TX

Blind Transmitter Controller for pH, ORP, Conductivity, Oxygen, Turbidity, Chlorine, Chlorine Dioxide, Chlorites, Peracetic Acid, Ozone and other oxidising substances, Sulphites, Metabisulphites and other reducing substances

Electronic units for the measure and control of electro-chemical parameters with serial interface and MODBUS communication protocol. Programmable instruments that receive the input from different sensors for electro-chemical analysis and from pertinent temperature sensors. Configuration is easily operated through PC or PLC through the serial interface with a flexible software included in the supply.
The electronic unit includes two 4÷20 mA analog outputs (measure and temperature retransmission), two digital outputs from relay (alarms on measure and/or temperature). Two digital inputs are available for automatic remote calibration or for measure hold and external alarm acquistion.
The instrument is suitable for rear panel mounting, DIN bar. It is also available in an IP65 houding suitable for outdoor installation. An IP65 housing suitable for 2 or 3 TX instruments is also available.
Typical use of these instruments is for on line measurements of various physico-chemical parameters.

Advantages

- **Direct input from electrochemical sensors and pertinent temperature sensor**
- **Automatic thermo compensation of the measure via software through specific algorithms**
- **RS 485 serial interface with MODBUS RTU communication protocol**
- **2 analog output 4÷20 mA for measure and tempertaure**
- **2 digital outputs from relay, programmable**
- **2 digital inputs, programmable**
- **Remote calibration capability**
- **Isolated 24 Vdc power supply; 24 Vac power supply**
- **Suitable for rear panel mounting (DIN bar) and for outdoor installation (IP 65 protection degree)**
- **Freely programmable linearization curves**

Installation, Maintenance and Calibration

The instrument is supplied configured and calibrated according to customer specifications (if indicated in the order). Install the instrument and complete wirings according to instruction manuals, then power up and verify that the instrument configuration complies with process requirements. Now operate a calibration of the measuring chain.
The instrument does not require specific maintenance. Verify calibration at periodic intervals depending upon the application of the analyser.

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Operating principle and realization

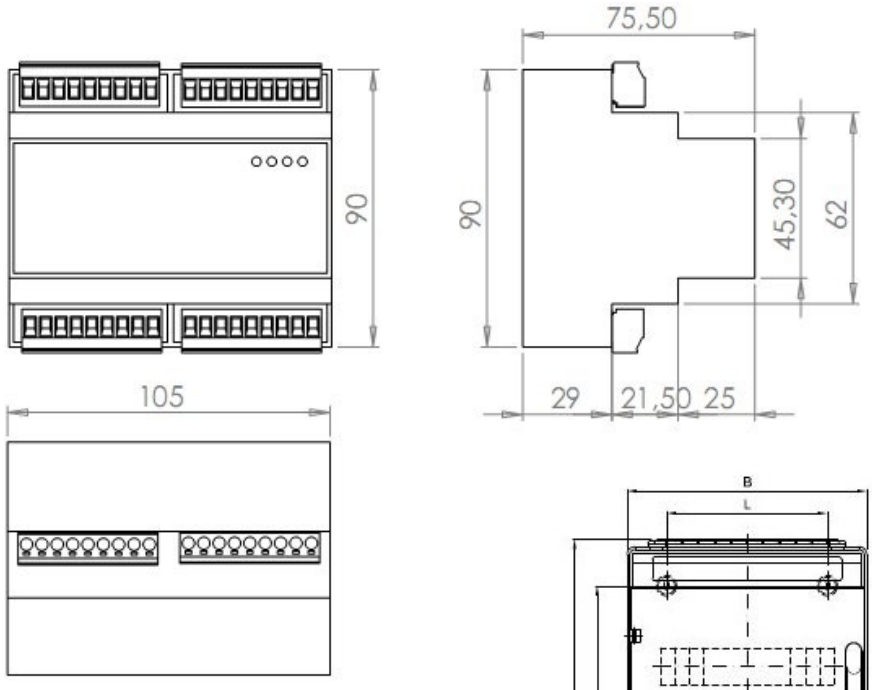
Series TX are transmitters/controllers for the analysis of pH, ORP, ISE, Conductivity, Turbidity, Dissolved Oxygen, Oxidising Substances (e.g. Chlorine, Chlorine Dioxide, Chlorites, Ozone, Peracetic Acid, Permanganate, Bromine), Reducing Substances (e.g. Metabisulphites, Sulphites, Sulphur anhydride etc.) They can be directly connected to the sensor of one of the a.m. parameters and to the pertinent temperature sensing element. The measure is compensated for temperature variations, linearized if reuired, retransmitted on a 4÷20 mA analogue output that can be freely associated to any interval inside the measuring range. A second 4÷20 mA analogue output retransmits the temperature value. The instrument provides 2 digital outputs (NO) that can be programmed as low alarm, high alarm, alarm with hysteresis or windows alarm for measure and/or temperature. The 2 digital outputs are from relays. Two digital inputs are available, for remote calibration of the analyser. The digital inputs can also be used for digital hold of the measure, and for the input of an external alarm (e.g. level switch, temperature switch etc.)

