Tx1xx and Tx2xx industrial transmitters and transducers with 4 - 20 mA or 0 - 10 V outputs

PRODUCT DESCRIPTION

Programmable transmitters and transducers with 4 – 20 mA or 0 – 10 V outputs are designed to measure temperature, relative humidity and barometric pressure in non-aggressive environment. Transmitters and transducers are available in wall-mount, duct-mount and bar versions or with probe on a cable. For measuring temperature and relative humidity of compressed air is used type TxxxxP.

Digital conception with microprocessor allows to determine the other computed humidity values, like dew point temperature, absolute humidity, specific humidity, mixing ratio and specific enthalpy. Measured and calculated values are displayed on a two-line LCD display. Using TSensor software (see www.cometsystem.com) you can assign to each output measured or computed value and to set its measuring range. For device connection to PC is used USB adapter SP003 (optional accessories).

Durable plastic case from ASA contains electronic and connection terminals. For easy connection/disconnection of the output cable is used TxxxxL version with Lumberg connector (IP67) instead of a cable gland.

type *	output **	measured values	construction	mounting	power supply
T4111	1 x 4-20mA	T	external probe Pt1000/3850 ppm	wall	DC
T4211	1 x 0-10V	T	external probe Pt1000/3850 ppm	wall	DC/AC
T0110	1 x 4-20mA	T	ambient air	wall	DC
T1110	1 x 4-20mA	RH	ambient air	wall	DC
T3110	2 x 4-20mA	T + RH + CV	ambient air	wall	DC
T0210	2 x 0-10V	T + RH + CV	ambient air	wall	DC/AC
T3113	2 x 4-20mA	T + RH + CV	duct mount	fix by means of the gland	DC
T3113D	2 x 4-20mA	T + RH + CV	duct mount	fix by means of the gland	DC
T3117	2 x 4-20mA	T + RH + CV	bar type	fix by means of the gland	DC
T3117D	2 x 4-20mA	T + RH + CV	bar type	fix by means of the gland	DC
T0213	2 x 0-10V	T + RH + CV	duct mount	fix by means of the gland	DC/AC
T0213D	2 x 0-10V	T + RH + CV	duct mount	fix by means of the gland	DC/AC
T3111	2 x 4-20mA	T + RH + CV	probe with a cable	wall	DC
T0211	2 x 0-10V	T + RH + CV	probe with a cable	wall	DC/AC
T3111P	2 x 4-20mA	T + RH + CV	probe with a cable - pressure up to 25 bars	wall	DC
T0211P	2 x 0-10V	T + RH + CV	probe with a cable - pressure up to 25 bars	wall	DC/AC
T2114	1 x 4-20mA	P	ambient air	wall	DC
T2214	1 x 0-10V	P	ambient air	wall	DC/AC

* models marked Txxxx**Z** are custom - specified devices

** The current loops 4-20 mA are galvanic isolated. The current loop I1 has to be connected always!

T…temperature, RH…relative humidity, P…barometric pressure, CV…computed values

INSTALLATION AND OPERATION

The transmitters and transducers designed for mounting on the wall are mounted on a flat surface with two screws or bolts. The duct mount and bar types of transmitters install by clamping a metal stem into the gland or flange PP4 or PP90 (optional accessory). The probe with a cable is placed into a measured environment. Pay attention to device mounting, because incorrect choice of working position or measuring point could adversely affect accuracy and long-term stability of measured values.

The connecting terminals are accessible after unscrewing the four screws in the corners of the case and removing the lid. Pass the connecting cable through released upper gland and connect the wires according to diagram. The cable of external probe Pt1000 pass through released lower gland, pass it under the display and connect according to diagram. Tighten glands and screw the lid.

For device connection it is recommended to use shielded cable (external diameter 4 to 8 mm) with wire cross-section 0.14 to 1.5 mm^2. Maximum cable length of the current loop is 1200 m, maximum voltage output cable length is 15 m. External probe Pt1000 is connected by shielded cable with a length up to 10 m. The shielding of the probe cable connect only to proper terminal of the device and do not connect it to any other circuitry and do not ground it. All cables should be located as far as possible from potential interference sources.

Devices don´t require special operation and maintenance. We recommend you periodic calibration for measurement accuracy validation.

SAFETY INSTRUCTIONS



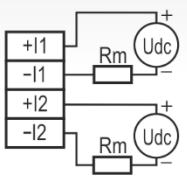
- Humidity and temperature sensors of the transmitters cannot be operate and store without a filter cap.
- Temperature and humidity sensors have not to be exposed to direct contact with water and other liquids.
- It is not recommended to use the humidity transmitters for long time under condensation conditions.
- Take care when unscrewing the filter cap as the sensor element could be damaged.
- Don't connect or disconnect transmitter and transducer while power supply voltage is on.
- If the sensing probe of T3111P (T0211P) device is installed, make sure that measured area is without pressure.
- Installation, electrical connection and commissioning should be performed by qualified personnel only.
- Devices contain electronic components, it needs to liquidate them according to currently valid conditions.
- **To supplement the information** provided in this data sheet, use the manuals and other documentations which are available at www.cometsystem.com.

