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ENVIROMENTAL CONTROLS

HD 9408 T BARO- HD 9408 TR BARO AND HD 9908 T BARO

BAROMETRIC PRESSURE TRANSMITTERS

HD 9408T BARO, **HD 9408TR BARO** and **HD 9908T BARO** are analog output electronic barometers. The piezoresistive sensor gives extremely accurate and stable measurement of atmospheric pressure and assures excellent repeatability, low hysteresis and very good temperature stability. The output signal of the sensor is conditioned to provide a voltage or a current output linearly proportional to the barometric pressure. The transmitters are ready to use as they have been factory calibrated. An offset adjustment potentiometer is available for station elevation.

HD9408T BARO requires a DC supply voltage, its low power consumption (< 4 mA) makes it suitable for portable and remote battery or solar powered applications. It is available in different kinds of analog output: 0-1 Vdc, 0-5 Vdc (1-5 Vdc, 1-6 Vdc on request) or 4-20 mA (two wires).

HD 9408TR BARO offers higher temperature performance: the internal circuitry allow the sensor to work at constant temperature so that it achieves accurate temperature compensation over the whole range from -40°C to +60°C.

HD 9408TR BARO requires a continuous DC supply voltage. It is available in different output versions: 0+1 Vdc, 0+5 Vdc (1+5 Vdc, 1+6 Vdc on request).

HD 9908T BARO, is a barometric transmitter equipped with a 3 1/2 digi display (1 mbar resolution) showing pressure measurements it has a 0+20 mA, 4+20 mA, 0+1 V and 0+5 V (0+10 V on request) analog output configurable by the customer and an ON/OFF relay with programmable alarm threshold.

HD 9908T BARO requires a 24 Vac (or 220 Vac on request) power supply.

HD 9408T BARO, **HD 9408TR BARO** and **HD 9908T BARO** are low cost and high -performance solutions for meteorological applications, environmental monitoring systems, weather and environmental data logging, barometric pressure compensation for internal combustion engine performance, cleanroom barometric pressure compensation, automotive emission test.



HOUSING AND INSTALLATION

In all models the sensor and the electronics are housed in a sturdy MACROLON box (degree of protection IP67). When the lid is opened, holes allow fi xing the base of the transmitter to a panel or surface. The precision of measurement does not depend on the position of the transmitter. However it is advisable to fi t the transmitter in such a way that the sensor is facing downwards so as to minimize the accumulation of dust or dirt on the fi lter. If the transmitter is installed in an outdoor location, it is recommended to use a pressure port which minimizes the errors caused by the wind fi ow.

TECHNICAL DATA

	HD 9408T BARO	HD 9408TR BARO	HD 9908T BARO
Sensor Type	Piezoresistive diaphragm		
Measuring range	800...1100 mbar / 600...1100 mbar on request		
Analog Output	0..1 Vcc standard 0..5 Vcc, 1..5 Vcc, 1..6 Vcc 4..20 mA (2 wires)	..1 Vcc standard 0..5 Vcc, 1..5 Vcc, 1..6 Vcc	Configurable 0..20 mA, 4..20 mA, 0..1 V on request 0..10 V
Accuracy	± 0,4 mbar @ 20 °C	± 0,4 mbar @ 20 °C	Display : ± 1 mbar @ 20 °C Analog output ± 0,8 mbar @ 20 °C
Resolution	Infinite	Infinite	Display : 1 mbar Analog output: infinite
Temperature drift	< 1% F.S. zero; and span from -20 °C y 60 °C	± 0,8 mbar from -40 °C y 60 °C	< 1% F.S. zero; and span from -20 °C y 60 °C
Long-term stability	< 0,25 % F.S. over 6months at 20 °C	< 0,2 % F.S. over 6months at 20 °C	< 0,25 % F.S. over 6months at 20 °C
Stabilization time	1 sec. at 99% of measurement	5 min. @ 24 Vcc at 99% of measurement	5 sec. at 99% of measurement
Response time	< 200 mseg to reach full accuracy after a pressure step		
Contact	-	-	3 A/220 Vca
Set point	-	-	From 800 to 1100 mbar
Supply voltage	8...35 Vcc	12...35 Vcc	24 Vca ± 10% (220 Vca)
Supply current	< 4 mA	25 mA @ 20 °C 24 Vcc	1 VA
Operating Temperature	-30 °C to 60 °C	-40 °C to 60 °C	-20 °C to 60 °C
Media compatibility	Air and dry gases only		
Over pressure	2 bar (30 psi)		

