pH /ATC TRANSMITTER

4-20 mA & Modbus transmission

with local display and RS-485 communication

DMM-4000/pH

Desin Instruments

DESCRIPTION

The **DMM-4000/pH** Series are powerful field mounting transmitters incorporating high impedance pH direct input with ATC compensation. Transmit the two variables at once by 0 .. 4-20 mA and RS-485 MODBUS communication. These devices are dedicated specifically to the pH transmission in industrial processes as well as water treatment under PC supervision.

2 x 4-20 mA

IP-65

CE

- **pH AND Pt100 TRANSMITTERS BY mA AND MODBUS**
- **HIGH IMPEDANCE INPUT FOR COMBINED PH SENSORS**
- **AUTOMATIC TEMPERATURE COMPENSATION (ATC)**
- **USER-DEFINED BUFFERS FOR EASY CALIBRATION**
- **SENSOR TEST AND SENSOR LIFE TIME FUNCTIONS**
- **DUAL CONFIGURABLE INSULATED ANALOG OUTPUT**
- **ENCLOSURE RATING IP65 FOR FIELD MOUNTING**
- **POWER SUPPLY 85...265 Vac (or 24 Vdc in option)**
- **MOUNTING ON WALL OR ON PIPES UP TO 2" (50 mm)**
- **RS-485 MODBUS COMMUNICATION AS STANDARD**
- **PROGRAMMABLE BY KEYBOARD OR REMOTE PC**
- **PROASIS DCS-WIN SUPERVISORY SOFTWARE INCLUDED**

FEATURES

Gathered under the generic name **DMM-4000/..VQ** a new Series of field mounting transmitters for chemical processes is presented, combining the measuremnt and transmission of analog variables in the same device.

The **DMM-4000/pH** Series is designed for the measurement of pH with ATC automatic temperature compensation by means of sensor Pt100 (or Pt1000 in option).

The pH input by BNC plug is impedance adapted by means an internal circuit, specific to combined pH sensors, performing the ATC compensation, allowing the exchange and also the calibration procedure for this type of sensors.

The other input is performed to Pt100 (or Pt1000) to achieving the correction measuring ATC according Nerst law.

The **DMM-4000/pH** Series is presented in a only version with two 4-20 mA retransmission outputs, and the same time by Modbus communicatioin, allowing to read the data measurements and the alarms from a remote PC or PLC.

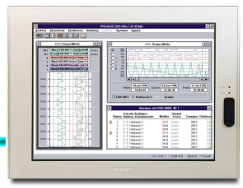
The **DMM-4000/..** Series is provided with RS-485 MODBUS RTU communication protocol, as standard, thus, the instrument can be included in any MODBUS RTU communication network in a distributed control system.

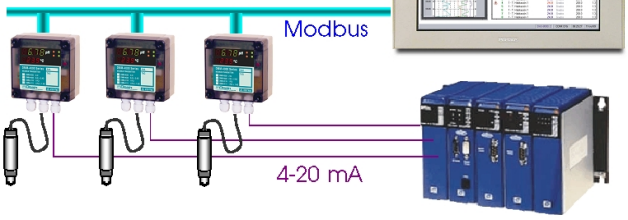
In additional to this Series, a complete range of sensors and electrodes with different features are available.

Optionally can include functions for sensor cleaning (with read hold during cleaning) by relay output, Calculation of sensor Use Life showing the time remaining and Test of Sensor

Field Mounting Transmitters DMM-4000/..VQ whole Series

DMM-4000/pH	pH + Pt100 (ATC)
DMM-4000/ORP	Redox + Pt100
DMM-4000/EC	Two Poles Conductivity + Pt100 (ATC)
DMM-4000/ECT	Inductive Conductivity + Pt100 (ATC)
DMM-4000/O2	Dissolved Oxygen + Pt100 (ATC)
DMM-4000/CL	Free Chlorine
DMM-4000/OZ	Ozone
DMM-4000/TB	Turbidity
DMM-4000/ESI	Selective Ion





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SPECIFICATIONS

ANALOG INPUTS:
- Measurement input: . by BNC plug from combined pH sensor
- Range: ..... 0.00 a 14.00 pH
- Input impedance: ..... > 1000 GΩ
- Automatic Temp. Comp.: ..... Pt100 (or Pt1000 in option)
- Range of Temp. Comp.: ..... 30 to 212 °F 0 to 100 °C
- Compensation: ..... acc/Nerst law
- Accuracy at 25 °C: ..... ± 0.1 %
- Sampling rate: ..... 125 ms

CALIBRATION:
- Automatic from two buffers programmed by the user

ANALOG OUTPUTS:
- Type: .... dual 0..4-20 mA outputs (V with 500 ohm ext. shunt)
- Function: ..... measurement retransmission
- Current loop max. load: ..... 500 Ohms
- Accuracy at 25 °C: ..... ± 0.1 %
- D/A converter resolution: ..... 12 bits
- Update time: ..... 250 ms
- Insulation: ..... 1000 V

