



TX-HMI

Indicator 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

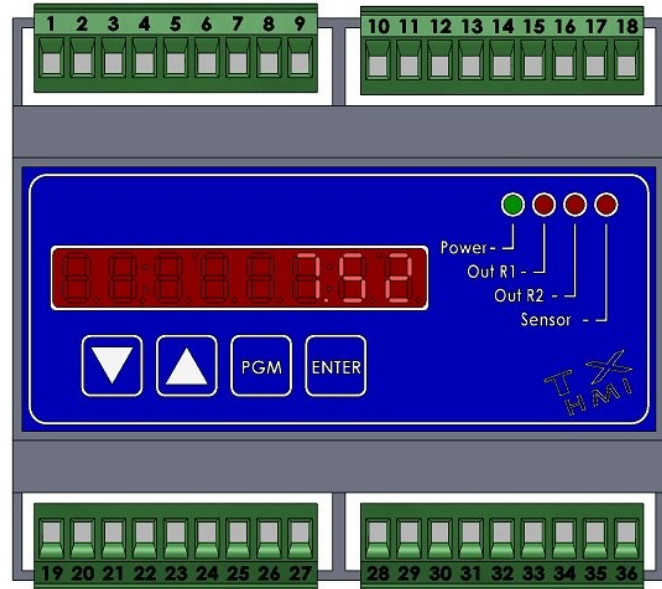
Electronic units for the measure and control of electro-chemical parameters with serial interface and MODBUS communication protocol. Programmable instruments that receive the input from different sensors for electro-chemical analysis and from pertinent temperature sensors. Configuration is easily operated using local display and keypad. It may also be operated (but it is only an option) by PC or PLC through the serial interface with a flexible software that must be separately required.

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 acquisition.

RS 485 serial interface with MODBUS RTU communication protocol.

The instrument is suitable for rear panel mounting, DIN bar. It is also available in an IP65 housing suitable for outdoor installation. An IP65 housing suitable for 2 or 3 TX-HMI 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
- Display indication of both analysis and temperature values
- 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 temperature
- 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). Require at order the desired measuring range and the desired association for the alarm thresholds (alarm for measured variable, for temperature or for both). 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.

TX-HMI

Operating principle and realization

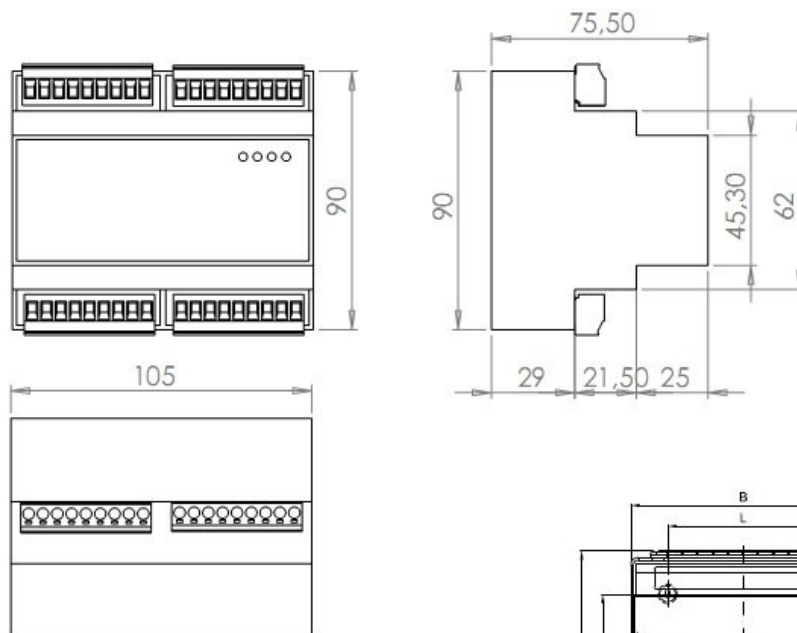
Series TX-HMI are indicators/transmitters/controllers for the analysis of pH, ORP, ISE, Conductivity, Turbidity, Dissolved Oxygen, Oxidising Substances (e.g. Chlorine, Chlorine Dioxide, Chlorites, Ozone, Peracetic Acid, Permanganate, Bromine), Reducing Substances (e.g. Metabisulphites, Sulphites, Sulphur 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 required, indicated on local display (measure + temperature), 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. (require association at order) 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-HMI transmitter/controller includes a RS485 serial interface with MODBUS RTU communication protocol, for data transmission, configuration and calibration through PC 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-HMI together are also available. Ask Your supplier.

