



### Features

- Humidity measurement range 0 ... 100 %RH
- Temperature measurement ranges -40 ... +100 °C (-40 ... +212 °F), depending on probe model. The HM46 model can measure up to +180 °C (+356 °F) for a short period of time.
- Incorporates proven Vaisala HUMICAP® sensor technology
- Calibration reminder function
- Probes can be user calibrated using an on-site reference
- Graphical display indicates when measurement has stabilized
- Hold-button to freeze the screen and save the reading
- Multilingual user interface available in 10 languages (EN, DE, FR, JA, ZH, PT, ES, RU, FI, SV)

The easy-to-use HM40 is a compact and portable humidity meter that provides reliable measurements in a wide range of applications. It is the ideal spot-checking tool for everything from structural moisture measurement and air conditioning systems to humidity measurement in industrial production processes and life science applications. There are four different models available: HM41, HM42, HM45, and HM46.

### Benefits

- Compact, portable, and easy to use
- Versatile meter with wide measurement range and multiple calculated parameters
- Ideal for spot-checking in a wide variety of applications

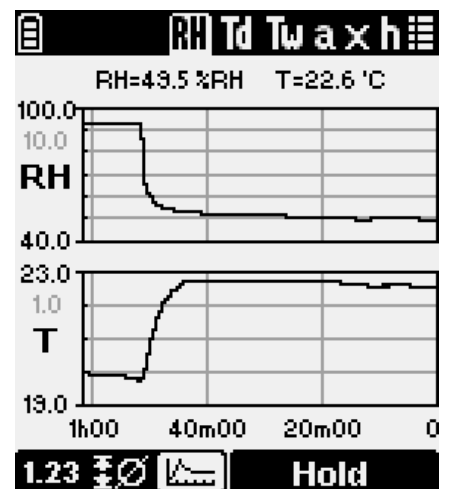
### Simple and Easy to Use

HM40 has a large, user-friendly graphical display and easy-to-use push buttons. The user interface is simple and intuitive, and available in 10 languages. Also, many settings can be modified to meet users' individual needs. In addition to relative humidity and temperature, HM40 provides five calculated humidity

parameters, all of which are available in metric and non-metric units. HM40 is powered by 2 AA batteries. An external USB-charger and rechargeable AA sized NiMH batteries are available as an option. Each model also comes with a handy belt clip and case.

### Easy Recalibration

Calibrating HM40 is easy. The meter or the probe can be sent to a Vaisala Service Center for recalibration. Alternatively, calibration can be completed on site by users with a humidity reference such as another hand-held meter or Vaisala Humidity Calibrator HMK15. The indicator includes a calibration reminder function that can be activated by the user.



The Graph Clearly Indicates When Readings Have Stabilized.

# HM40 Hand-Held Humidity and Temperature Meter Series



## HM41 Technical Data

Humidity Measurement Accuracy (Including Non-linearity, Hysteresis, and Repeatability):

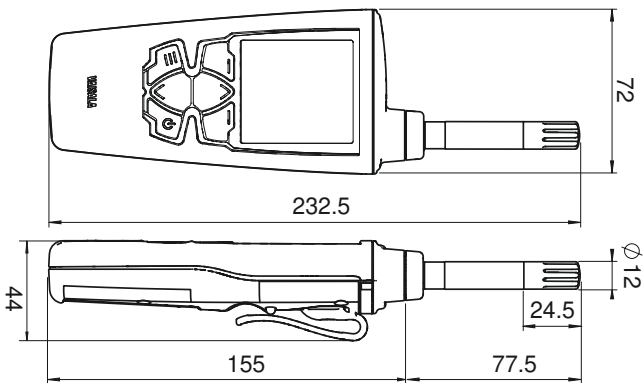
At 0 ... +40 °C	±1.5 %RH (0 ... 90 %RH) ±2.5 %RH (90 ... 100 %RH)
At -10 ... 0 °C and +40 ... +60 °C	±3.0 %RH (0 ... 90 %RH) ±4.0 %RH (90 ... 100 %RH)
Humidity sensor	HUMICAP® 180R
Temperature measurement range	-10 ... +60 °C (+14 ... +140 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751
Measurement probe	Interchangeable HMP113 probe
Probe material	PC/ABS plastic blend (white)
IP rating	IP54
Weight (with alkaline batteries)	230 g (8.1 oz)
Filter material	PC (glass-reinforced)

