T4211 TRANSDUCER

Programmable temperature transducer from Pt1000 sensor to 0 - 10V output

Instruction Manual

Read carefully instruction manual before the first device connection.

Contact address of this device's producer:

COMET SYSTEM, s.r.o.
Bezrucova 2901
756 61 Roznov pod Radhostem
Czech Republic
www.cometsystem.com

Distributor in Australia
Pacific Sensor Technologies Pty Ltd
Unit 4, 3 Neutron Place Rowville, VIC 3178 Australia
1300 662 720 | sales@pacificsensortech.com.au
www.pacificsensortech.com.au

Instruction manual for use of T4211 transducer

Transducer is designed for temperature measurement at °C or °F by means of an external temperature probe with Pt1000 sensor. Measured values are displayed on LCD display. It is possible to switch OFF the LCD at all.

All transducer setting is performed by means of the PC connected via the optional SP003 communication cable (not included in delivery). Program *Tsensor* for transducer setting is available to download free at www.cometsystem.com. Program enables to assign temperature measuring range. It supports make the adjustment of the device too. This procedure is described at file „*Calibration manual.pdf*" which is installed commonly with the software.

Transducer version TxxxxL with watertight male connector instead of a cable gland is designed for easy connection/disconnection of the output cable. The protection of male Lumberg connector RSFM4 is IP67.

Models marked TxxxxZ are non-standard versions of the transducers. Description is not included in this manual.

Please read instruction manual before the first device connection.

Device setting from the manufacturer

Transducer is set from the manufacturer to the following parameters:
value at output I1: 0 – 10 V corresponds -200 to +600 °C
display: switched ON

Modification of the setting is possible to do by means of the PC using procedure described at the end of this document.
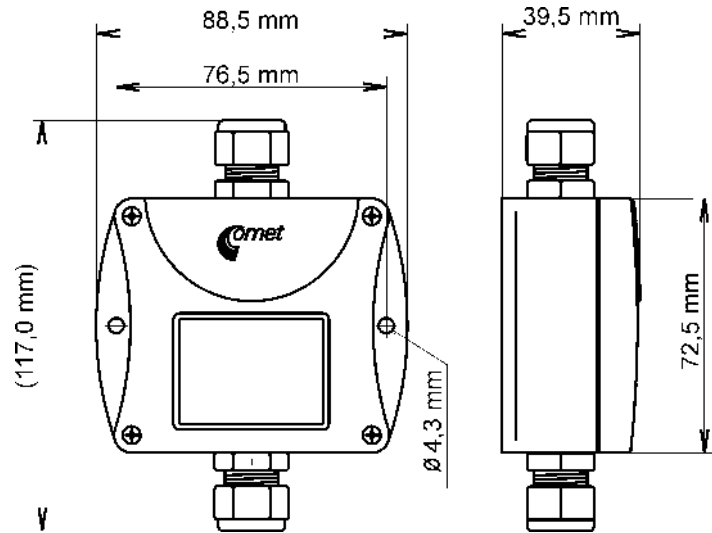
Installation of the transducer

Transducer is designed for wall mounting. There are two mounting holes at the sides of the case. Interconnection terminals of T4211 are accessible after unscrewing four screws and removing the lid. Lace the cable through a gland at the case wall. Connect the cable to terminals with respecting the signal polarity (see figure). Terminals are self-clamping and can be opened by a suitable screwdriver. For the opening, insert the screwdriver to upper terminal hole and lever by him. Do not remember to tighten glands and case lid with inserted packing after cables connecting. It is necessary for warranting of protection IP65. Connect complementary female connector for T4211L transmitter in accordance with the table in Appendix A of this manual.

It is recommended to use shielded twisted copper cable, maximal length 15m. The cable must be located at indoor rooms. The cable should not be led in parallel along power cabling. Safety distance is up to 0.5 m, otherwise undesirable induction of interference signals can appear. Outside diameter of the cable for T4211 device must be from 3,5 to 8 mm (e.g. SYKFY), for device T4211L with respect to the female connector. Do NOT connect shielding at connector side.

