



No pressure with accuracy

Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU300

Since 1999, Vaisala has offered a transmitter for the measurement of barometric pressure, relative humidity and temperature. The Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU200 is now receiving a successor, the PTU300, a fully digital three parameter transmitter with several new and improved features.

Pressure, humidity and temperature are among the most important and widely measured environmental parameters, especially in meteorology. The new transmitter enables high quality measurement of all of these with a single instrument.

These three parameters are also measured when using the GPS (Global Positioning System) signal in weather-related measurements. The GPS signal is affected by the amount of water vapor on the signal path, causing a so-called tropospheric wet delay. With accurate measurements of barometric pressure, humidity and temperature at the GPS receiver antenna, all other errors in the GPS signal can be subtracted. After this, the amount of precipitable water vapor in the atmosphere can be estimated.

When calibration and test laboratories report the environmental parameters

present in the laboratory during a test or calibration, the prevailing air pressure, humidity and temperature are normally essential. These parameters are also required in accurate laser interferometric measurements, in order to compensate for their influence on the measuring laser wavelength and thereby to improve accuracy. Other applications, such as exhaust gas analyzing in engine test benches, may also require the measurement of these parameters directly or for compensation purposes.

Trust the measurement - not your luck

The pressure measurement of the Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU300 is based on the Vaisala BAROCAP® sensor, providing high measurement accuracy and excellent long-term stability. When ordering the new transmitter, the customer can choose between two different accuracy classes. The transmitter can also incorporate either one or two BAROCAP® sensors. The latter alternative provides additional reliability to the pressure measurement through the redundant measuring principle. With two sensors, the transmitter inter-

nally makes two independent pressure measurements and, in addition to the pressure signal, also gives user information on the signal reliability.

In addition to measuring barometric pressure, the new transmitter also provides the WMO (World Meteorological Organization) pressure trend and tendency code. The pressure trend indicates the amount of pressure change, while the tendency code indicates the nature of the pressure tendency for the three hours preceding the time of observation.

Choose your probe

Due to its easy configurability, the new transmitter offers several sensor head alternatives for humidity and temperature measurement. The Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU301 has a fixed humidity and temperature probe, and is especially suitable for calibration and test laboratory monitoring. The PTU303 provides a cable probe that can be easily installed for example in a radiation shield in a weather station. The PTU307 features Vaisala's patented warmed sensor head method for demanding outdoor and meteorological measurements. This



method keeps the humidity sensor safely away from condensation in all conditions, ensuring that the true ambient humidity level is observed at all times. The PTU30T incorporates a cabled temperature probe, in case only pressure and temperature measurements are required.

The humidity measurement of the new transmitter is based on the Vaisala HUMICAP® sensor, providing high accuracy and excellent long-term stability. In addition to measuring the relative humidity, the new transmitter can also provide the humidity information in the form of calculated humidity quantities such as dewpoint/frostpoint, absolute humidity, wet bulb temperature and many others.

The calibration of all the three measured quantities – barometric pressure, relative humidity and temperature – is traceable to the NIST (National Institute of Standards and Technology, USA).

It speaks your language

As an option, the new transmitter can also incorporate a graphic display, together with an intuitive menu-based interface, through which the displayed quantities and units can easily be selected. The display language can be chosen from English, German, French, Spanish, Swedish, Finnish and Japanese.

Display graphics allow the user to see the trends of the selected parameters in six different time windows, the longest being a one-year history of active opera-

tion of the unit. Cursors on the display make it possible to refer to values at individual time spots and to read the minimum and maximum values.

Connect the way you like

The new transmitter provides several different communication signals. While the standard output is RS232, the data can also be communicated using an RS485 serial line. Linear voltage and current outputs for all three parameters are also available. The voltage and current ranges can be easily modified using simple dip switches.

The voltage supply ranges from 10...35 VDC, allowing the transmitter to be also used in battery-powered applications. An optional AC supply module enables the transmitter to be connected to all universal mains AC supplies. This feature, combined with the display, makes it a handy movable environmental monitoring device. The transmitter can also be equipped with an alarm output module, providing two programmable relay outputs.

The PTU300 can be linked to a PC either via a terminal program or by using specific Windows® software to transfer the measured data, which can then be processed further and copied to other Windows® programs. The transmitter also responds to certain GPS-specific application commands and can transmit the measured data in so-called NMEA



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message format, making it compatible with major GPS receivers.

And how would you like to install it?

The Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU300 can be installed in many different ways. The unit can be mounted as such, or by using a separate wall mounting plate that enables easy detachment of the transmitter, as well as installation on top of a connection box. With the mounting plate and a DIN rail kit, the unit can be easily connected to a standard DIN rail.

The housing of the transmitter is IP65, enabling direct outdoor installation. An outdoor installation kit HMP330MIK is available, providing the required pole mounting plate, support bars, radiation shield and static pressure head to obtain reliable measurements for meteorological and other purposes.