## HM42 Technical Data

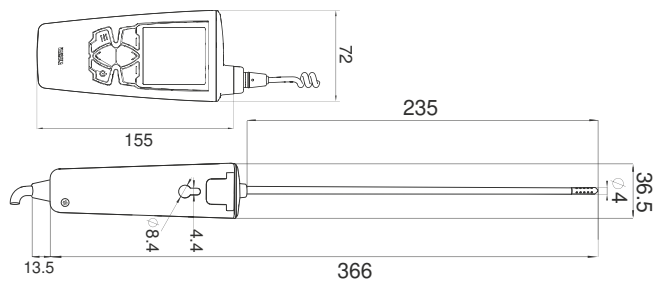
Humidity Measurement Accuracy (Including Non-linearity, Hysteresis, and Repeatability):

At 0 ... +40 °C	±1.5 %RH (0 ... 90 %RH) ±2.5 %RH (90 ... 100 %RH)
At -40 ... 0 °C and +40 ... +80 °C	±3.0 %RH (0 ... 90 %RH) ±4.0 %RH (90 ... 100 %RH)
At +80 ... +100 °C	±4.0 %RH <sup>1)</sup>
Humidity sensor	HUMICAP® 100R-Mini
Temperature measurement range	-40 ... +100 °C (-40 ... +212 °F)
Temperature sensor	Pt1000 RTD Class F0.3 IEC60751
Measurement probe	HM42PROBE
Probe head material	Stainless steel
IP rating	IP40 (probe), IP54 (indicator)
Weight (with alkaline batteries)	370 g (13.1 oz)
Filter material	Stainless steel and PTFE membrane
Probe cable length	1500 mm (59 in)

<sup>1)</sup> Not recommended for  $T_d > 85$  °C



Dimensions in mm



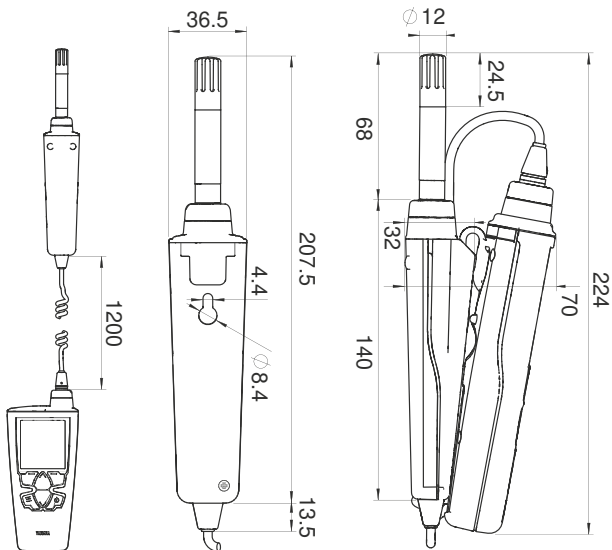
Dimensions in mm



### HM45 Technical Data

Humidity Measurement Accuracy (Including Non-linearity, Hysteresis, and Repeatability):

At 0 ... +40 °C	±1.5 %RH (0 ... 90 %RH) ±2.5 %RH (90 ... 100 %RH)
At -40 ... 0 °C and +40 ... +60 °C	±3.0 %RH (0 ... 90 %RH) ±4.0 %RH (90 ... 100 %RH)
Humidity sensor	HUMICAP® 180R
Temperature measurement range	-40 ... +60 °C (-40 ... +140 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751
Measurement probe	Interchangeable HMP113 with HM40HANDLE
Probe material	PC/ABS plastic blend (white)
IP rating	IP54
Weight (with alkaline batteries)	330 g (11.6 oz)
Filter material	PC (glass-reinforced)
Probe cable length	1200 mm (47 in)



Dimensions in mm

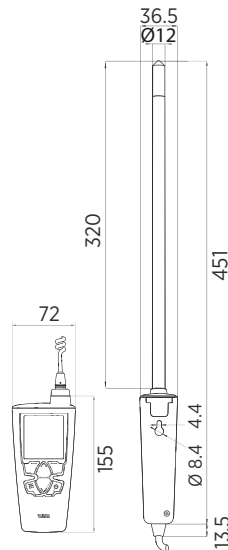


### HM46 Technical Data

Humidity Measurement Accuracy (Including Non-linearity, Hysteresis, and Repeatability):

