MEISEI

IHI GROUP
Realize your dreams

GPS Radiosonde

iMS-100(eco)

Outline

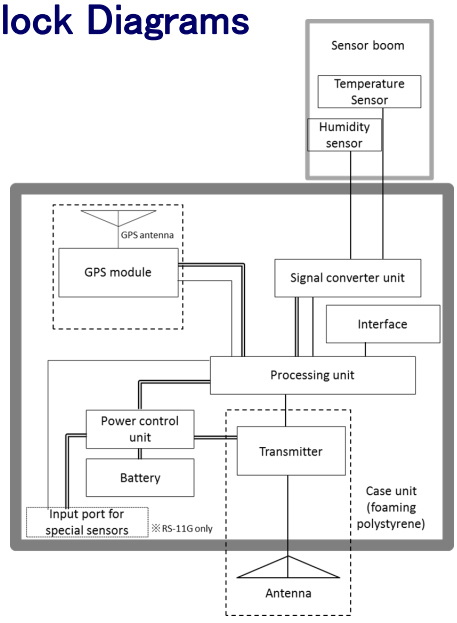
GPS Radiosonde observe meteorological data such as wind speed, wind direction, atmos pheric pressure, temperature, and humidity at approximately 35 km above the ground. Wind speed, wind direction, and air pressure are cal culated based on the speed of movement and altitude obtained by GPS positioning technolo gy. Every second observation data is convert to digital signals .After that transmit to the ground receiving system.

iMS-100(eco)achieved innovative miniaturize tion and weight reduction through the aggres sive use of the latest electronic components. By doing this, it is possible to reduce the size of balloons and other equipment used during flight and to reduce the amount of gas used. Not only reduces operating costs, plus reduces waste and is environmentally friendly. Further more, frame is made from LACTIF®, That is biodegradable material made from corn, which contributes to the reduction of microplastics.
In terms of performance, iMS-100 certified GRUAN Data Product certification. That is adopt highly accurate and transparent algo rithms, Used for GRUAN observation station.

Features

- iMS-100 eco certified GRUAN DATA Product. That can high precision instrumentation for temperature, humidity and wind.
- Light weight 45g (inc. battery) iMS-100 eco helps enhancing safe operation especially when it falls down to the ground.
- Tiny iMS-100 effectively reducing overall operational costs (smaller balloon, fewer gas consumption) de-pends on the target height
- Downsized iMS-100 can contribute to reduce envi-ronmental burden through the entire life cycle (manufacturing, transportation, storage, and disposal)
- Biomaterial package, which is environmental friendly
- One lithium battery enables more than 4 hours sounding operation.
- High stability transmitter complying with ETSI (EN 302 054 V1.1.1)
- Easy preparation through wireless infrared communi-cation (IrDA) between radiosonde and sonde checker unit before launch

Block Diagrams



Specification ※1

Tempera-ture	Measurement range	−95℃ ～ +60℃
	Resolution	0.1℃
	Uncertainty*2,	(daytime) 0.5 ℃@ troposphere 0.8 ℃@ stratosphere (night) 0.4 ℃@ troposphere 0.4 ℃@ stratosphere
	Response time	＜0.4 s （1,000 hPa, 5 m/s）
Humidity	Measurement range	0%RH ～ 100%RH
	Resolution	0.1%RH
	Uncertainty*2,	5%RH @troposphere *3
	Response time	＜0.2 s (Absorbing, 1,000 hPa, 6 m/s , 0℃) ＜14 s (Absorbing, 1,000 hPa, 6 m/s, -60℃)
Pressure (from GPS value)	Measurement range	1050.0 hPa ～ 3.0 hPa
	Resolution	0.1 hPa
	Uncertainty* *2,4	1.2 hPa near ground ～100hPa 0.5 hPa (0.5%) :100hPa near 0.13 hPa (1.3%) :10hPa near
Geopotential Height	Measurement range	−500.0 m ～ 40,000.0 m
	Resolution	0.1 m
	Uncertainty *2,4	11 m
Wind Direction	Measurement range	0 deg ～ 359.99 deg
	Resolution	0.01 deg
	Uncertainty* *2,4	1 deg: near ground～10hPa
Wind Speed	Measurement range	0.00 m/s ～ 200.00 m/s
	Resolution	0.01 m/s
	Uncertainty *4,5	0.15m/s :near ground～10hPa
GPS Receiver	Frequency	1574.25 MHz ±1 MHz
	Number of channels	66 ch parallel
	Positioning Technology	D-GPS (SBAS)
Usage Environment	Pressure	1050.0 hPa ～ 3.0 hPa
	Temperature	−95℃ ～ +60℃
	Humidity	0%RH ～ 100%RH

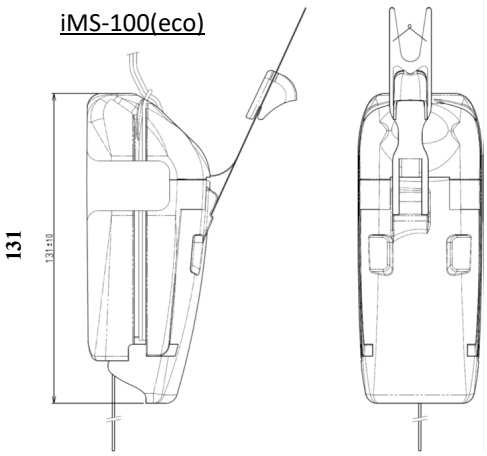
Transmitter	Center freq.	404.5 MHz
	Tuning range	400 MHz ～ 406 MHz *6
	Band width	15 kHz以下
	Output power	100 m W以下
	Transmitter type	FM
	Standard	EN302 054 V1.1.1
Modulation	Modulation type	Digital PCM
	Baud rate	1,200 bps
	Range	>250 km (with Yagi antenna)
	Sampling	1second
Power	Voltage	3.0 VDC
	Current	＜200 mA
	Battery type	Lithium battery × 1(CR-123)
	Operating time	240min
Size & Weight	Dimensions	55(W)×53(D)×131(H) mm
	Weight (Including a battery)	45 g (LACTIF®)
Accompany-ing items	Unwinder	10 m / 15 m /30 m
	Balloon/parachute	please contact us.

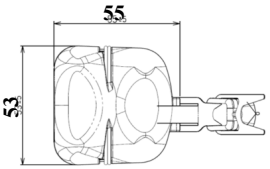
Note
*1: Uncertainty are values evaluated as radiosondes for GRUAN (GCOS Reference Upper-Air Network) Please check below URL.
https://www.gruan.org/documentation/gruan/td/graun-td-5/
*2: Uncertainty are expressed with an inclusion factor k=2, unless otherwise noted.
*3: Excluding sudden humidity changes near the tropopause.
*4: PDOP=1 when GPS positioning is good
*5: Standard deviation (1σ) evaluated using GPS simulator
*6: Frequency can be changed in 100 kHz increments within the specification range, but please follow the Radio Law regarding the frequency to be used.

Outline View

Unit (mm)

iMS-100(eco)





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.
- Some of the products listed are made to order, so please contact us separately regarding delivery. Also, depending on the specifications required by the customer, development may be required.
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- The color of the product photography on catalog might be different from that of actual product because of printing.

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