

SKYDEW

chilled-mirror hygrometer



Outline

The SKYDEW is a Peltier-based digitally-controlled chilled-mirror hygrometer to measure atmospheric water vapor accurately. When the chilled mirror hygrometer maintain thin dew/frost layer constantly, the mirror temperature is equal to the dew/frost point temperature in ambient air. The mirror is cooled by two-stage Peltier device, with PID controller.

The chilled-mirror hygrometer is mainly used for the three purposes;

- (1) validation for the operational radiosonde RH sensor and satellite measurements for water vapor as reference sensor;
- (2) monitoring the climate (long-term variability in atmospheric water vapor);
- (3) studies for at upper troposphere and around tropopause.

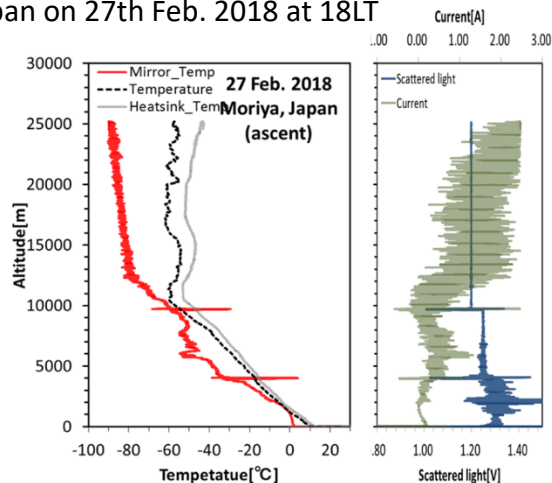
The SKYDEW is environmentally-friendly and ease-to-handle in nature because this instrument does not use a cryogenic material to cool the mirror. The SKYDEW can measure atmospheric water vapor up without cryogen material.

The data format of SKYDEW is according to the XDATA radiosonde protocol. Therefore, SKYDEW can connect the several types of radiosonde in addition with Meisei radiosonde RS-11G.

Features

- Accurate water vapor measurement from surface to tropopause level
- Environmentally-friendly and ease-to-handle (without cryogen)
- Light weight of ~700g including batteries.
- XDATA format

Example in Moriya, Japan on 27th Feb. 2018 at 18LT



Specification

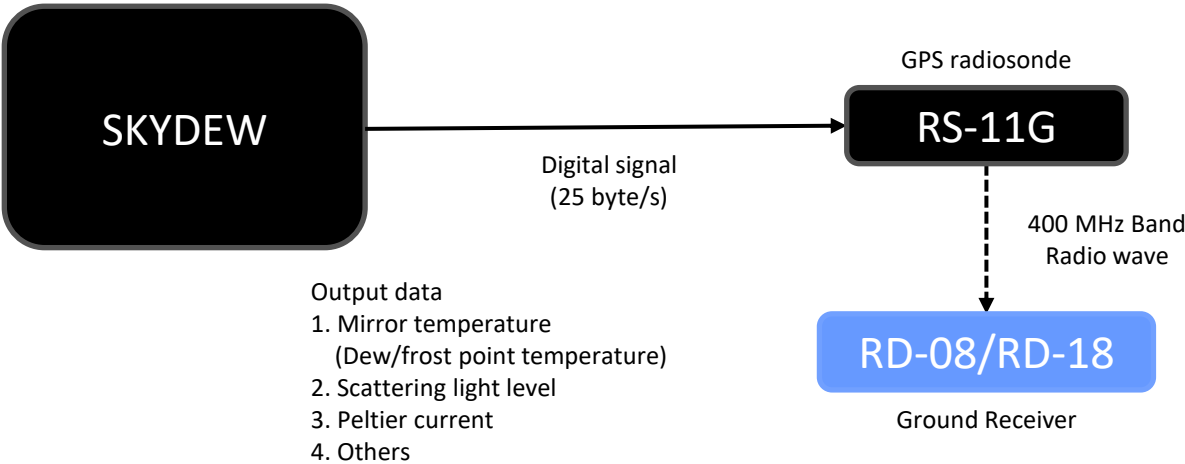
Principle	Chilled-mirror hygrometer	
	Cooling methods	Peltier device
Measuring Range	Mirror temperature	-100 ~ 40 degC ^{*(1) (2)} (depending on day/nighttime, location, weather condition)
	Sampling rate	1 sec

- (1) Regarding the measuring range, daytime measurements are limited as compared with nighttime measurements.
(The measurement range is restricted by the Peltier performance.)
- (2) There are some oscillations in the measured mirror temperature especially above upper troposphere because of the PID controller. The mirror temperature should be applied with a smoothing filter.

Operation Environment	Temperature	-85 ~ +40 degC
	Pressure	1050 hPa ~ 5 hPa
	Cloud	No water clouds
Power Source	Voltage	9VDC (Peltier device) 9 VDC (for controller device)
	Model	Lithium battery (AAA) × 6
		Lithium battery (006P) × 1
Size & Weight	Dimensions	170 (W) x 93 (D) x 318 (H) mm
	Weight	700 g (without radiosonde RS-11G)

Block Diagram

[The case of Meisei radiosonde]



CAUTION

- For safe and correct usage, please read the "Operation Manual" prior to the use of the products.
- The specifications and appearances might be changed without prior notice, which please understand.
- The specifications shown in the catalog are of our standard products. We are pleased to customize it to meet customer's requirements. For the details, please contact us.
- Please understand in advance that our company cannot assume the responsibility of any claims made by the third party about any monetary damages or any loss of profits arising out from the use of our products.
- The color of the product photography on catalog might be different from that of actual product because of printing.

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