

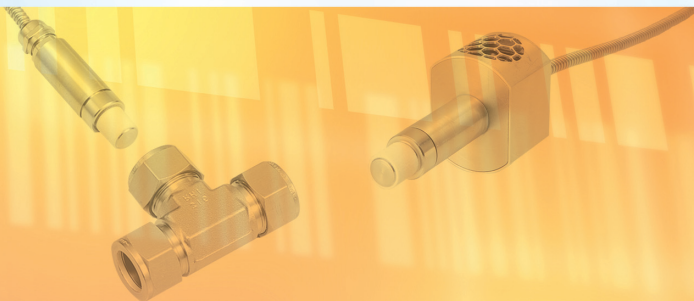
FINEDEW™ FDW10

Desktop Chilled Mirror Hygrometer



The smallest sensor probe ever made.

***With fast response and stable measurement,
this is tomorrow's chilled mirror hygrometer, today!***



Small size, high precision, fast response, and high reliability. For dew point measurement, FINEDEW™ offers innovative value.

FINEDEW™ performs a variety of moist environment measuring tasks with a novel sensing and control technology designed for scientific and industrial use.

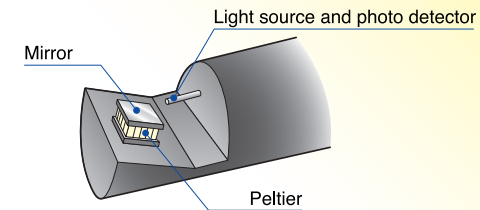
If you need a hygrometer which is small, fast, and reliably accurate, FINEDEW™ is the answer.



Features

Chilled mirror sensing technology

FINEDEW™ employs chilled mirror sensing technology, the type which is most reliably accurate, and which is specified by JIS (Japanese Industrial Standards). FINEDEW™ adds ease of use to the reliability of chilled mirror hygrometers.



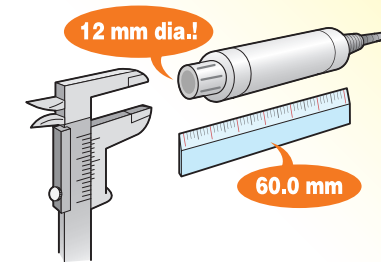
Direct insertion

FINEDEW™ is innovative not only in its miniature size, but also in its ability to be directly inserted into the measured environment. Conventional chilled mirror hygrometers are restricted to using a sampling method.



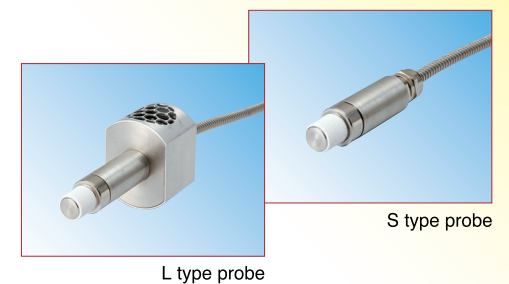
World's smallest sensor probe

The FINEDEW™ probe is 1/100 the size (volume) of conventional chilled mirror hygrometers.



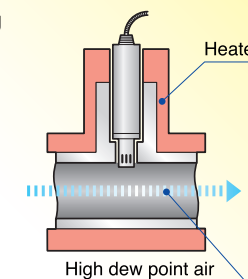
Two kinds of sensor probe

The S type probe is designed to be the world's smallest. The L type probe is made for extra low dew point measurement.



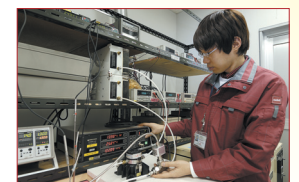
Excellent for measuring high moisture concentration

Actually, high dew point measurement is easy for a chilled mirror hygrometer, since only a slight cooling of the mirror is required. With its direct insertion capability and specially designed heating unit, FINEDEW™ provides convenient measurement of high dewpoint temperature.



