

Vaisala VaiNet Wireless Humidity and Temperature Data Logger RFL100



RFL100 data logger with a fixed HMP115 probe

The RFL100 data logger uses Vaisala's proprietary VaiNet wireless technology to monitor environments ranging from warehouses, to production areas, to cleanrooms and laboratories. The loggers connect wirelessly to Vaisala's monitoring system: the viewLinc Enterprise Server, which provides real-time trends, alarms, and historical reporting. The VaiNet wireless technology is based on the LoRa® modulation technique to provide a robust wireless signal that is extremely reliable over long distances and in complex, obstructed conditions. This wireless technology allows each RFL data logger's signal to travel over 100 m indoors without the aid of signal amplifiers

or repeaters. All communications are encrypted then verified by the system before being stored to a secure database that ensures data integrity and security.

The RFL data logger requires no configuration and is powered by two standard AA alkaline 1.5 Volt (LR6 or FR6) batteries for 18 months of operation at approximately 20 °C (68 °F). The housing is classified IP54 to protect the device from dust and cleaning, and the detachable probe is easily switched out to maintain accurate and complete historical records. The plastic HMP115 and the stainless steel HMP110 probe options both use a Vaisala HUMICAP® humidity sensor and a platinum RTD temperature sensor for superior stability. The HMP115 probe has both integrated and cabled probe options. The HMP110, designed for extreme conditions, uses a cabled probe. Cable probe length options are 3 or 10 meters.

Measurements are updated and stored once every 60 seconds and the detailed custom display provides information about current conditions, battery life, alarm and signal status. In case of temporary network disruptions, the data logger can record up to 30 days of measurements that are automatically transmitted to the viewLinc Enterprise Server software when communications are restored. Recorded data can also be downloaded directly from the RFL data logger through the USB port.

Features/Benefits

- Industry-leading temperature and relative humidity measurement precision
- Detachable high-accuracy RH and temperature probes
- Magnetic mounting bracket available
- Typical battery life of 18 months, no need for costly battery replacements between recommended calibrations
- Each data logger uses standard alkaline batteries
- Traceable to SI units through national metrology institutes*
- Cost-effective alternative to chart recorders
- 30-day First In First Out (FIFO) memory buffer

*Measurement results are traceable to the International System of units (SI) through national metrology institutes (NIST USA, MIKES Finland, or an equivalent) or accredited calibration laboratories.



HMP110 probe

Technical Data

Probe Performance

RELATIVE HUMIDITY

Measurement range HMP115, HMP110
(0...100 %RH applies to both) 0 ... 100 %RH

Accuracy
Temperature range HMP115, HMP110 0 ... +40 °C¹
(32 ... 104 °F)¹

at 0 ... 90 %RH ± 1.5 %RH
at 90 ... 100 %RH ± 2.5 %RH

Temperature range HMP115 -20 ... 0 °C, +40 ... +60 °C
(-4 ... 32 °F, 104 ... 140 °F)

at 0 ... 90 %RH ± 3.0 %RH
at 90 ... 100 %RH ± 4.0 %RH

Temperature range HMP110 -40 ... 0 °C, +40 ... +80 °C
(-40 ... 32 °F, 104 ... 176 °F)

at 0 ... 90 %RH ± 3.0 %RH
at 90 ... 100 %RH ± 4.0 %RH

Factory calibration uncertainty at +20 °C (68 °F)²

HMP115
at 0 ... 40 %RH ± 0.6 %RH
at 40 ... 75 %RH ± 1.0 %RH

HMP110
at 0 ... 90 %RH ± 1.1 %RH
at 90 ... 100 %RH ± 1.8 %RH

Humidity sensor HUMICAP® 180R
Stability ±2 %RH over 2 years

TEMPERATURE

Measurement range HMP115 -20 ... +60 °C (-4 °F ... 140 °F)

Measurement range HMP110 -40 ... +80 °C (-40 °F ... 176 °F)

Accuracy over temperature range
HMP115, HMP110
at 0 ... +40 °C (+32 °F ... +104 °F) ± 0.2 °C (0.36 °F)

HMP115
at -20 ... 0 °C, +40 ... +60 °C
(-4 ... +32 °F, +104 ... +140 °F) ± 0.4 °C (0.72 °F)

HMP110
at -40 ... 0 °C, +40 ... +80 °C
(-40 ... +32 °F, +104 ... +176 °F) ± 0.4 °C (0.72 °F)

Temperature Sensor Pt1000 RTD Class F0.1 IEC 60751

Factory calibration uncertainty HMP110 ± 0.2 °C (0.36 °F)

Factory calibration uncertainty HMP115 ± 0.1 °C (0.18 °F)

MECHANICAL

Weight

Probe
HMP115 10 g (0.35 oz.)
HMP110 17g (0.6 oz.)