TX transmitter/controller includes a RS485 serial interface with MODBUS RTU communication protocol, for data transmission, configuration and calibration throughPC or PLC.

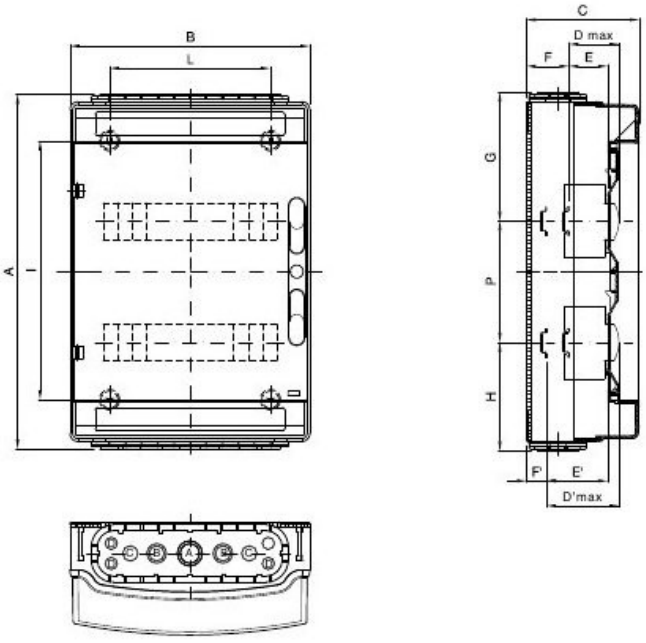
The instrument is suitable for 50022 DIN bar mounting (according to DIN 43880), (6 modules width). It is also available in an IP65 housing suitable for outdoor mounting. IP 65 housings suitable to house 2 or 3 instruments Mod.TX together are also available. Ask Your supplier.

The instrument does not require specific maintenance, it is only necessary to periodically check the calibration. The frequency of calibration check depends upon the kind of analysis operated and the process in which the instrument is installed.

Outline dimensions (DIN bar mounting version)



Outline dimensions (IP 65 housing version); housing for 1 , 2 or 3 instruments



1 TX	2 TX	3 TX
A = 278 mm	A = 438 mm	A = 588 cm
B = 298 mm	B = 298 mm	B = 298 mm
C = 140 mm	C = 140 mm	C = 140 mm
L = 115 mm	L = 115 mm	L = 115 mm
I = 161 mm	I = 320 mm	I = 494 mm