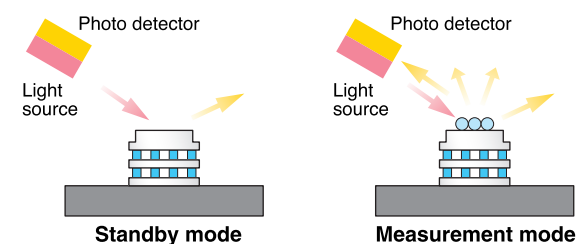
Integrated Yamatake technology

The design of FINEDEW™ incorporates Yamatake's state-of-the-art PID control and photo detector technologies. Yamatake is JCSS accredited laboratory for humidity, so the calibration of FINEDEW™ is traceable by Measuring Law.



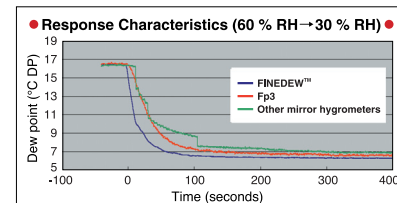
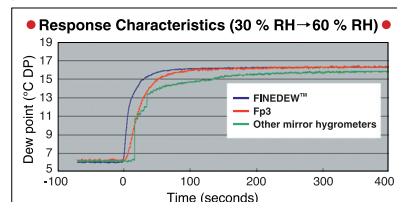
Operating Principle

The sensor probe of FINEDEW™ consists of a mirror, a Peltier device which cools and heats the mirror, a pair of thin fiber optic cables which detect the dew on the mirror, and a Pt100 RTD. When the temperature of the measured air falls below the dew point by chilling the mirror, a layer of water droplets (or ice crystals) forms on the mirror. The water droplets scatter the light emitted by the light source, and the light is therefore detected by the photo detector. By controlling the Peltier device, the amount of scattered light is maintained at a certain level. The mirror temperature at this time is the dew point temperature of the measured air.



Response Characteristics

Because the sensing core (mirror, Peltier device, Pt100) of FINEDEW™ is exceedingly small, its heat mass is also small. That produces a faster response time than that of conventional hygrometers.

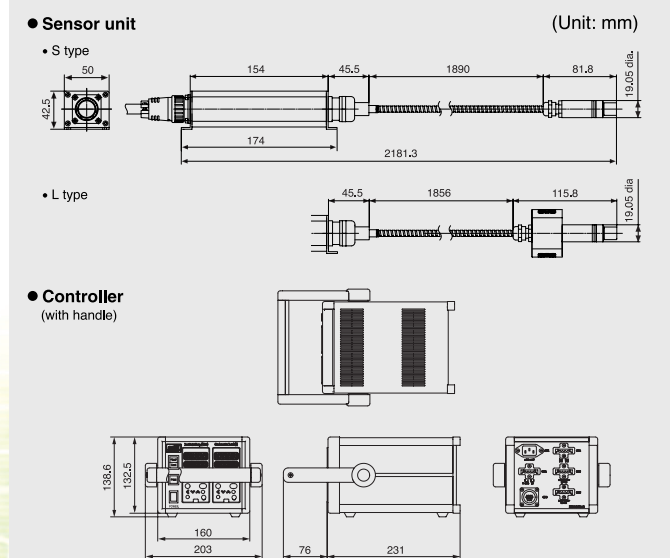


Specifications

| Item | S type | L type | |
|---------------------------------|-----------------------------|--------------------------------------|-------------------------------------|
| Sensor probe | Dew point measurement range | 0 to 25 °C DP*1 (at 25 °C *2) | -30 to +25 °C DP (at 25 °C *2) |
| | | 55 to 80 °C DP (at 80 °C *2) | 25 to 80 °C DP (at 80 °C *2) |
| | | 75 to 100 °C DP (at 100 °C *2) | 45 to 100 °C DP (at 100 °C *2) |
| | Accuracy | ±0.5 °C DP | |
| | Pressure rating | 1 MPa max. | |
| Controller | Peltier device | 2-stage | |
| | Max. cooling capacity | 30 °C (at 25 °C air *2) | 60 °C (at 25 °C air *2) |
| | Cooling | Air cooling w/o blower | Forced air cooling (internal fan) |
| | Operating temperature | -20 to +100 °C | -20 to +100 °C (60 °C at heat sink) |
| | Operating dew point | -40 to +100 °C DP (w/o condensation) | |
| | Operating temperature | 0 to 40 °C (including relay box) | |
| | Operating humidity | 10 to 95 % RH (including relay box) | |
| | Power supply | 85 to 264 Vac | |
| | Analog output | 0 to 10 V (1-5 V) or 4 to 20 mA | |
| | Digital output | Dry contact, 2A, 250 Vac / 30 Vdc | |
| Communications | RS-485 | | |
| Mass (sensor unit + controller) | Approx. 3.5 kg | Approx. 3.7 kg | |