At 0 ... +40 °C	±1.5 %RH (0 ... 90 %RH) ±2.5 %RH (90 ... 100 %RH)
At -40 ... 0 °C and +40 ... +80 °C	±3.0 %RH (0 ... 90 %RH) ±4.0 %RH (90 ... 100 %RH)
At +80 ... +100 °C	±4.0 %RH <sup>1)</sup>
Humidity sensor	HUMICAP® 180R
Temperature measurement range	-40 ... +100 °C (-40 ... +212 °F), short-term up to +180 °C (+356 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751
Measurement probe	HM46PROBE
Probe head material	Stainless steel, brass filter
IP rating	IP40 (probe), IP54 (indicator)
Weight (with alkaline batteries)	490 g (17.3 oz)
Filter material	Sintered brass
Probe cable length	1500 mm (59 in)

<sup>1)</sup> Not recommended for  $T_a > 85$  °C



Dimensions in mm

# HM40 Series Technical Data

## Measurement Performance

Calculated parameters Dew point, wet bulb temperature, absolute humidity, mixing ratio, enthalpy

### Relative Humidity

Measurement range	0 ... 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability) for different models at 0 ... +40 °C (+32 ... +104 °F)	±1.5 %RH (0 ... 90 %RH) ±2.5 %RH (90 ... 100 %RH)
Factory calibration uncertainty at +20 °C (+68 °F):	
HM42 and HM46	±1.5 %RH
HM41 and HM45	±1.1 %RH (0 ... 90 %RH) ±1.8 %RH (90 ... 100 %RH)
Stability	±2 %RH over 2 years

### Humidity Measurement Response Time:

(90 %) with plastic grid filter (HM41 and HM45)	17 s
(90 %) with membrane filter and steel grid (HM42)	26 s
(90 %) with brass sintered filter (HM46)	40 s

### Temperature

Accuracy over temperature range:

At 0 ... +40 °C (+32 ... +104 °F)	±0.2 °C (0.36 °F)
At -40 ... 0 °C and +40 ... +100 °C (-40 ... +32 °F and +104 ... +212 °F)	±0.4 °C (0.72 °F)

## Operating Environment

### Operating temperature

Indicator	-10 ... +60 °C (+14 ... +140 °F)
Probe handle	-40 ... +60 °C (-40 ... +140 °F)
Probe head	Range -40 ... +180 °C (-40 ... +356 °F) See probe specifications
Storage temperature	-30 ... +70 °C (-22 ... +158 °F)
EMC compliance	EN61326-1, Portable Equipment

## Mechanical Specifications

### Materials

Indicator body	PC/ABS blend, acrylic display lens
Probe holder	PC/ABS blend (gray)
Probe handle	PC/ABS blend (white), PC/ABS blend (gray, HM45) or PBT (gray, HM42/46)
HMP113 probe or probe measurement head	PC/ABS blend (white, HM41/45) or stainless steel (HM42/46)
IP rating, HM40	IP54

## Indicator

Display	LCD (140 x 160 pixels)
Power-up time	< 3 s
Batteries	2 × AA, 1.5 V
Operation time (typical)	100 hours (without backlight)
Menu languages	English, Chinese (simplified), Finnish, French, German, Japanese, Portuguese, Russian, Spanish, Swedish

## Spare Parts and Accessories

### Indicator

Spare HM40 indicator	HM40INDI
Belt clip (3 pcs)	227710SP
Battery cover (3 pcs)	225688SP
NiMH rechargeable batteries (4 pcs)	229247SP
External battery recharger with USB connection and 4 batteries	229249SP
Case for short HM40 probes	235849SP
Case for long HM40 probes	DRW242351SP

### Standard Probe (HM41)

HMP113 probe for HM40	HMP113 (configuration: V00B2C1A0)
Plastic locking bushing (3 pcs) for attaching HMP113 probe to HM40 indicator	DRW238590SP
Plastic grid filter for HMP113 probe	DRW236214SP
Plastic grid with membrane filter for HMP113 probe	230727SP

### HM42 Probe (HM42)

Thin 4 mm diameter probe for HM40	HM42PROBE
Steel grid filter for HM42PROBE	19867HM
Membrane tube set (5 pcs) for HM42PROBE	19858HM
Rubber sleeve set (10 pcs) for HM42PROBE	19809HM
Calibration adapter for HM42PROBE	HM37067