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Technical Specifications

Housing Mod.TXxxTxxxAxxx (panel mtg):..... IP 20 protection, 105 x 90 x 75 mm
Housing Mod.TXxxTxxxCxxx (outdoor inst.):.....IP 65 prot.degree; dimensions mm: 278 h x 298 w x 140 d
Input signal:.....from sensor: pH, ORP, Conductivity, Turbidity, Oxygen, Cl_2, ClO_2, PAA, $KMnO_4$, Br_2,
.....$S_2O_5^=$, SO_2, $SO_3^=$, or other and from pertinent temperature sensor, Pt100.
Digital inputs: .....2, from NPN static contact or from voltage free contact, max.voltage 18 V;
.....max. closure current 4 mA;
.....In standard functionality mode: clabration from remote contact
.....Other digital input functionality:IN1 : Digital hold of reading (freezing);
.....IN2: alarm from external equipment (level switch, pressure switch, temperature switch etc.).
Digital outputs:.....2 alarm set points, output from relays, SP, 3A – 250 V, resistive load.
.....The alarms can be configured as low alarm, high alarm, window alarm, alarm with hysteresis
.....for measure, temperature or for measure and temperature
.....Each set-point has programmable differential.
Analogue output:.....2, proportional to analysis; 4÷20 mA; max.load 500 Ω;
.....Output signal can be freely associated to any interval inside the measuring range.
Analogue output accuracy and linearity:.....Accuracy: 0.01 %; Linearity: 0.025 %
Serial communication:.....RS485 serial interface with MODBUS RTU communication protocol
Measuring range (Where required, specify desired measuring range at order):

- pH and pH(Sb).....-1.00 ÷ +15.00 pH
- ORP.....- 2000 ÷+2000 mV
- ISE.....- 2000 ÷+2000 mV or 0÷9999 ppm
- Conductivity:.....0.0÷20.0/0.0÷200.0/0.0÷2000.0 µS; 0.000÷20.000/0.00÷200.00/0.0÷2000.0 mS
- Turbidity.....0.0 ÷ 2000.0 NTU
- D.O.....0.00÷20.00 ppm
- Oxidising Substances .....0÷2000 ppb / 0.00÷10.00 ppm / 0.0÷2000.0 ppm
- Reducing substances .....0.0÷2000 ppb / 0.00÷10.00 ppm / 0.0÷2000.0 ppm
- Temperature.....-50÷+150°C, resolution 0.1°C, accuracy ±0,5% f.s.
- Other.....-99999 ÷ + 99999, with selectable decimal point.

Measure intervals associated to analogue output:

- pH and pH(Sb): .....freely selectable inside the limits -1.00 and +15.00 pH
- ORP: .....freely selectable inside the limits - 2000 and +2000 mV
- ISE: .....freely selectable inside the limits - 2000 and +2000 mV or 0÷9999 ppm
- Conductivity:.....freely selectable inside selected measuring range
  .....(0.0÷20.0 / 0.0÷200.0 / 0.0÷20000.0 µS; 0.000÷20.000 / 0.00÷200.00 / 0.0÷2000.0 mS)
- Turbidity: ..... freely selectable inside the limits 0.0 and 2000.0 NTU
- D.O..... freely selectable inside the limits 0.00 and 20.00 ppm
- Oxidizing Substances:.....freely selectable inside
  .....measuring range (0÷2000 ppb, 0.00÷10.00 ppm, 0.0÷2000.0 ppm)
- Reducing Substances : .....freely selectable inside
  .....measuring range (0.0÷2000 ppb, 0.00÷10.00 ppm or 0.0÷2000.0 ppm)
- Other:.....freely selectable inside the limits -99999 e + 99999

Integration (smoothing): .....programmable
Range of temperature compensation:.....-50°C to 150°C 0.1°C resolution
Power supply: ..... 24 Vac, 50/60 Hz, ±10%, maximum consumption 4 VA
.....or, depending on wiring, 24 Vdc (8-30 Vdc), maximum consumption 4 VA
Data storage:..... E^2prom stores data also during power shut off
CE compliance:.....according to pertinent rules (93/68CEE – electromagnetic compatibility; low voltage)
Electrical classification:.....for safe area installation
Ambient temperature limits during operation:.....-10 ÷ 50 °C
Storage temperature limits:.....0 ÷ 60 °C

