels. The specifically prepared and perforated labels are marked with the help of the engineering tool for the building automation and control system. The space for the address plug is also on the front of the module.

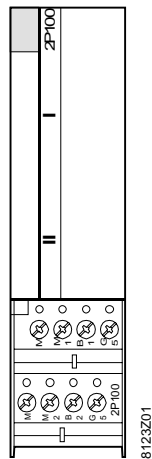
All I/O modules use the same accessories, which are shown on data sheet N8105.

Note

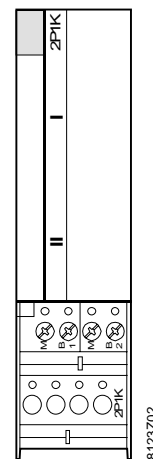
For a more detailed description of the module's mechanical design, refer to document Z8102, "I/O module system".

Front views

PTM1.2P100



PTM1.2P1K



Engineering notes



The document Z8102, "I/O module system", contains system-related engineering know-how. It should be studied before reading the following sections while paying special attention to the information relating to safety.

Correct use

Within the overall system, these I/O modules must always be used on applications as described in document Z8102, "I/O module system". The module-specific characteristics and features given in the brief description on the front page and in the chapters "Use", "Engineering notes" and "Technical data" of the present data sheet must also be taken into consideration.



The sections of this chapter identified by a warning triangle contain additional requirements and restrictions relevant to safety. They must be observed to ensure the safety of persons and objects.



Measured value transmitters

The insulation resistance of the connected measuring sensors must comply with the requirements for **safety extra-low voltage (SELV)** or **protection by extra-low voltage (PELV)** as per HD 384.



Measured value inputs

The measured value inputs are **not galvanically separated** from the system's electronics.

Conversion and linearization	When using the modules for temperature measurement, the respective conversion parameters and characteristic factors are to be entered in the corresponding functional unit of automation station.
Four-wire connection	As shown in the connection diagram, the connection between a Pt100 or Ni100 sensor and the PTM1.2P100 module requires two wires.
Line lengths	Line lengths exceeding 300 m at the measured value input are permitted, but shielded cable will be required to reduce humming.

Fitting notes

Please refer to document M8102, "I/O modules and P-bus".
 Instructions for fitting the I/O module on mounting rails and on the I/O bar are printed on the packing.

Commissioning notes

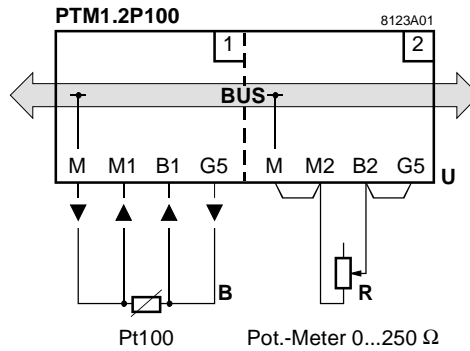
Please refer to document Z8102, "I/O module system".

Technical data

Power supply	Module power supply via P-bus Load units	DC 24 V (against G0) 2 (12.5 mA each)
Suitable resistance transmitters	At the PTM1.2P100 At the PTM1.2P1K	0...250 ohm 0...2500 ohm
Suitable sensing elements	At the PTM1.2P100 At the PTM1.2P1K	Pt100 (DIN IEC 751) Ni100 Pt1000 (DIN IEC 751) Ni1000
Temperature measuring range	With Pt sensors With Ni sensors	up to 400 °C up to 150 °C
Resolution	A/D converter Resistance with the PTM1.2P100 Resistance with the PTM1.2P1K Temperature with Pt sensors Temperature with Ni sensors	13 bits 33 mOhm 333 mOhm 0.086 K 0.059 K
Sensor current, constant	With the PTM1.2P100 With the PTM1.2P1K	4 mA 1.25 mA
Line lengths	For permissible line lengths and cross-sectional areas, also refer to document Z8102, "I/O module system" Min. dia. of wire	300 m max. 0.6 mm
CE conformance	In compliance with the directives of the European Union Electromagnetic compatibility	89/336/EEC
<i>Note</i>	For technical data common to all I/O modules, refer to document Z8102, "I/O module system", and for dimensions refer to document M8102, "I/O modules and P-bus".	

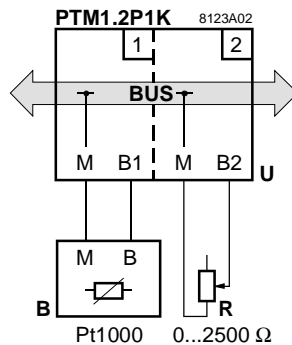
Connection diagrams

Measured value module
type PTM1.2P100



- U** Measured value module PTM1.2P100
- B** Temperature sensor Pt100 (DIN IEC 751) or
Temperature sensor Ni100
- R** Resistance transmitter 0...250 ohm
- BUS** I/O bar with P-bus
- B1, B2** Sensor signal (four-wire connection),
or transmitter signal
- G5** Power supply for measuring sensor
- M** Sensor supply neutral
- M1, M2** Measuring neutral

Measured value module
type PTM1.2P1K



- U** Measured value module PTM1.2P1K
- B** Temperature sensor Pt1000 (DIN IEC 751) or
Temperature sensor Ni1000
- R** Resistance transmitter 0...2500 ohm
- BUS** I/O bar with P-bus
- B1, B2** Sensor or transmitter signal
- M** Measuring neutral