Technical specifications

	T2114	T4111	T0110	T1110, T3110	T3113(D), T3117(D)	T3111	T3111P
4 - 20 mA analog output power supply: 9 - 30 Vdc							
0 - 10 V analog output power supply: 15 - 30 Vdc or 24 Vac	**T2214**	**T4211**	—	**T0210**	**T0213(D)**	**T0211**	**T0211P**
Factory settings of the outputs - output 1 / output 2	barometr. pressure / —	temperature / —	temperature / —	rel. humidity / temperature	rel. humidity / temperature	rel. humidity / temperature	rel. humidity / temperature
Temperature measuring range	—	-200 to +600°C	-30 to +80°C	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C
Accuracy of temperature measurement	—	±(0.15+0.1%TMR)°C	± 0.4°C	± 0.4°C	± 0.4°C	± 0.4°C	± 0.4°C
Relative humidity (RH) measuring range *	—	—	—	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH
Accuracy of humidity measurement from 5 to 95 %RH at 23°C	—	—	—	± 2.5 %RH	± 2.5 %RH	± 2.5 %RH	± 2.5 %RH
Barometric pressure measuring range	600 to 1100 hPa **	—	—	—	—	—	—
Accuracy of barometric pressure measurement at 23°C	±1.3 hPa (see below)	—	—	—	—	—	—
Other calculated humidity variables (dew point temperature, ...)	—	—	—	yes (only T3110, T0210)	yes	yes	yes
Recomended calibration interval	1 year	2 years	2 years	1 year	1 year	1 year	1 year
Protection class - case with elektronics / sensors cover	IP54 / --	IP65 / --	IP65 / IP65	IP65 / IP40	IP65 / IP40	IP65 / IP40	IP65 / IP40
Temperature operating range of the case with electronics	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C
Temperature operating range of the sensing element (sensors)	—	—	—	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C
Humidity operating range	0 to 100%RH	0 to 100 %RH	0 až 100 %RH	0 at 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH
Mounting position	cable gland upwards	any position	cable gland upwards	cable gland upwards	cable gland upwards ***	any position ****	any position ****
Storage temperature range (environment without condensation)	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C
Electromagnetic compatibility according to	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1
Weight	130 g	140 g	140 g	150 g	230 g / 580 g	210 (250, 330) g	260 (300, 380) g
Dimensions [mm]							

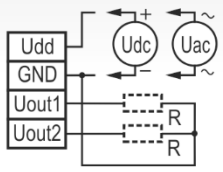
Electrical wiring

4-20 mA analog output



Rc[Ω] < 40*Udc[V] - 360
Rc = Rm + resistance of the wires

0-10 V analog output

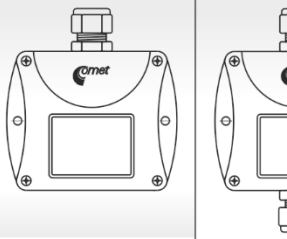


R > 20 kΩ

TxxxxL transmitter version - female Lumberg connection



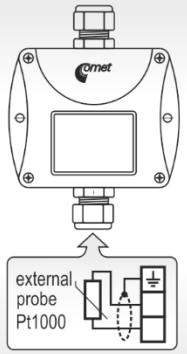
pin	4-20mA	0-10V
1	+I1	Udd
2	+I2	Uout1
3	−I2	Uout2
4	−I1	GND

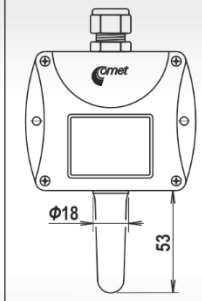


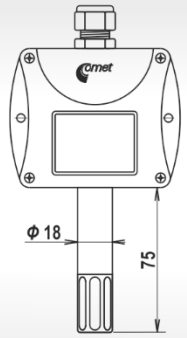
Accuracy of barometric pressure measurement

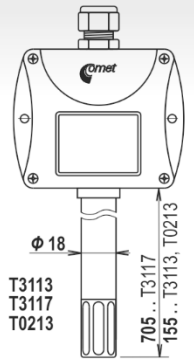
- accuracy of the pressure shown on LCD display:
  ± 1.3 hPa T= 23°C
  ± 1.5 hPa 0<T<40°C
  ± 2.0 hPa -30<T<80°C
- accuracy of the device's analog output:
  ± 1.5 hPa T= 23°C
  ± 1.7 hPa 0<T<40°C
  ± 2.2 hPa -30<T<80°C

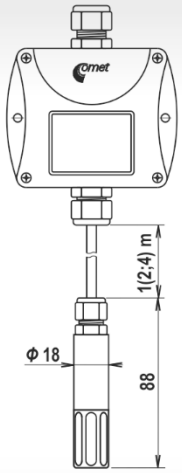
the accuracy of the analog output applies to the output range of 800 to 1100 hPa (see Instruction Manual)

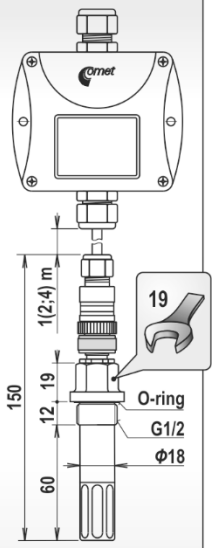






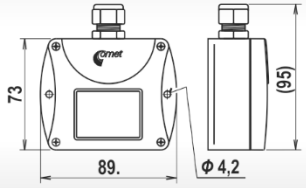




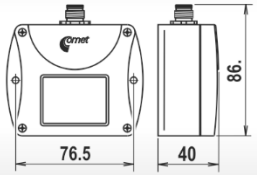


Use the 19 mm spanner for probe installation!

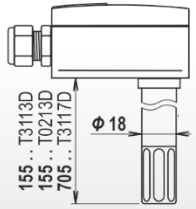
Device with cable gland



TxxxxL version of device



T3113D, T3117D, T0213D



* The relative humidity measuring range is limited at temperatures above 85°C, see manuals for devices.
** The analog output range can be set with user software (the factory settings of analog output: 800 to 1100 hPa)

*** mounting position "cable gland upwards" is recomended for free space, in the air-conditioning duct you can place the device in any position
**** if it can lead to long term condensation of water, it is necessary to use the probe at position with sensor cover downwards