### Remote Probe (HM45)

HMP113 probe for HM40	HMP113 (configuration: V00B2C1A0)
Plastic locking bushing (3 pcs) for attaching HMP113 probe to HM40 indicator	DRW238590SP
HM40 handle and cable	HM40HANDLE
Plastic grid filter for HMP113 probe	DRW236214SP
Plastic grid with membrane filter for HMP113 probe	230727SP

### HM46 Probe (HM46)

Stainless steel 12 mm diameter probe for HM40	HM46PROBE
Sintered filter for HM46PROBE	0195
Optional membrane filter for HM46PROBE (up to +80 °C)	10159HM
Plastic grid filter for HM46PROBE (up to +80 °C)	6221
Disposable sleeve, 50 pcs set	1558
Probe holder	HM36915

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### Features

- Truly interchangeable measurement probes
- Accurate measurement data in numeric, statistic or graph views
- Conforms to ASTM standard F2170
- IP65 classified measurement probe and case

Vaisala HUMICAP® Structural Humidity Measurement Kit SHM40 offers an easy and reliable solution for humidity measurements in concrete and other structures.

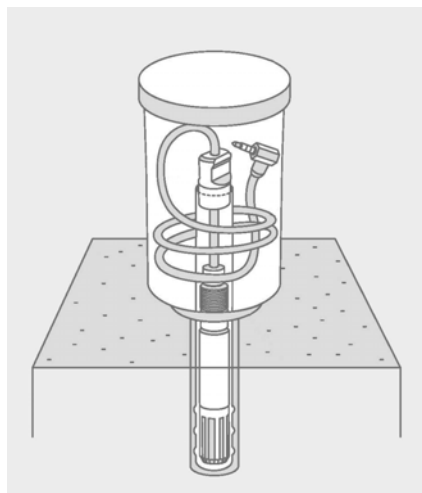
### Measuring Humidity under the Surface

Concrete dries unevenly and is usually drier on the surface, consequently it is important to measure beneath the surface conditions. The borehole method provides information about the humidity profile under the surface. In this method, a humidity probe is left in the borehole until the humidity in the hole has reached an equilibrium state and the stabilized values can be read.

### SHM40 is All You Need for Borehole Humidity Measurement

The Vaisala HUMICAP® Structural Humidity Measurement Kit SHM40 is an ideal solution for the borehole method. The starter kit is comprised of an

HMP40S probe, HM40 indicator and accessories for the borehole method in a weather-proof case, optimized for use in harsh and humid construction sites. Additional accessories for the SHM40 can be used to prepare a moisture measurement hole in fresh concrete. Pre-formed holes eliminate the need for drilling and the risk of damaging heating elements or tubing embedded in the concrete.



Borehole in concrete and a measurement probe HMP40S inserted in it.

### Standard Contents of SHM40

- HM40 indicator with adapter
- 1 piece HMP40S RH&T probe with a cable
- 12 pcs plastic tubes (19266HM)
- 12 pcs rubber plugs (233976)
- 3 pcs protective covers with lid (19268HM)
- Traceable calibration certificate
- Weather-proof carrying case with a shoulder strap

# SHM40 Structural Humidity Measurement Kit

## Easy Measurement with Multiple HMP40S Probes and Quick Connectors

HMP40S measurement probes are interchangeable. The probes connect easily to the HM40 indicator with a snap-on connector enabling convenient use of multiple probes with one indicator. The measurement data can be displayed in numeric, statistic or graph views.



Snapping a connector to the indicator HM40 to read the measurement results.