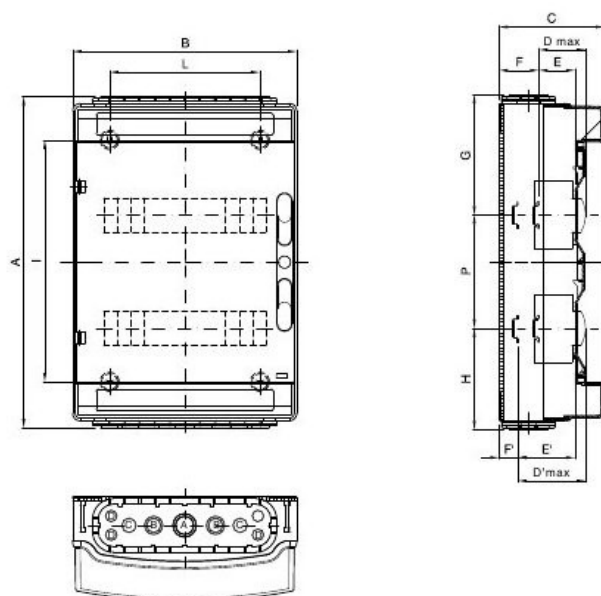
The instrument does not require specific maintenance, it is only necessary to periodically check the calibration. The frequency of calibration check depends upon the kind of analysis operated and the process in which the instrument is installed.

Outline dimensions (DIN bar mounting version)



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

1 TX-HMI	2 TX-HMI	3 TX-HMI
A = 278 mm	A = 438 mm	A = 588 mm
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



TX-HMI

Technical Specifications

Housing Mod.TXHMIxxTxxxAxxx (panel mtg):..... IP 20 protection, 105 x 90 x 75 mm
Housing Mod.TXHMIxxTxxxCxxx (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, Cl₂, ClO₂, PAA, KMnO₄, Br₂,
.....S₂O₅⁼, SO₂, SO₃⁼, 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
Display:.....red LED, h 12.5 mm, 5 digit and algebraic sign, programmable decimal point, selectable range
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 Substances0÷2000 ppb / 0.00÷10.00 ppm / 0.0÷2000.0 ppm
Reducing substances0.0÷2000 ppb / 0.00÷10.00 ppm / 0.0÷2000.0 ppm
.....-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:..... E²prom 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

TX-HMI

Order code breakdown

	TX-HMI	xx	T	x	x	x	x	xx	x
Transmitter controller	TX-HMI								
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 TX-HMI04)									A
Code not in use									B
Only for TX-HMI04: cell constant K = 0,1 cm									C
Only for TX-HMI04: cell constant K = 1 cm									D
Only for TX-HMI04: cell constant K = 10 cm									E
Only for TX-HMI04: 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

