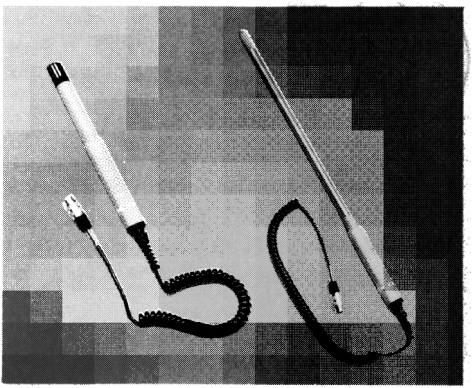
User's manual
Mode d'emploi
Bedienungsanleitung
Käyttöohje

HMP 35 / HMP 36
0903 / 0904



Relative humidity and temperature probes

Sondes de mesure d'humidité relative et de température

Feuchte- und Temperatursonden

Kosteus- ja lämpötilamittapäät

Doc. no. HMP 35-00222-2.2

VAISALA

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Relative humidity and temperature probes

1. PRODUCT DESCRIPTION

The HMP 35 and HMP 36 measurement probes are designed for the measurement of relative humidity and temperature. The 0903 probe is a surface temperature probe for solid objects, while the 0904 probe is a immersible probe for liquids or semi-solid materials (refer to Fig.1).

All these probes are compatible with Vaisala's indicator units HMI 31, HMI 32 and HMI 33. Probe types HMP 35 and HMP 36 are direct replacements for the probe types HMP 31UT and HMP 32UT.

2. CONNECTION

The probes are delivered ready for use with a cable connector compatible with the front panel connector of the indicator units. When you wish to use the probes with any other make of measurement equipment or indicator unit, connect the cable wires as shown in Fig. 2.

3. LINEARIZATION

When you connect the HMP 35 or HMP 36 probe to a HMI 31, HMI 32 or HMI 33 indicator unit, you must check that the linearization block of the indicator

unit is disconnected as described in the User's manual of your indicator unit.

4. CALIBRATION AND MAINTENANCE

Calibration and maintenance of the probes should be performed at regular intervals, at least once a year, depending on the conditions of use and accuracy desired. A one-point calibration may be performed for the HMP 35 and HMP 36 probes during actual measurement by adjusting the trimmer potentiometer marked "DRY" in the probe shaft (refer to Figs. 3 and 4). The field calibration can be performed against a calibrated Vaisala humidity meter.

For a high-accuracy two-point calibration use a Vaisala HMK 11 humidity meter calibrator and saturated salt solutions LiCl and NaCl or K_2SO_4, depending on the desired humidity range. The LiCl and NaCl salt solutions are suitable for general purpose calibration, while the LiCl and K_2SO_4 solution provide improved accuracy when calibrating the probe for regular use in the range 75...100 %RH. The calibration is done first for the dry end and then for the wet end by adjusting trimmer potentiometers "DRY" and "WET", respectively. The potentiometers are located under a snap-off cover in the probe handle. Detailed calibration instructions are to be found in the HMK 11 User's manual.

Replacing the HUMICAP® sensor

When you replace a defective HUMICAP sensor package with a new one, make sure you handle the sensor package with care. After installation, calibrate the humidity sensor. If the "WET" trimmer potentiometer has not been adjusted from its factory setting, a one-point calibration is sufficient. Otherwise, perform a two-point calibration.

Chemical tolerance of the HUMICAP 0062 humidity sensor

Long-term exposure of the humidity sensor to certain chemicals and gases may shorten the sensor life and affect its characteristics. The following list gives suggested maximum ambient concentrations for some typical chemicals:

1. Organic solvents:	1000...10 000 ppm (typ.)
2. Aggressive chemicals: (e.g. strong acids such as SO_2, H_2SO_4, H_2S, HCl, Cl_2, etc.)	1...10 ppm (typ.)
3. Weak acids:	100...1000 ppm (typ.)
4. Bases:	10 000...100 000 ppm (typ.)

Detailed information on allowed concentrations are available on request from your Vaisala representative.