MATERIALS

HMP115
Body PC/ABS blend
Grid filter PC (glass reinforced)
Sleeve PC/ABS blend

HMP110
Body Stainless steel (AISI 316)
Grid filter chrome coated ABS plastic

¹ Accuracy specification includes non-linearity, hysteresis, and repeatability

² Small variations possible; see also calibration certificate.

Wireless

Networking standards Vaisala VaiNet
Frequency ISM bands 868 MHz model for Europe 915 MHz
(866.1 MHz - 869.85 MHz)

915 MHz model for North America, Australia, New Zealand
(921.5 MHz – 924.65 MHz)

Modulation LoRa™ chirp spread spectrum
Output power 14 dBm (25 mW)

Antenna Internal
Typical indoor range at least 100 m (328 ft.)

Electrical Safety EN/UL/IEC 61010-1
RF exposure KDB 447498 (United States)
RSS-102 Issue 5 (Canada)

EMC and Radio Standards

868 MHz model ETSI EN300220-2
EN61326-1
Industrial environment

915 MHz model FCC title 47 part 15.247 (United States)
ICE RSS-247 (Canada)
AS/NZS 4268 (Australia and New Zealand)

Memory

Sample capacity 30 days (43200 samples per channel)
Memory type Non-volatile EEPROM
Memory mode Ring buffer (FIFO)
Sampling rate One sample / channel / minute (non-changeable)
Transmission rate every 4 minutes

Technical Data

Mechanical

| | |
|--|---|
| Ingress protection rating | |
| HMP110 | IP54 |
| HMP115 | IP65 |
| RFL100 | |
| Housing color | White |
| Mounting methods | Screws, tie-wrap, hook, or magnetic mounting bracket (optional accessory) |
| Magnetic strength of optional magnetic mounting bracket | 10 kg (22 lbs.) |
| Probe interface connector | 4-pin female M8 connector |
| Service port | USB 2.0 with Micro-USB connector |
| Mechanical drop endurance | 1 m (3.28 ft.) |
| Dimensions (HxWxD) | |
| Without mounting bracket | 158 x 62 x 31 mm (6.22 x 2.4 x 1.22 inch) |
| With mounting bracket | 186 x 68 x 36.5 mm (7.32 x 2.68 x 1.44 inch) |
| Weight | |
| With batteries (2 pcs alkaline) and HMP115 probe | 190 g (6.7 oz.) |
| With batteries (2 pcs alkaline), HMP115 probe, and magnetic mounting bracket | 254 g (8.96 oz.) |
| Materials | |
| Housing | PC/ABS blend |
| Display window | PMMA (acrylic) |
| Sealings | Thermoplastic elastomer |

General

| | |
|---|---|
| Compatible probes | HMP115, HMP115T, HMP110, HMP110T (cabled only) |
| Batteries | 2 x AA sized, 1.5V (LR6 or FR6) |
| Operation time at 20 °C (alkaline batteries) | 18 months |
| Internal clock accuracy | ± 30 sec./month, synchronizes with viewLinc Enterprise Server |
| Clock battery | CR 1/3N (3 V lithium) |
| RFL100 Operating temperature range with integrated HMP115 | +2 ... +60 °C (+35.6 ... +140 °F) with alkaline batteries* -20 ... +60 °C (-4 ... +140 °F) with lithium batteries* |

| | |
|-------------------------------------|--------------------------------------|
| Storage temperature range | -40 ... +60 °C (-40 ... +140 °F) |
| Operating humidity range | 0 ... 100 %RH, non-condensing |
| Electromagnetic compatibility (EMC) | EN61326-1, industrial environment |

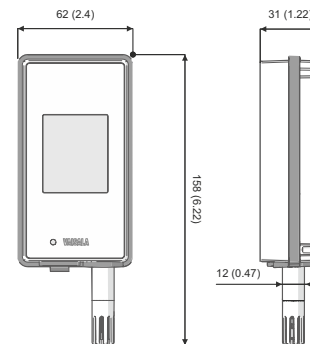
*For both alkaline and lithium, battery temperature operating specifications apply.

Spare Parts and Accessories

| | |
|--------------------------------------|-----------------|
| Mounting Bracket (5 pcs) | DRW244769SP |
| Magnetic Mounting Bracket (5 pcs) | ASM211527SP |
| Magnets for Mounting Bracket (5 pcs) | 243429SP |
| Battery Cover (5 pcs) | DRW244766SP |
| RFL100 10m Cable (1 pc) | CBL210555-10MSP |
| RFL100 3m Cable (1pc) | CBL210555-3MSP |
| RFL100 and AP10 Mounting Kit (1pc) | 245679SP |
| HMP115 SPARE PARTS AND ACCESSORIES | |
| Plastic grid filter | DRW240185SP |
| Membrane filter | ASM210856SP |
| PTFE filter | 219452SP |
| HMP110 SPARE PARTS AND ACCESSORIES | |
| Plastic grid | DRW010522SP |
| Membrane filter | DRW010525SP |
| Stainless steel sintered filter | HM46670SP |

Dimensions

Dimensions in mm (inches)



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