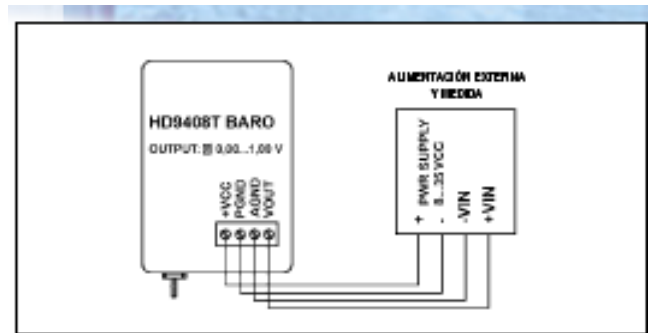
CONNECTION DIAGRAM AND OPERATION

- Make the power connections for the HD 9908T BARO.
- Make the connections for the relay output, the relay contact is free.
- Select the analog output 0÷20 mA, 4÷20 mA, 0÷1 V, 0÷5 V by means of the jumper.
- Power the instrument, press the PUSH button and turn the SET trimmer to set the desired threshold value between 800 and 1100 mbar; the set value is shown on the LCD display.
- Using the trimmer, set the desired HYS (=hysteresis) value between 5 and 50 mbar.
- The instrument will now indicate the barometric pressure; HI led, LO led or ALARM led and ALARM relay will perform as shown in table 1.

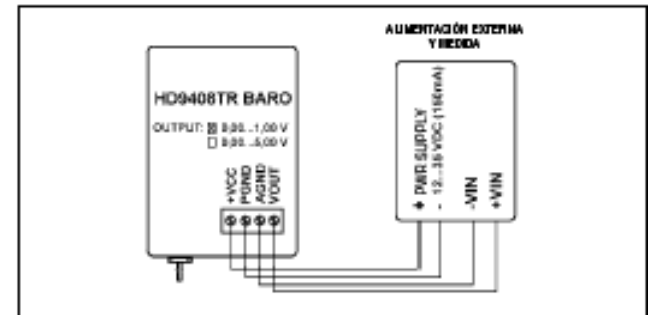
NOTE: the ALARM led on indicates that the relay is energized and the contact is closed.

- Once the installation is complete, make sure that the cover is perfectly closed; the same applies to the grommets.

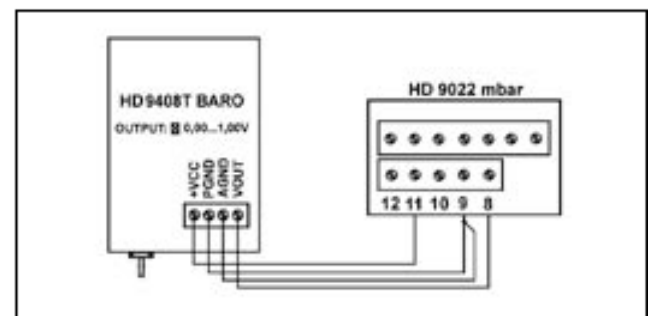
Table 1	HI	LO	Alarm Led
measure > set, measure < set + hys	on	off	off
measure > set, measure > set + hys	on	off	on
measure < set, measure > set - hys	off	on	off
measure < set, measure < set - hys	off	on	on



