PTU300 Combined Pressure, Humidity and Temperature Transmitter
For Demanding Applications

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

**Options**
- Available with up to two barometric pressure sensors for added reliability
- Optional universal power supply module
- HMT330MIK installation kit for outdoor use

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

**Graphical Display of Measurement Data and Trends for Convenient Operation**
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.

**Proven Vaisala Sensor Technology**
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**
- Barometric pressure, humidity, and temperature measurement in one transmitter
- RS-232C serial interface with NMEA protocol for GPS use
- Graphical display and keypad for convenient operation
- Analog outputs, RS-232/485, LAN
- Modbus protocol support (RTU/TCP)
- Traceable to international standards

PTU300 is also capable of applying the Modbus communication protocol and, together with an appropriate connection option, provides either Modbus RTU (RS-485) or Modbus TCP/IP (Ethernet) communication. The data logger records data that 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 LAN interface, which enables an Ethernet connection. A USB service cable makes it easy to connect 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 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.

**Applications**

- Environmental monitoring in calibration laboratories
- Industrial applications in semiconductor industry, engine testing and maritime sector
- GPS meteorology: estimating precipitable water vapor in the atmosphere, weather stations

The display also shows the WMO pressure trend ΔP 3h and tendency of 0 ... 8.

**Model**

PTU301 for wall mounting

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTU301 for wall mounting</td>
<td>120 (4.72)</td>
</tr>
<tr>
<td></td>
<td>169 (6.65)</td>
</tr>
<tr>
<td></td>
<td>183 (7.20)</td>
</tr>
<tr>
<td>Model</td>
<td>Dimensions in mm</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| **PTU303** probe for outdoor use | Ø 12 (0.47)  
 37.5 (1.48)  
 78.5 (3.09)  
 98.5 (3.88)  
 Ø 12 (0.47) |

| **PTU307** warmed probe for demanding meteorological installations | Ø 12 (0.47)  
 37.5 (1.48)  
 79.5 (3.13)  
 99.5 (3.92)  
 Ø 12 (0.47)  
 Ø 3.2 (0.13)  
 Ø 6 (0.24)  
 130 (5.12) |

| **PTU30T** for pressure and temperature only measurement | Ø 6 (0.24)  
 130 (5.12)  
 Ø 3.2 (0.13) |

**HMT330MIK Meteorological Installation Kit** enables **PTU307** to be installed outdoors to obtain reliable measurements for meteorological purposes.
## Technical Data

### Measurement Performance

#### Barometric Pressure

<table>
<thead>
<tr>
<th>Pressure range</th>
<th>Accuracy</th>
<th>Linearity</th>
<th>Hysteresis</th>
<th>Repeatability</th>
<th>Calibration uncertainty</th>
<th>Accuracy at +20 °C / +68 °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 … 1100 hPa</td>
<td>±0.05 hPa</td>
<td>±0.01 hPa</td>
<td>±0.03 hPa</td>
<td>±0.03 hPa</td>
<td>±0.07 hPa</td>
<td>±0.10 hPa</td>
</tr>
<tr>
<td>500 … 1100 hPa</td>
<td>±0.10 hPa</td>
<td>±0.10 hPa</td>
<td>±0.03 hPa</td>
<td>±0.03 hPa</td>
<td>±0.15 hPa</td>
<td>±0.20 hPa</td>
</tr>
<tr>
<td>50 … 1100 hPa</td>
<td>±0.20 hPa</td>
<td>±0.20 hPa</td>
<td>±0.03 hPa</td>
<td>±0.03 hPa</td>
<td>±0.20 hPa</td>
<td>±0.30 hPa</td>
</tr>
</tbody>
</table>

#### Relative Humidity

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>Accuracy (Including Non-linearity, Hysteresis, and Repeatability):</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 … 100 %RH</td>
<td>±1 %RH (0 … 90 %RH) ±1.7 %RH (90 … 100 %RH) ±(1.0 + 0.008 x reading) %RH ±(1.5 + 0.015 x reading) %RH</td>
</tr>
</tbody>
</table>