TX-HMI

	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

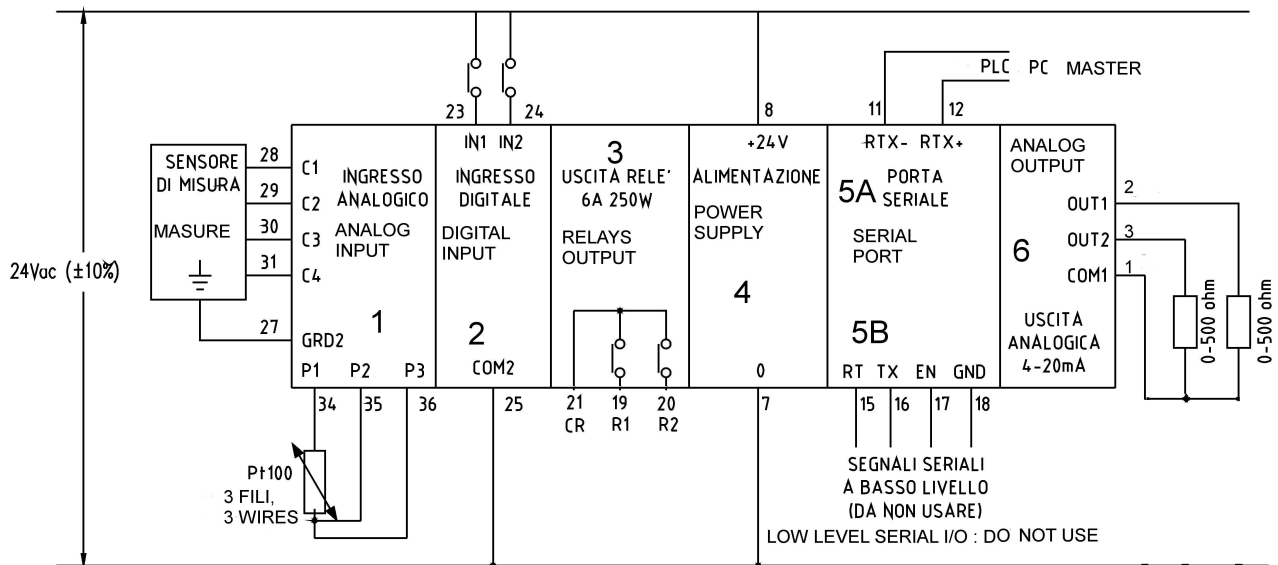
A

Specify at order:
measuring range

meaning of alarm thresholds (association of the digital output to alarm on temperature and/or analysis)

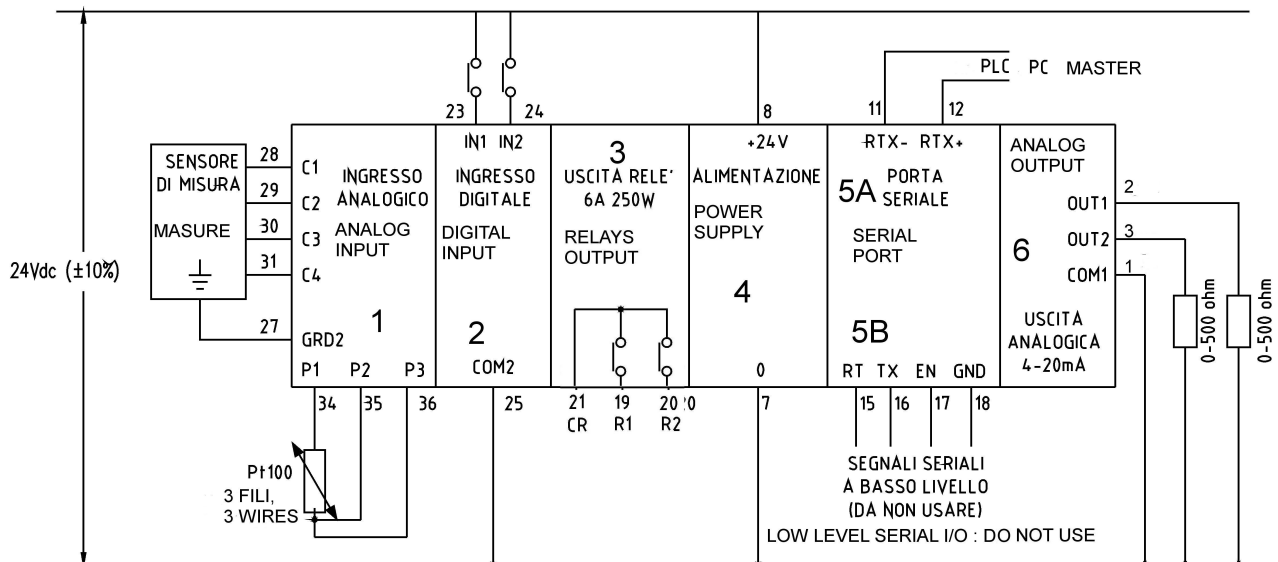
TX-HMI

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



- 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