PTU300 Combined Pressure, Humidity and Temperature Transmitter for Demanding Applications

One Transmitter, Three Measurements
The Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU300 is a unique instrument measuring three parameters simultaneously.

You can choose from the following probe options: PTU301 for laboratories, PTU303 for general use, PTU307 warmed probe for outdoor and demanding meteorology applications, and PTU30T for pressure and temperature measurement only.

Proven Vaisala Sensor Technology
The PTU300 incorporates sensors known for their high accuracy and excellent long-term stability: Vaisala BAROCAP® for pressure measurement and Vaisala HUMICAP® for humidity measurement. The temperature sensor is a platinum RTD sensor.

Features/Benefits
- Barometric pressure, humidity, and temperature measurement in one transmitter
- Available with up to two barometric pressure sensors for added reliability
- RS232C serial interface with NMEA protocol for GPS use
- Graphical display and keypad for convenient operation
- Analog outputs, RS232/485, WLAN/LAN
- MODBUS protocol support (RTU/TCP)
- Optional universal power supply module
- NIST traceable calibration (certificate included)
- HMT330MIK installation kit for outdoor use
- Applications include environmental monitoring in calibration laboratories, industrial applications, GPS meteorology: estimating precipitable water vapor in the atmosphere, weather stations

Graphical Display of Measurement Data and Trends for Convenient Operation
The PTU300 features a large numerical and graphical display with a multilingual menu and keypad. It allows users to easily monitor operational data, measurement trends, and access measurement history for the past 12 months.

The optional data logger, with real-time clock, makes it possible to generate over four years of measurement history and zoom in on any desired time or time frame.

The display alarm allows any measured parameter to be tracked, with freely configurable low and high limits.
Versatile Outputs and Data Collection

The PTU300 comes with a standard RS232 serial interface. The output format is compatible with major GPS receivers and NMEA-coded messages. An isolated RS485 is available as an option. The PTU300 is also capable of applying the MODBUS communication protocol and, together with an appropriate connection option, provides either MODBUS RTU (RS485) or MODBUS TCP/IP (Ethernet) communication. The data logger, with real-time clock and battery backup, guarantees reliable logging of measurement data for over four years. The recorded data can be viewed on the local display or transferred to a PC with Microsoft Windows® software. The transmitter can also be connected to a network with an optional (W)LAN interface, which enables a (wireless) Ethernet connection. A USB service cable makes it easy to connect the PTU300 to a PC via the service port.

Outdoor Installation Kit

Outdoor installation is possible using the optional HMT330MIK installation kit, for applications requiring reliable measurements for meteorological purposes.

Flexible Calibration

Quick, one-point field calibration for humidity is easy using the Vaisala Hand-Held Humidity Meter HM70. With Vaisala Barometric Pressure Transfer Standard PTB330TS, including optional humidity and temperature probe, field check and calibration can be performed for all three parameters.

PTU300 Models

PTU301 for wall mounting

Dimensions

Dimensions in mm (inches)

120 (4.72)
12 (0.47)

PTU301 short cable probe with optional WLAN

Dimensions

Dimensions in mm (inches)
PTU300 Models

PTU303 probe for outdoor use

PTU307 warmed probe for demanding meteorological installations

PTU30T for pressure and temperature only measurement
### Technical Data

#### Performance

**Barometric Pressure**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>500 ... 1100 hPa</th>
<th>50 ... 1100 hPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure range</td>
<td>±0.05 hPa</td>
<td>±0.10 hPa</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.20 hPa</td>
<td>±0.20 hPa</td>
</tr>
<tr>
<td>Linearity</td>
<td>±0.03 hPa</td>
<td>±0.03 hPa</td>
</tr>
<tr>
<td>Hysteresis*</td>
<td>±0.08 hPa</td>
<td>±0.08 hPa</td>
</tr>
<tr>
<td>Repeatability*</td>
<td>±0.08 hPa</td>
<td>±0.08 hPa</td>
</tr>
<tr>
<td>Calibration</td>
<td>±0.15 hPa</td>
<td>±0.20 hPa</td>
</tr>
<tr>
<td>Uncertainty**</td>
<td>±0.10 hPa</td>
<td>±0.20 hPa</td>
</tr>
<tr>
<td>Accuracy at +20 °C</td>
<td>±0.10 hPa</td>
<td>±0.20 hPa</td>
</tr>
<tr>
<td>Temperature</td>
<td>±0.1 hPa</td>
<td>±0.1 hPa</td>
</tr>
<tr>
<td>Total accuracy</td>
<td>±0.15 hPa</td>
<td>±0.25 hPa</td>
</tr>
<tr>
<td>Long-term stability</td>
<td>±0.1 hPa</td>
<td>±0.1 hPa</td>
</tr>
<tr>
<td>Response time (100% response) one sensor</td>
<td>2 s</td>
<td>1 s</td>
</tr>
</tbody>
</table>

**Relative Humidity**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>0 ... 100 %RH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy (including non-linearity, hysteresis, and repeatability) at +15 ... +25 °C</td>
<td>±1 %RH (0 ... 90 %RH)</td>
</tr>
<tr>
<td></td>
<td>±1.7 %RH (90 ... 100 %RH)</td>
</tr>
<tr>
<td>at -20 ... +40 °C</td>
<td>±(1.0 + 0.008 x reading) %RH</td>
</tr>
<tr>
<td>at ≥-40 ... +60 °C</td>
<td>±(1.5 + 0.015 x reading) %RH</td>
</tr>
</tbody>
</table>

Factory calibration uncertainty (+20 °C)

(Defined as ±2 standard deviation limits. Small variations possible, see also calibration certificate.)