# Technical Data

## HMP40S Probe Measurement Performance

### Relative Humidity

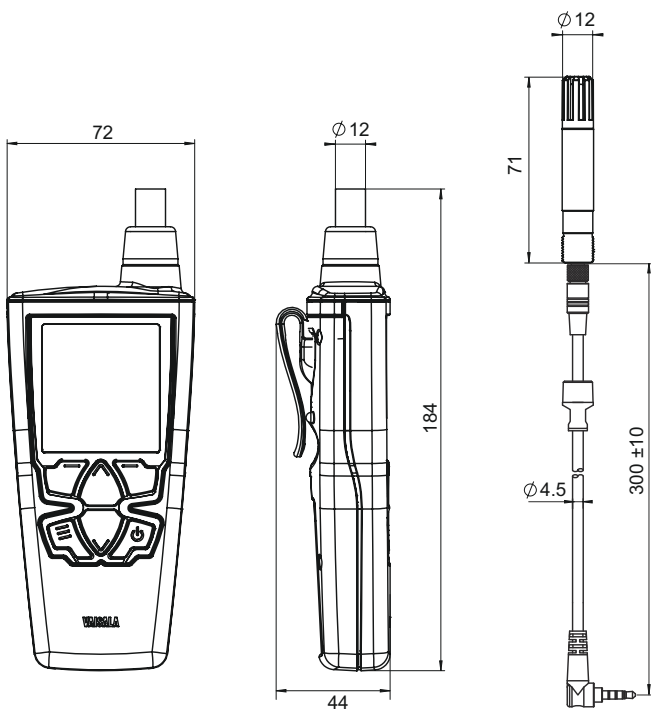
Measurement range	0 ... 100 %RH
Accuracy (incl. non-linearity, hysteresis, and repeatability)	
temperature range: 0 °C ... +40 °C	0 ... 90 %RH: ± 1.5 %RH 90 ... 100 %RH: ± 2.5 %RH
temperature range: -40 °C...0 °C and +40 °C ... +80 °C	0 ... 90 %RH: ± 3.0 %RH 90 ... 100 %RH: ± 4.0 %RH
Factory calibration uncertainty at +20 °C (68 °F)	
	0 ... 90 %RH: ± 1.1 %RH 90 ... 100 %RH: ± 1.8 %RH
Humidity sensor	HUMICAP® 180R
Stability	± 2 %RH over 2 years

### Temperature

Measurement range	-40 °C ... +80 °C
Accuracy over temperature range:	0 ... +40 °C: ± 0.2 °C -40 ... 0 °C, +40 ... +80 °C: ± 0.4 °C
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751

## HMP40S Probe Mechanical Specifications

Probe weight with standard cable	31 g
Probe housing material	stainless steel
Probe filter and sensor protection	membrane filter with chrome coated ABS plastic
Cable material	Wire PVC / jacket PU
Cable connector	TRRS male 3.5 mm
Probe housing classification	IP65
Borehole diameter needed	16 mm
Measurement depth with standard accessories	min. 30 mm, max. 90 mm



Dimensions in mm

## Operating Environment

Operation temperature range for probe	-40 °C ... +80 °C
Operation temperature range for indicator	-10 ... +60 °C
Storage temperature range	-30 ... +70 °C

## HM40 Indicator Mechanical Specifications

Weight	
Indicator with adapter	240 g
SHM40 case with standard content	3.7 kg
Indicator materials	PC/ABS blend, acrylic display lens
Indicator adapter materials	Nickel plated brass and plastic overmolding
Indicator housing classification	IP54
Mechanical drop endurance	1.0 m without the probe

## HM40 Indicator - General

Power-up time	< 3 s
Alkaline batteries	2 x AA sized, 1.5V (LR6)
Operation time (Alkaline batteries)	typical 100 hours (without backlight)
Calculated variables	Td, Tw, a, x, h
Menu languages	English, German, French, Finnish, Spanish, Swedish, Chinese (simplified), Russian, Japanese
Display	LCD (140 x 160 pixels)
Electromagnetic compatibility (EMC)	European Union directive EN61326-1 for portable equipment

## Spare Parts and Accessories

HM40 indicator with adapter and cable	HM40S
RH&T probe with cable	HMP40S
HM40 indicator with adapter	HM40SINDI
Quick connection adapter	HM40SADAPTER
Cable for RH&T probe	HMP40SCABLE
Long cable (2.7 m) for RH&T probe	HMP40SCABLE2
Plastic tube set (12 pcs)	19266HM
Long (200 mm) plastic tube set (12 pcs)	245789
Rubber plugs (12 pcs)	233976
Protective cover with lid (3 pcs)	19268HM
Weather-proof carrying case with SHM40 filling	233815
USB recharger for HM40 indicator batteries	229249SP
Plastic grid with membrane filter for HMP40S probe	DRW010525SP
<b>Accessories for Wet Concrete</b>	
Plastic flange set (12 pcs)	26529HM
Long rubber plug for wet concrete (12 pcs)	26530HM