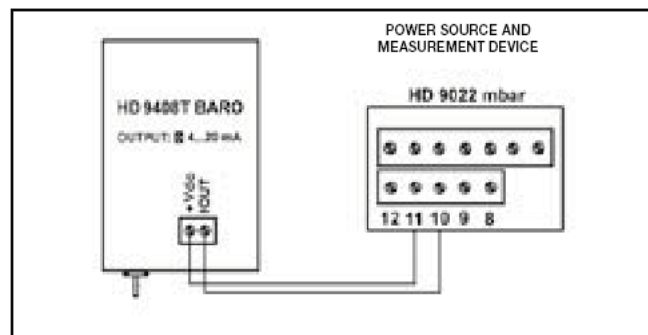
HD 9408T BARO 0..1V OUTPUT



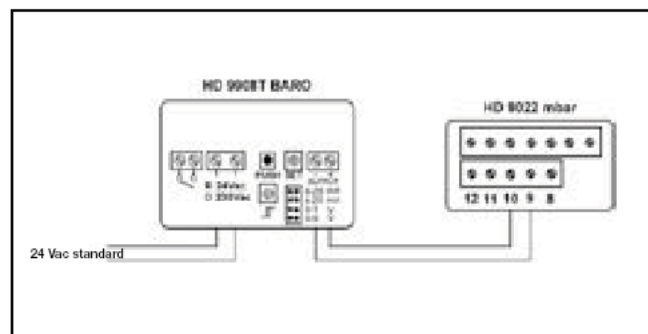
HD 9408TR BARO 0..1V OUTPUT



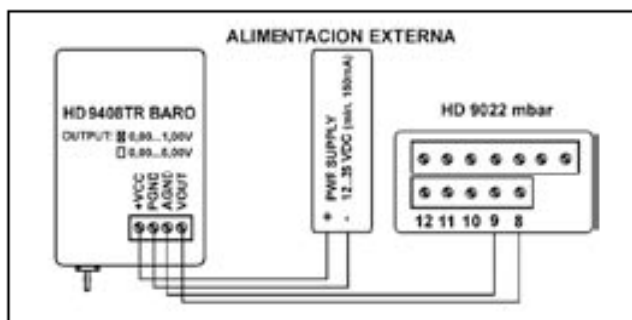
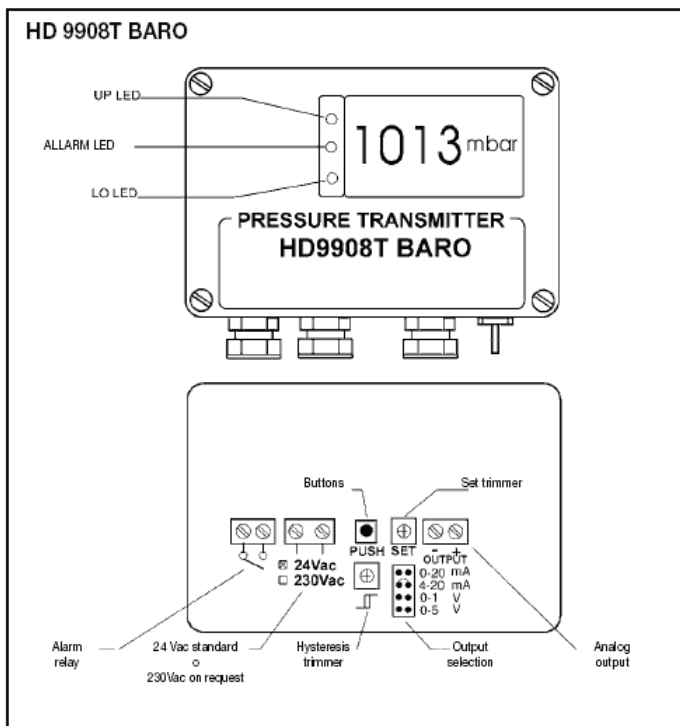
HD 9408T BARO 0..1V OUTPUT



HD 9408T BARO 4÷20 mA OUTPUT (two wire)



HD 9908T BARO 4÷20 mA OUTPUT



HD 9408TR BARO SALIDA 0÷1 V

HD 9408PS 50 STATIC PORT FOR BAROMETRIC MEASUREMENTS

GENERAL DESCRIPTION

The measurement of barometric pressure in free field can give wrong values, of hundreds of pascal, because of wind fluctuation and direction. The HD9408PS 50 static port for barometric measurements minimizes such errors, because, besides working as a filter (brake) against the wind dynamic pressures, it allows the barometer to work properly, even in the presence of snow or ice, as well as to conform to the WMO recommendations (World Meteorology Organization). The materials in are UV-resistant and can operate in the temperature range between -40°C and $+80^{\circ}\text{C}$.

INSTALLATION AND CONNECTION

The instrument is easy to install and it has to be placed far from buildings, trees or any other source that might disturb the flow of the wind. The HD9408PS 56 mounting bracket and three M5x16 Stainless Steel screws are available to fix the port properly. The connection of the static port to the barometer, i.e. either to a HD9408T or to a HD9408TR, is carried out through the HV55 special tube (inside \varnothing : 3mm, outside \varnothing : 6mm), which is resistant to climate changes and UV. Maintenance and cleaning are very simple. Plastic parts are in LURAN S777K, manufactured by BASF. It is strongly suggested to use non-aggressive cleaners, compatible with the plastic material.

TECHNICAL SPECIFICATIONS

According to the WMO recommendations, the allowed measurement deviation at a 20meters/second wind speed is 0.3mbar, corresponding to 300 Pascal. The HD9408PS 50 static port for barometric measurements complies with this value.

ORDERING CODES

HD9408T BARO Barometric, transmitter output $0\div 1\text{Vdc}$, measuring range $800\div 1100\text{mbar}$. On request output: $0\div 5\text{Vdc}$, $1\div 5\text{Vdc}$, $1\div 6\text{Vdc}$, $4\div 20\text{mA}$, working temperature $-30^{\circ}\text{C} \div +60^{\circ}\text{C}$.

HD9408TR BARO Barometric transmitter, $800\div 1100\text{mbar}$, output $0\div 1\text{Vdc}$. On request output $0\div 5\text{Vdc}$, $1\div 5\text{Vdc}$. Temperature working range $-40^{\circ}\text{C} \div +60^{\circ}\text{C}$, sensor heated.

HD9908T BARO Barometric transmitter, $800\div 1100\text{mbar}$ with LCD indication. Outputs: $0\div 20\text{mA}$, $4\div 20\text{mA}$, $0\div 1\text{Vdc}$, $0\div 5\text{Vdc}$. Working temperature $-20^{\circ}\text{C} \div +60^{\circ}\text{C}$.

HD9408PS 50K Kit composed of static port, mast mounting bracket and HV55 tube

HD9408PS 50 Static port for barometric measurements equipped with HV55 tube

HD9408PS 56 Mounting bracket for static port, barometer and mast fitting
HV55 Silicone tube resistant to UV and temperature, inside \varnothing : 3mm, outside \varnothing : 6mm, L=400mm