**Temperature**

-40 ... +60 °C (±0.2 °C (± 0.4 °F))

**Humidity Range**

-40 ... +60 °C (-40 ... +140 °F)

**Accuracy at +20 °C**

-0.10 %RH

**Response Time**

-0.20 hPa

**Temperature Units**

°C, °F

#### Operating Environment

- Operating temperature: -40 ... +60 °C (-40 ... +140 °F)
- Humidity range: non-condensing
- Electromagnetic compatibility: Complies with EMC standard EN61326-1, Industrial Environment

#### Inputs and Outputs

- Operating voltage: 10 ... 35 VDC, 24 VAC ±20%
- Power consumption at +20 °C (U₀₂₄ VDC)
  - RS232: max. 28 mA
  - U₀₂₄: max. 24 mA
  - I₀₂₄: max. 33 mA

- Settling time at power-up (one sensor)
  - class A: 4 s
  - class B: 3 s

- External loads
  - current outputs
    - 0 ... 1 V output: Rₗ < 500 ohm
    - 0 ... 5 V and 0 ... 10 V outputs: Rₗ > 2 kohm
  - voltage outputs
    - Rₗ > 10 kohm

#### Diagram

The display also shows the WMO pressure trend ΔP 3h and tendency of 0 ... 8.
Recommended wire size: 0.5 mm² (AWG 20) stranded wires
Digital outputs: RS232, RS485 (optional)
Protocols: ASCII commands, MODBUS RTU
Service connection: RS232, USB
Relay outputs (optional): 0.5 A, 250 VAC
Ethernet interface (optional):
- Supported standards: 10BASE-T, 100BASE-TX
- Connector: 8P8C (RJ45)
- IPv4 address assignment: DHCP (automatic), static
- Protocols: Telnet, MODBUS TCP/IP
WLAN interface (optional):
- Supported standards: 802.11b
- Antenna connector type: RP-SMA
- IPv4 address assignment: DHCP (automatic), static
- Protocols: Telnet, MODBUS TCP/IP
- Security: WEP 64/128, WPA2
Authentication / Encryption (WLAN):
- Open / no encryption
- Open / WEP
- WPA Pre-shared key / TKIP
- WPA Pre-shared key / CCMP (a.k.a. WPA2)
Optional data logger with real-time clock:
- Logged parameters: max. four with trend/min/max values
- Logging interval: 10 sec. (fixed)
- Max. logging period: 4 years, 5 months
- Logged points: 13.7 million points per parameter
- Battery lifetime: min. 5 years
Display:
- LCD with backlight, graphical trend display of any parameter
Menu languages:
- English, Chinese, Finnish, French, German, Japanese, Russian, Spanish, Swedish
Analog outputs (optional):
- Current output: 0 ... 20 mA, 4 ... 20 mA
- Voltage output: 0 ... 1 V, 0 ... 5 V, 0 ... 10 V
Humidity and temperature:
- Accuracy at +20 °C: ±0.05% full scale
- Temperature dependence: ±0.005%/°C full scale
Pressure:
- Accuracy at +20 °C: ±0.30 hPa, ±0.40 hPa
- Accuracy at +40 °C +60 °C: ±0.60 hPa, ±0.75 hPa

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Mechanics:
Cable bushing:
- M20 x 1.5 for cable diameter 8 ... 11 mm/0.31 ... 0.43"
Conduit fitting:
- 1/2" NPT
User cable connector (optional):
- M12 series 8-pin (male)
  - option 1: female plug with 5 m (16.4 ft) black cable
  - option 2: female plug with screw terminals

Probe cable diameter:
- PTU303: 6.0 mm
- other probes: 5.5 mm

Standard probe cable lengths:
- 2 m, 5 m or 10 m
(Additional cable lengths available, please see order form for details)

Housing material:
- GAIS 10 Mg (DIN 1725)

Housing classification:
- IP 66
- IP65 (NEMA4X) with local display

Weight:
- depending on selected probe: 1.0 - 3.0 kg

Accessories:
- PC software and cable: 215005
- USB RJ45 Serial Connection Cable: 219685
- Connection cable for HM70: 211339
- Wall mounting plate (plastic): 214829
- Pole installation kit with rain shield: 215109
- DIN rail installation set: 211477
- Duct installation kit, PTU303/307: 210697
- Cable gland and AGRO, PTU303/307: HMP247CG
- Solar radiation shield, PTU303/307/30T: DTR502B
- Meteorological installation kit, HMT330MIK: DTR502B
- Duct installation kit (T probe): 215003

Dimensions:
Dimensions in mm (inches)

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Type Approved Product
Certificate No.: A-13529

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