#### Temperature

- **Temperature measurement range, housing** (barometric pressure measurement limit): -40 ... +60 °C (-40 ... +140 °F)
- **Temperature measurement range, probes** (operational limit when measuring RH or T): PTU301: -40 ... +60 °C (-40 ... +140 °F), PTU303: -40 ... +80 °C (-40 ... +176 °F), PTU307: -40 ... +180 °C (-40 ... +356 °F), PTU30T: -70 ... +180 °C (-94 ... +356 °F)

### Operating Environment

#### Operating temperature

-40 ... +60 °C (-40 ... +140 °F)

### Mechanical Specifications

- **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) Female plug with 5 m (16.4 ft) black cable, Female plug with screw terminals
- **Cable diameter, PTU303**: 6.0 mm
- **Cable diameter, other probes**: 5.5 mm
- **Standard probe cable lengths**: 2 m, 5 m or 10 m
- **Housing material**: G-AlSi 10 Mg (DIN 1725)
- **IP rating**: IP65 (NEMA4X) with local display
- **Weight (depending on selected probe)**: 1.0 - 3.0 kg / 2.2 - 6.6 lb

### Optional Data Logger with Real-time Clock

- **Logged parameters**: Max. four with trend/min/max values
- **Logging interval**: 10 s (fixed)
- **Maximum logging period with maximum temporal resolution**: 4 years 5 months
- **Logged points**: 13.7 million points per parameter
- **Battery lifetime**: Min. 5 years

### Display

- **Material**: LCD with backlight, graphical trend display of any parameter
- **Menu languages**: English, Chinese, Finnish, French, German, Japanese, Russian, Spanish, Swedish
### Inputs and Outputs

**Operating voltage**
- With optional power supply module
  - 100 ... 240 VAC, 50/60 Hz

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

**Recommended wire size**
- 0.5 mm² (AWG 20) stranded wires

**Digital outputs**
- RS-232, RS-485 (optional)

**Protocols**
- ASCII commands, Modbus RTU

**Service connection**
- RS-232, USB

**Relay outputs (optional)**
- 0.5 A, 250 VAC

**Power Consumption at +20 °C (+68 °F) (U<sub>in</sub>, 24 VDC)**
- RS-232
  - Max. 28 mA
  - U<sub>out</sub> 3 x 0 ... 1 V / 0 ... 5 V / 0 ... 10 V
  - Max. 33 mA
  - I<sub>out</sub> 3 x 0 ... 20 mA
  - Max. 63 mA
  - Display and backlight
    - +20 mA
  - During chemical purge
    - Max. +110 mA
  - During probe heating
    - +120 mA

**External Loads**
- Current outputs
  - R<sub>L</sub> < 500 Ω
  - 0 ... 1 V output
    - R<sub>L</sub> > 2 kΩ
  - 0 ... 5 V and 0 ... 10 V outputs
    - R<sub>L</sub> > 10 kΩ

**Ethernet Interface (Optional)**
- Supported standards
  - 10BASE-T, 100BASE-TX
- Connector
  - 8P8C (RJ45)
- IPv4 address assignment
  - DHCP (automatic), static
- Protocols
  - Telnet, Modbus TCP/IP

**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 of analog outputs at +20 °C (+68 °F)
  - ±0.05 %/full scale
- Temperature dependence of analog outputs
  - ±0.005 %/°C (0.003 %/°F) full scale

**Pressure:**
- Accuracy of analog outputs at +20 °C (+68 °F)
  - ±0.30 hPa (500 ... 1100 hPa)
  - ±0.40 hPa (50 ... 1100 hPa)
- Accuracy of analog outputs at -40 ... +60 °C / -40 ... +140 °F
  - ±0.60 hPa (500 ... 1100 hPa)
  - ±0.75 hPa (50 ... 1100 hPa)

### Spare Parts and Accessories

- PC software and cable
  - 215005
- USB-RJ45 Serial Connection Cable
  - 219685
- Connection cable for HM70
  - 211379
- 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
- Meteorological installation kit
  - HMT330MIK
- Duct installation kit (T probe)
  - 215003

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