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Order code breakdown

	TX	xx	T	x	x	x	x	xx	x
Transmitter controller	TX								
Measured parameter									
pH		01							
pH with Antimony (Sb) electrodes		02							
Oxidation Reduction Potential		03							
Conductivity		04							
Turbidity		05							
Dissolved Oxygen (Mod.332I, 332C, 332P cells)		06							
Dissolved Oxygen (Mod.332B cell)		21							
Chlorine		22							
Chlorine dioxide		23							
Ozone		24							
Peracetic Acid		25							
Permanganate		26							
Bromine		27							
Oxidising Power		28							
Temperature		29							
Ion Selective Electrodes		30							
Metabisulphites		33							
Hydrogen Peroxide		40							
Chlorites		42							
Conductivity with toroidal cell		44							
Oxygen in air with cell 332K25		66							
Other		99							
Fixed Code			T						
Power supply									
24 Vac 50/60 Hz or 24 Vdc				1					
Cell constant of the conductivity cell to be connected									
Standard (for all instruments except TX04)					A				
Code not in use					B				
Only for TX04: cell constant K = 0,1 cm					C				
Only for TX04: cell constant K = 1 cm					D				
Only for TX04: cell constant K = 10 cm					E				
Only for TX04: cell constant K = 100 cm					F				
Special execution					Z				
Fixed Code						0			
Housing									
IP 20 for DIN bar mounting							A		
IP 65 for outdoor installation				C					

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TX	xx	T	x	x	x	x	xx	x

Measuring Range		
Reserved		0
pH with glass electrode, pH differential electrodes	0-14 pH	10
pH with Antimony electrodes	0-14 pH	11
ORP	-2000 mV - + 2000 mV	20
Dissolved Oxygen	0-2000 ppb	31
	0-20 ppm	32
	0-100%	33
Conductivity	0-20 uS	41
	0-200 uS	42
	0-2000 uS	43
	0-20 mS	44
	0-200 mS	45
	0-2000 mS	46
Reducing Substances	0-2000 ppb	51
	0-10 ppm	52
	0-2000 ppm	53
Oxidising Substances	0-2000 ppb	61
	0-10 ppm	62
	0-2000 ppm	63
Turbidity	0-2 NTU	71
	0-20 NTU	72
	0-200 NTU	73
	0-2000 NTU	74
Temperature	-50°C - + 150°C	80
Other		99