External temperature probe should be of „shielded two-wire" type. For leading of the cable same recommendations are valid as for current loop cable, i.e. cable should be located as far as possible from potential interference sources. Maximum probe cable length is 10 m. Connect probe cable shielding to proper terminal and do not connect it to any other circuitry and do not ground it. If connected probe is equipped with metal stem, we recommend using probes with metal stem not connected to cable shielding. Or else it is necessary to arrange metal stem is not connected to any other circuitry.
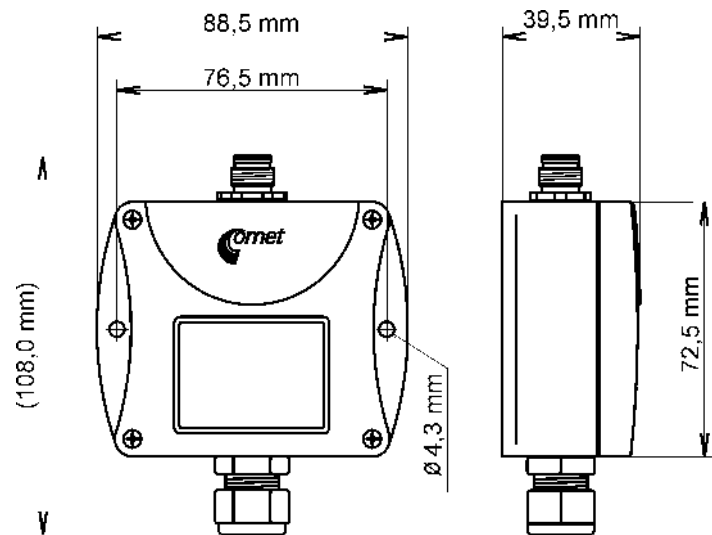
Electrical system (wiring) may do only worker with required qualification by rules in operation.

Dimensions – T4211

88,5 mm
76,5 mm
39,5 mm
(117,0 mm)
72,5 mm
Ø 4,3 mm

Dimensions – T4211L

Connection of Lumberg connector: see Appendix A

88,5 mm
76,5 mm
39,5 mm
(108,0 mm)
72,5 mm
Ø 4,3 mm

Typical application wiring

Udd
GND
Uout1
Rz1
Uout1
Uac
~
~
Udc
+
−
Pt1000
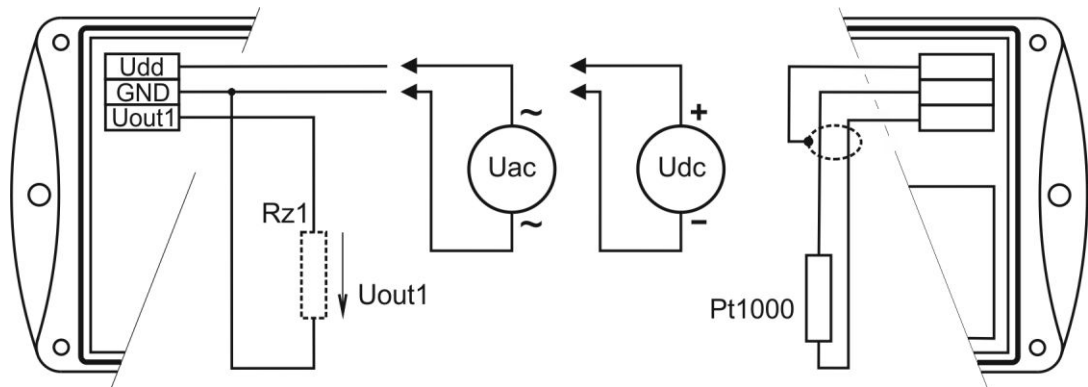
maximum load current of voltage output is 0.5 mA

Uac = 24 Vac
Udc = 15 to 30 Vdc

LCD Info mode

Several settings of installed transmitter is possible to verify without a use of the computer. It is necessary to connect power.

Unscrew the transmitter lid and shortly press button between display and interconnection terminals by means of a tool (e.g. screwdriver).

Range and type of value for output 1 (Uout 1 = symbol „1"on display). Type of value, assigned to output 1, is indicated by displayed unit (here °C). Upper line displays voltage value corresponding to measured value (lower line). Here 0V corresponds to ambient temperature -30 °C.

After next press of the button value for upper point appears, here 10 V corresponds to ambient temperature +80 °C.

Press button again to end info mode and display actual measured values.

Notice: during info mode no measurement and no output voltage generation proceed. The transmitter stays at info mode 15 s, and then automatically goes back to measuring cycle.

Readings on LCD display

°C, °F   Reading next to this symbol is measured temperature or error state of value.