Notes: *1. °C DP is an expression used in industrial fields to specifically designate the dew point temperature.
*2. Probe temperature

External Dimensions



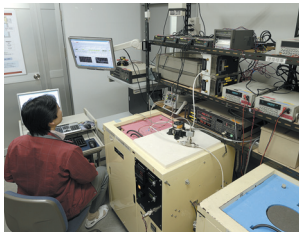
Selection Guide

I II III IV V VI VII VIII IX X XI Example: FDW10B1101S100D

| Segment | Model No. selection | | Description | |
|---------|-----------------------|------------------|--|---|
| I | Basic No. | FDW10 | FINEDEW, Desktop chilled mirror hygrometer | |
| II | Controller | Controller type | B Basic controller | |
| III | | Analog output | 1 | Dew point (0-10 V) or condensation level (1-5 V) |
| | | | 2 | Dew point (4-20 mA) or condensation level (4-20 mA) |
| IV | | Digital output | 1 | Dew point high/low alarm or control status |
| V | | Option 1 | 0 | (Reserved) |
| VI | | Handle / Bracket | 1 | Handle |
| | | | 5 | Panel mount bracket |
| VII | | Probe type | S | S type (standard) |
| | | | L | L type (low dew point) |
| VIII | | Relay cable | 1 | Relay cable, 50 cm |
| IX | | Option 2 | 0 | (Reserved) |
| X | Option 3 | 0 | (Reserved) | |
| XI | Additional processing | D | Inspection certificate | |
| | | Y | Traceability and inspection certificates | |

JCSS Calibration

Measurement Standards Center of Yamatake Corporation is assessed and accredited as an Accredited Calibration Laboratories for temperature, pressure and humidity. They offer accredited calibration services under the JCSS calibration laboratory accreditation system based on Japanese Measurement Law. Accordingly, the Center can issue an accredited calibration certificate with the JCSS symbol in combination with the ILAC-MRA Mark, for the FDW10 desktop chilled mirror hygrometer.



Accessories (sold separately)

| Model No. | Description |
|--------------|--|
| 81447211-001 | Sensor filter (2 pcs) (used for maintenance) |

About the One-Tenth Project, which created FINEDEW™



Yamatake Corporation is engaged in the project that clearly aims to develop the product which size is reduced to 1/10 within one year to establish a unique design and microfabrication technology.

By 1/10 projects started in 2002, the following can be attempted through the miniaturization of the products.

- Saving of natural resources (Less consumption of raw materials and fewer by-products.)
- Saving of energy (Shorter developing and production period and less operating power consumption.)
- Reduction in labor (Easy transportation, installation and handling.)

As a product of this project, FINEDEW™ creates value together with customers at their site, and contributes to preserving the global environment.

⚠️ RESTRICTIONS ON USE

This product has been designed, developed and manufactured for general-purpose application in machinery and equipment. Accordingly, when used in applications outlined below, special care should be taken to implement a fail-safe and/or redundant design concept as well as a periodic maintenance program.

- Safety devices for plant worker protection
- Start/stop control devices for transportation and material handling machines
- Aeronautical/aerospace machines
- Control devices for nuclear reactors

Never use this product in applications where human safety may be put at risk.

Specifications are subject to change without notice.

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1st Edition: Issued in Aug.2008

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