Fixed Code	A

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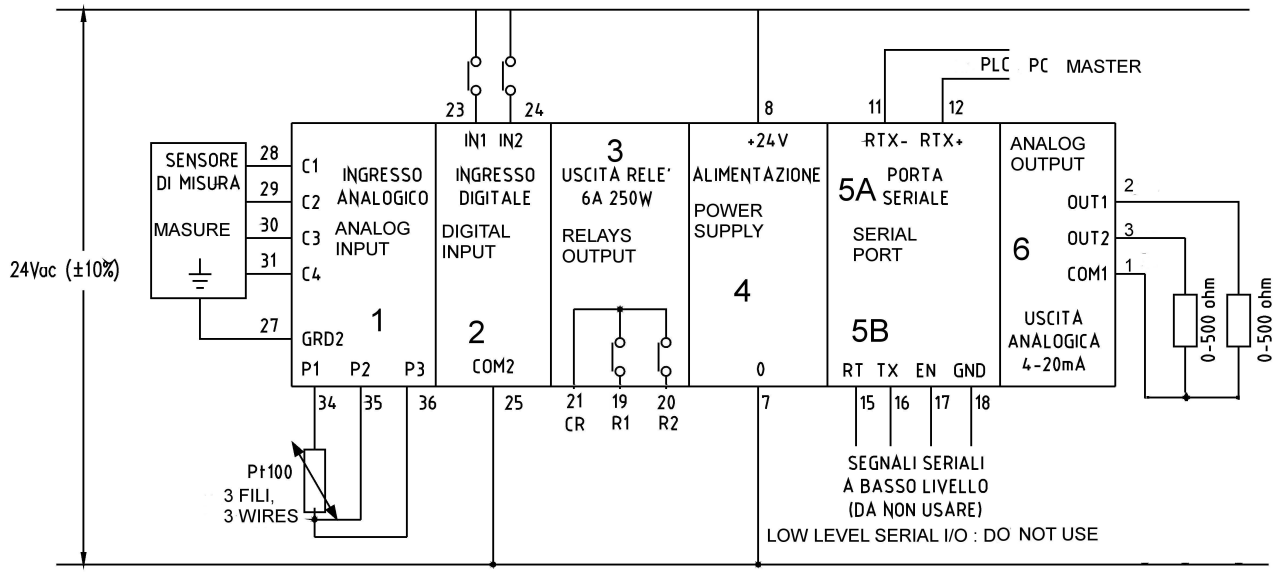
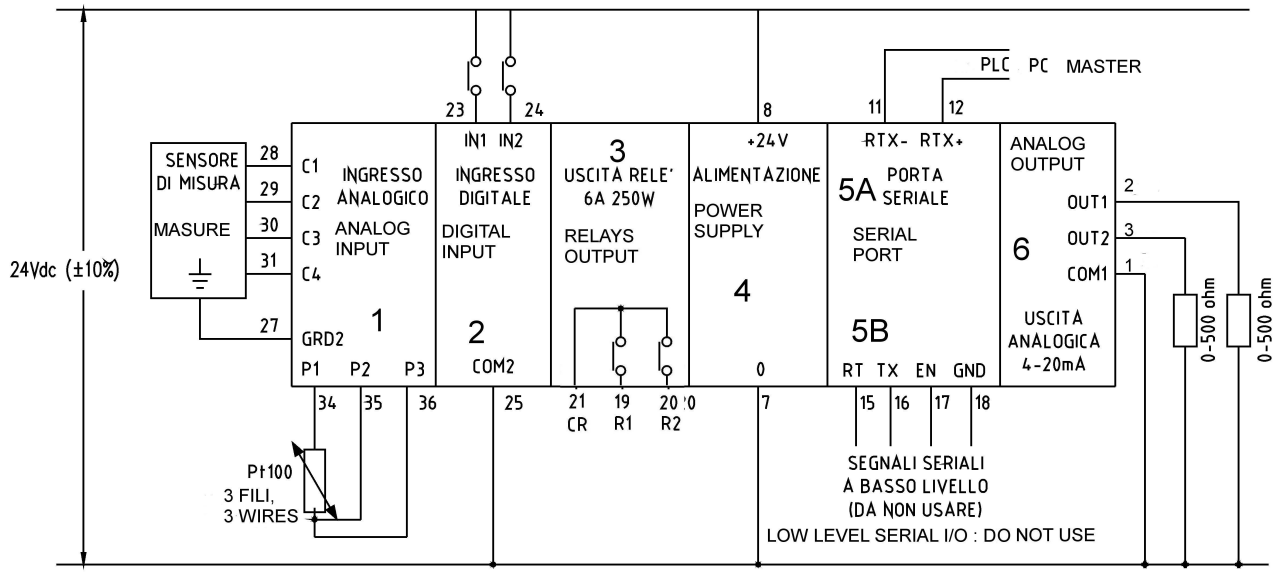
Wiring



1 is isolated from 2, 3, 4, 5A, 6; it is NOT isolated from 5B
2 is isolated from 3, 4, 5A, 5B, 6
3 is isolated from 4, 5A, 5B, 6
4 is isolated from 5A, 5B, 6
5A is isolated from 6
5B is isolated from 6

OUT 1 = Analysis
OUT 2 = Temperature



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5A is isolated from 6
5B is isolated from 6

OUT 1 = Analysis
OUT 2 = Temperature