Procedure of modification of transducer adjustment:

- Device adjustment is performed by means of the optional SP003 communication cable, connected to USB port of the PC.
- It is necessary to have installed configuration program Tsensor on the PC. It is free to download at www.cometsystem.com. During installation please take care about installation of driver for USB communication cable.
- Connect SP003 communication cable to the PC. Installed USB driver detect connected cable and create virtual COM port inside the PC.
- Unscrew four screws of the device lid a remove the lid. If device is already installed to measuring system, disconnect leads from terminals.
- Connect SP003 communication cable to the device. Display must light up, or at least must light up all symbols for one second (if LCD was switched OFF by program before).
- Run installed Tsensor program and select corresponding communication COM port (as described above).
- When new setting is saved and finished, disconnect the cable from the device, connect leads into its terminals and place the lid back to the device.

Technical parameters:

Analog output:
Range from 0 to 10 V
Output load capability: min. 20 kΩ
Voltage output in case of error: approximately –0.1 V or >10.5 V

Measuring parameters:
Temperature probe: Pt1000/3850 ppm connected by shielded cable of maximum length 10m
Measuring temperature range: -200 to +600 °C (can be limited by applied temperature probe model)
Resolution: 0.1 °C
Accuracy without probe: output ± (0,15 + 0,1% FS) °C,
±0,2 °C for value on LCD display

Recommended interval of calibration: 2 years
Measuring interval and LCD display refresh: 0.5 s
Communication with computer: via USB port by means of USB communication cable SP003

Power: • 15 to 30 Vdc
• 24 Vac

Protection: IP65

Operating conditions:
Operating temperature range: -30 to +80 °C, over +70°C switch LCD display OFF
Operating humidity range: 0 to 100 %RH
Outer characteristics in accordance with Czech National Standard 33-2000-3:
normal environment with the specifications: AE1, AN1, BE1
Working position: arbitrary
Electromagnetic compatibility: complies EN 61326-1
Not allowed manipulations: It is not allowed to operate the device under other than specified conditions in technical parameters. Devices are not designed for locations with chemically aggressive environment.

Storing conditions: temperature -30 to +80 °C
humidity 0 to 100 %RH without condensation
Dimensions: see dimensional drawings
Weight: approximately 145 g
Material of the case: ASA

Error States of the device

Device continuously checks its state during operation. In case error is found LCD displays corresponding error code:

Error 0

First line displays „Err0". Check sum error of stored setting inside device's memory. Output value is <-0.1 V. This error appears if incorrect writing procedure to device's memory occurred or if damage of calibration data appeared. At this state device does not measure. It is the serious error, contact distributor of the instrument to fix.

Error 1

Measured value is over upper limit of allowed full scale range. There is a reading „Err1" on LCD display. Output value is about 10.5 V. This state appears if measured temperature is higher than approximately 600°C (i.e. high non-measurable resistance of temperature sensor, probably opened circuit).

Error 2

There is a reading „Err2" on LCD display. Measured (calculated) value is below lower limit of allowed full scale range. Output value is about -0.1 V. This state appears if measured temperature is lower than approximately -210°C (i.e. low resistance of temperature sensor, probably short circuit).

Error 3

There is a reading „Err3" on LCD display upper line. Error of internal A/D converter appeared (converter does not respond, probably damage of A/D converter). No measurement is proceeded. Output value is about -0.1 V. It is a serious error, contact distributor of the instrument.
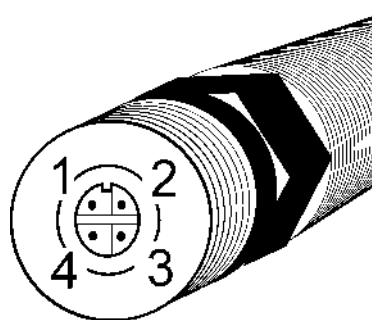
End of operation

Device itself (after its life) is necessary to liquidate ecologically according to statutory regulations.

Technical support and device service

Technical support and service is provided by distributor. For contact see warranty certificate.

Appendix A

Female Lumberg connector	Transmitter Tx1xxL with 4-20mA outputs	Transmitter Tx2xxL with 0-10V outputs	Transmitter Tx3xxL with RS232 output	Transmitter Tx4xxL with RS485 output
1	+I1	Udd	RTS	+U
2	+I2	Uout1	Rx	A
3	-I2	Uout2	Tx	B
4	-I1	GND	GND	GND