5. SPARE PARTS AND ACCESSORIES

HMP 35	Part no.
HUMICAP® H-Sensor	15202
Temperature sensor Pt 100 (1/3 DIN 43760B)	10429
Plastic grid	6597
Membrane filter 0.2 µm	2787
Sintered filter 37 µm	6685
Sintered filter 216 µm	6686
HMK 11 humidity meter calibrator	6711 (option)
Radiation shield	13303 (option)

HMP 36	
HUMICAP® H-Sensor	0062
Temperature sensor Pt 100 (1/3 DIN 43760B)	10429
Membrane filter 0.2 µm	10159
Sintered filter 133 µm	0195
Plastic grid	6221
HMK 11 humidity meter calibrator	6711 (option)

6. TECHNICAL SPECIFICATIONS

HMP 35

Humidity

Measurement range:	0...100 % RH
Output signal:	linear, floating signal of 0...100 mV, calibrated for 1 kohm load
Accuracy (at +20 °C): (nonlinearity and repeatability included)	
against factory references	± 1 % RH
against field references	± 2 % RH (0...90 % RH) ± 3 % RH (90...100 % RH)
Temperature dependence: (for equal temperature of sensor and electronics)	± 0.04 % RH/°C
Typical long-term stability:	better than ± 1 % RH per year
Response time: (at +20°C, 90% response)	5 s with plastic grid
Humidity sensor:	HUMICAP® H-Sensor (part no. 15202)

Temperature

Measurement range:	
continuous measurement	−40...+60 °C (−40...+140 °F)
short-term measurement	−40...+80 °C (−40...+176 °F)
Temperature sensor:	Pt 100 (1/3 DIN 43760B), 3-wire connection (part no. 10429)

General

Supply voltage:	7...35 VDC
Current consumption:	≤ 4 mA
Operating temperature:	
sensors	–40...+60 °C (–40...+140 °F)
electronics	–20...+60 °C (–4...+140 °F)
Sensor protection:	
standard	plastic grid (part no. 6597)
optional	0.2 µm membrane filter (part no. 2787) sintered filter 37 µm (part no. 6685) sintered filter 216 µm (part no. 6686)
Protection class:	IP 55 (NEMA 3S)
Housing material:	ABS plastic
Cable connector:	Amphenol 3475001
Cable length:	1500 mm
Weight:	180 g
Accessory:	Radiation shield (part no. 13303)

HMP 36

Humidity

Measurement range:	0...100 % RH
Output signal:	linear, floating signal of 0...100 mV, calibrated for 1 kohm load
Accuracy (at +20 °C): (nonlinearity and repeatability included)	
against factory references	± 1 % RH
against field references	± 2 % RH (0...90 % RH) ± 3 % RH (90...100 % RH)
Temperature dependence: (for equal temperature of sensor and electronics)	± 0.04 % RH/°C
Typical long-term stability:	better than ± 1 % RH per year
Response time: (at +20 °C, 90% response)	15 s with membrane filter
Humidity sensor:	HUMICAP® H-Sensor (part no. 0062)

Temperature

Measurement range:	
continuous measurement	−40...+80 °C (−40...+176 °F)
short-term measurement	−40...+115 °C (−40...+239 °F)
Temperature sensor:	Pt 100 (1/3 DIN 43760B), 3-wire connection (part no. 10429)

General

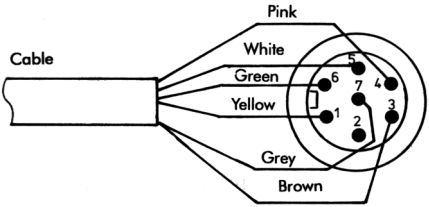
Supply voltage:	7...35 VDC
Current consumption:	≤ 4 mA
Operating temperature:	
sensors	−40...+80 °C (−40...+176 °F)
electronics	−20...+60 °C (−4...+140 °F)
Sensor protection:	
standard	133 µm sintered filter (part no. 0195)
optional	plastic grid (part no. 6221) 0.2 µm membrane filter (part no. 10159)
Protection class:	IP 55 (NEMA 3S)
Housing material:	ABS plastic, stainless steel
Cable connector:	Amphenol 3475001
Cable length:	1500 mm
Weight:	300 g

Temperature probes 0903 and 0904

0903	Surface temperature probe
0904	Immersible temperature probe
Measurement range:	−40...+199 °C (−40...+390 °F)
Temperature sensor:	Pt 100 (1/3 DIN 43760B), 3-wire connection
Cable connector:	Amphenol 3475001
Cable length:	1500 mm

Information and specifications in this manual subject to change without notice.

