User's Manual

HM34

Humidity and

temperature meter

Ref. HM34-U262en-1.1

VAISALA

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USERS' MANUAL
HM34
Relative humidity and temperature meter

1. PRODUCT DESCRIPTION

The HM34 is a battery-operated pocket-size meter for the measurement of ambient relative humidity and temperature. The humidity and temperature sensors are housed at the tip of an extendable probe, where a semipermeable membrane filter protects the humidity probe against water and dust. For easy use, the meter features a HOLD function for the display and an automatic power-off function.

For humidity measurement, the HM34 utilizes Vaisala's high-accuracy, high-reliability HUMICAP ® humidity sensor, the H-sensor. Temperature measurement is based on a Pt 100 temperature sensor.

The meter is intended for ambient measurements in such applications as:

- spot checks
- industrial monitoring and inspections
- occupational health and safety
- laboratory and research use

The meter is available with the display calibrated for either degrees Celsius (°C) or degrees Fahrenheit (°F).

2. OPERATION

The meter has four function pushbuttons and a display (Fig. 3).

1. On/off pushbutton (ON/OFF)

To switch the power on, press the ON/OFF pushbutton. This will automatically start the measurement of relative humidity (%RH).

2. Temp measurement pushbutton (TEMP)

For temperature measurement, press the TEMP pushbutton. TEMP measurement mode is indicated by a (+) or a (-) on the display. Display calibration is either in degrees Celsius (°C) or Fahrenheit (°F) as marked on the sticker on the backside of the meter.

3. RH measurement pushbutton (%RH)

Relative humidity is always positive. If a colon (:) is indicated in front of the displayed reading, the meter reads "negative" RH. This condition may occur e.g. when the meter has not been calibrated after sensor change.

4. Reading hold pushbutton (HOLD)

Pressing the HOLD pushbutton locks the reading in the display. A (▲) indicates the HOLD mode. The meter remains in HOLD mode until measurement is resumed by pressing any of the pushbuttons except ON/OFF.

5. Low battery indication

When battery voltage is low, a (**B**) is displayed. To ensure troublefree operation, replace the battery after about 50 h of operation.

Automatic power-off

The meter automatically switches off after about 3 minutes, unless a pushbutton is pressed or the meter is set in HOLD mode.

Operating voltage

The meter uses a standard 9 V transistor battery (type IEC 6F22). The battery is located under a protective lid on the backside of the meter (Fig. 2).

3. CALIBRATION AND MAINTENANCE

Calibration and maintenance of the meter should be performed at regular intervals which depend on the conditions of use and the desired accuracy, but at least once a year. A one point calibration may be performed for the HM34 meter by adjusting the trimmer potentiometer marked "DRY" (Fig. 2). This field calibration can be performed against a calibrated Vaisala humidity meter. For a higher-accuracy two-point calibration use a Vaisala HMK11 calibrator and saturated salt solutions as described in the Operating Manual of the HMK11. 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 the protective lid of the battery compartment (Fig. 2).

Replacing the sensors

When you replace a defective H-sensor package with a new one, make sure you handle the 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 with an HMK11 calibrator. Replacement of the Pt 100 temperature sensor requires no recalibration.

Chemical tolerance of the humidity sensor (HUMICAP®)

Long-term exposure of the sensor to certain chemicals and gases may shorten its life. 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.

4. SPARE PARTS AND ACCESSORIES

	Part no.
HUMICAP® H-sensor	15202
Temperature sensor Pt 100 (1/3 DIN 43760B)	10429
Sintered filter 133 µm	0195
Plastic grid	6221
HMK11 humidity meter calibrator	
Battery IEC 6F22	0332

5. TECHNICAL SPECIFICATIONS

Measurement range	
humidity	0...100 %RH
temperature	-20...+60 °C or
	-4...+140 °F
Accuracy (at +20 °C):	
(including nonlinearity and hysteresis)	
relative humidity	
against factory references	±1 %RH
against field references	±2 %RH (0...90 %RH)
	±3 %RH (90...100 %RH)
temperature	±0.3 °C (+0.5 °F)

NOTE:
When the HM34 is used in an electromagnetic field of 3 V/m, with the frequency of 200 - 220 Mhz, the temperature deviation is max. ±3 °C.

Temperature dependence:	±0.04 %RH/°C
	±0.02 °C/°C
Resolution:	0.1 %RH
	0.1 °C (0.1 °F)
Response time for humidity (at +20 °C):	15 s
Display:	3 1/2-digit LCD
HOLD function:	pushbutton hold for displayed value
Supply voltage:	9 V battery (IEC 6F22)
Battery operating time:	50 h (typ.)
Automatic power-off:	after 3 minutes, unless HOLD is activated

Sensors

Humidity:	HUMICAP® H-sensor (part no. 15202)
Temperature:	Pt 100 (1/3 DIN 43760B)
Sensor protection:	
standard	plastic grid (part no. 6221)
optional	133 µm sintered filter (part no. 0195)
Weight:	250 g
Ordering information:	HM34C (with °C temp. display) HM34F (with °F temp. display)

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WARRANTY

Vaisala issues a guarantee for the material and workmanship of this product for one (1) year from the date of delivery. Damage due to exceptional operating conditions, careless handling or misapplication will void the guarantee. Detailed warranty information is given in the Warranty and the Standard Conditions of Sale of Vaisala Oy.

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