FUNCTION CALCULATION OF USEFUL LIFE OF SENSOR:
- Calculates the % used of electrode life according:
  Wear away by Temperature ..... 0 to 100°C
  Exhaustion by Measure ..... +/- 100% of range
- Alarm indication: ..... by front Led and Modbus

FUNCTION TEST OF SENSOR:
- Supervising the sensor status alarming when:
  Breaking of the electrode
  Drift of measurement
  Short-circuit of sensor line
- Alarm indication: ..... by front Led and Modbus

FUNCTION CLEANING OF SENSOR (optional)**:**
- Programming of cleaning ..... enabling DO1 relay output
- Time of function ..... settable from 1 to 6500 sec.
- Time among cleanings ..... settable from 1 to 6500 sec.
- Function indication: ..... by front Led and Modbus

RELAY OUTPUTS:
- 2 x SPST relays ..... 1 A, 250 Vac sharing a common output in the terminal block
- Functions: Test sensor alarm or optional Cleaning output

ALARM LOOPS:
- 2 Alarms (without relay outputs): ..... only by Modbus

DISPLAY:
- Type: ..... 4 (10 mm) + 4 (8 mm) dígits Led
- Keyboard: ..... internal only for maintenance

AUXILIARY POWER SUPPLY OUTPUT:
- Type: ..... switched power 24 Vdc 40 mA max.

DIGITAL COMMUNICATIONS:
- Type: ..... RS-485 Modbus RTU
- Baud rate: ..... 9.6 - 4.8 - 38.4 Kbps

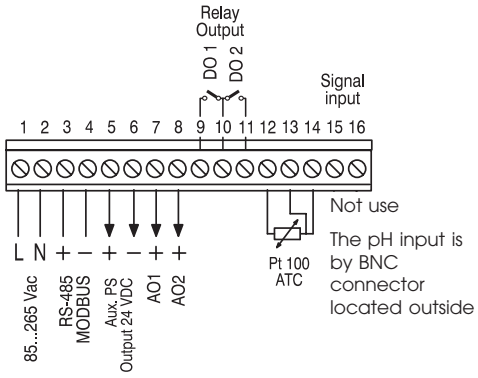
ENVIRONMENTAL LIMITS:
- Operating ambient temperature: ..... 0 to 50 °C
- Relative Humidity: ..... max. 99 %RH

CE STANDARDS:
- EN 61000-6-3 Emission, EN 61000-6-2 Immunity, EN 61010 Electric Safe

POWER:
- Operating voltage: ..... 85 to 265 Vac/dc (max. 3.5 VA) (optional 12 or 24 Vac/dc)

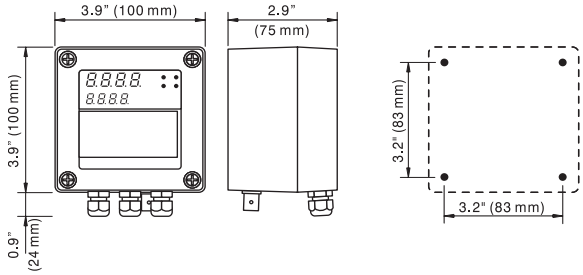
ENCLOSURE:
- Autoextingible material ..... ABS and Polycarbonate
- Protectión: ..... IP65 acc/IEC 60529 & IK09 acc/EN 50102
- Environmental resistance: ..... acc/ IEC 695-2-1 & IEC 439-3

WIRING DIAGRAM



1 2	— —	Power supply 85... 265 Vac/dc optional: 12 or 24 Vac/dc
3 4	+ –	RS-485 Modbus RTU communication
5 6 7 8	+ – + +	Auxiliary power supply 24 Vdc 40 mA output Common to 24 Vdc and AO1 - AO2 outputs AO1 Analog output 0...4-20 mA of °C range (ATC) AO2 Analog output 0...4-20 mA of pH range
9 10 11		DO1 output - Sensor Cleaning Common DO2 output - Optional functions
12 13 14		Pt100 input for ATC (Pt1000 in option)
15 16	Not use Not use	The pH sensor input is by a BNC connector located at bottom of transmitter enclosure

DIMENSIONS



Weight: 320 g; with packing 380 g.
Optionally can be delivered with SS flange for 2" pipe mounting.
Weight: Add 120 g

HOW TO ORDER

Factory configured standard version:

DMM-4000/pH **pH combined sensor 0.00 to 14.00 pH**
Pt100 sensor 0-100 °C (or °F)
2 Analog output 4-20 mA as pH + °C transmitter

The standard main power supply is 85 V to 265 Vac.
For 12 or 24 Vdc power supply to place 12 or 24 in front of version, e.g.:
DMM-4000/24/pH

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The contents of this sheet are subject to change without notice

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