Fig. 2 Electrical connections.
Fig. 2 Connexions électriques.
Bild 2 Elektrische Anschlüße.
Kuva 2 Sähköinen liitäntä.



1	Humidity output signal (+)	Yellow
2	No connection	
3	Supply voltage V+ 7...35 VDC	Brown
4	V– ground/Pt100 temp. signal (–)	Pink
5	Pt100 temp. signal (+)	White
6	Humidity output signal	Green
7	Pt100 temp signal (–)	Grey

1	Yellow	Jaune	Gelb	Keltainen
2				
3	Brown	Marron	Braun	Ruskea
4	Pink	Rose	Rosa	Vaal.punainen
5	White	Blanc	Weiss	Valkoinen
6	Green	Vert	Grün	Vihreä
7	Grey	Gris	Grau	Harmaa

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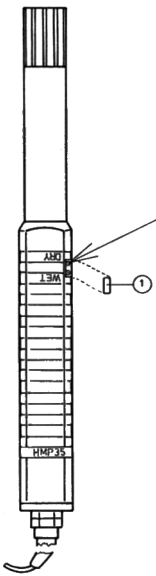
Fig. 3 One-point calibration.
Fig. 3 Etallonage 1 point.
Bild 3 Einpunkt-Kalibrierung.
Kuva 3 Yksipistekalibrointi.



Note: For one-point RH calibration adjust trimmer pot. "DRY" only.

Remarque: Pour l'étalonnage 1 point, ajuster seulement le potentiomètre de réglage «DRY».

Bitte beachten: Für Einpunkt-Kalibrierung nur Trimmerpotentiometer „DRY" einstellen.

Huom: Yksipistekalibroinnissa säädetään vain trimmeripotentiometria "DRY".

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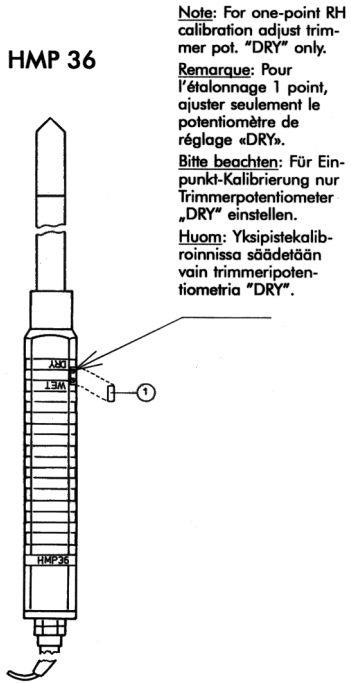
Fig. 4 One-point calibration.
Fig. 4 Etallonage 1 point.
Bild 4 Einpunkt-Kalibrierung.
Kuva 4 Yksipistekalibrointi.



Note: For one-point RH calibration adjust trimmer pot. "DRY" only.

Remarque: Pour l'étalonnage 1 point, ajuster seulement le potentiomètre de réglage «DRY».

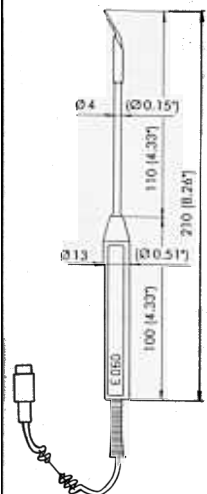
Bitte beachten: Für Einpunkt-Kalibrierung nur Trimmerpotentiometer „DRY" einstellen.

Huom: Yksipistekalibroinnissa säädetään vain trimmeripotentiometria "DRY".

Fig. 1 Dimensional drawings.
Fig. 1 Dimensions.
Bild 1 Maße.
Kuva 1 Mittapiirrokset.

Dimensions: in millimeters
(in inches)

0903



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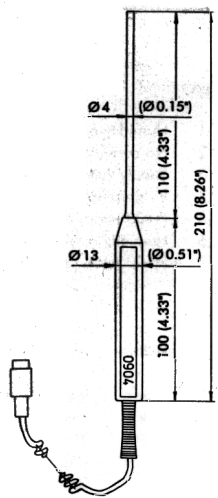
0904



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