

HD33[L]M.GSM HD33[L]M-MB.GSM GSM data loggers for weather stations



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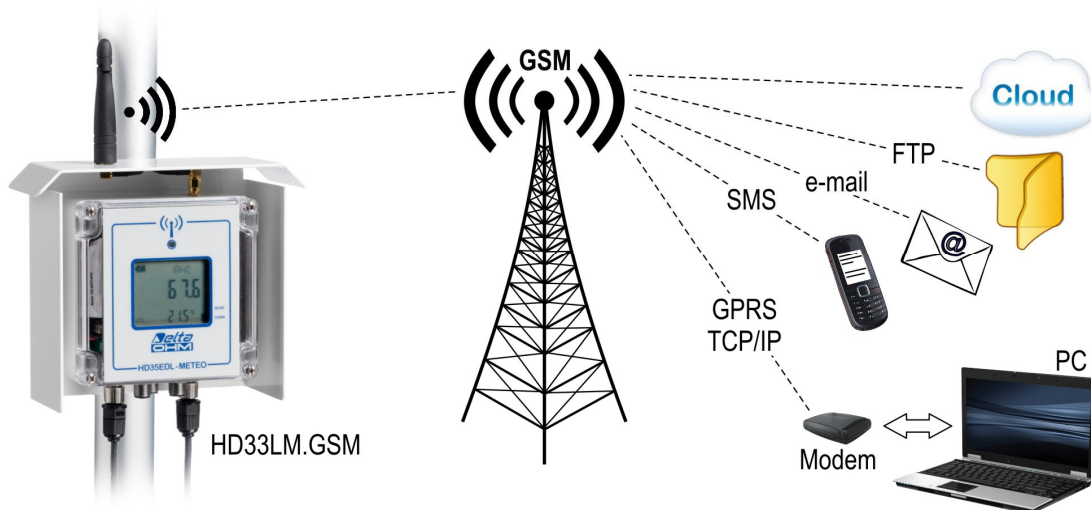


- Temperature, relative humidity, dew point, atmospheric pressure, solar radiation, rainfall quantity, wind speed and direction data logging
- Available in two versions: with input for standard RS485 MODBUS-RTU sensors or with inputs for dedicated Delta OHM sensors
- GSM/GPRS module for the remote monitoring
- Sending of data via e-mail, FTP and to an HTTP server (for example the Delta OHM Cloud)
- PC software for configuration, monitor and data download in a database
- Software option available for compliance to **FDA 21 CFR part 11** recommendations
- Alarm notification via e-mail and SMS when configurable measurement thresholds are exceeded
- **IP 67** waterproof housing
- Optimal custom LCD
- It can be powered by mains or by a solar panel (with optional external power supply unit)

DESCRIPTIONS

The **HD33[L]M.GSM** and **HD33[L]M-MB.GSM** data loggers are equipped with a GSM/GPRS module and allow several physical quantities to be monitored remotely in a large variety of application fields. You can monitor, for example, temperature, humidity, atmospheric pressure, solar radiation, rainfall quantity, wind speed and direction.

Thanks to **GSM/GPRS** transmission, the user will not have to remove the data logger from its position or reach the place where the data logger is installed to download the data measured with the PC: the instrument can send the data via **e-mail** or **FTP** and can upload the data on an **HTTP** server (for example the Delta OHM portal "**www.deltaohm.cloud**"). You can also make a direct GPRS TCP/IP connection with a remote PC which has an Internet connection.



The data logger GSM functions can be remotely controlled by sending SMS messages.

For each detected quantity, the user can set two alarm thresholds (high threshold and low threshold), the alarm hysteresis and a delay in the generation of the alarm. The overrun of the thresholds can be

indicated by an audible signal of the data logger through an internal buzzer or signaled by alarm e-mails or SMS messages.

If a relative humidity and temperature probe is connected, the dew point temperature is calculated.

If a pyranometer is connected, the daily Wh/m² (Wh = watt hour) are calculated.

If a rain gauge is connected, a measurement compensation curve as a function of the rainfall rate can be configured. The data logger calculates the rainfall rate in mm/h (by referring the rainfall quantity in the last five minutes to an hourly value) and the rainfall quantity in the last day.

HD35AP-S PC software, downloadable free of charge from the Delta OHM website, allows configuration of data logger, displaying measurements in real time both in graphical and numerical format, data download. The data transferred to the PC are entered into a database.

The data logger operates with 7...30 Vdc direct power supply voltage and can be powered by mains (with **optional HD32MT.SWD** external power supply unit) or by a solar panel (with **optional HD32WSF.S12** external power supply unit).

IP 67 waterproof housing.

Optional custom LCD display.

HD33[L]M.GSM

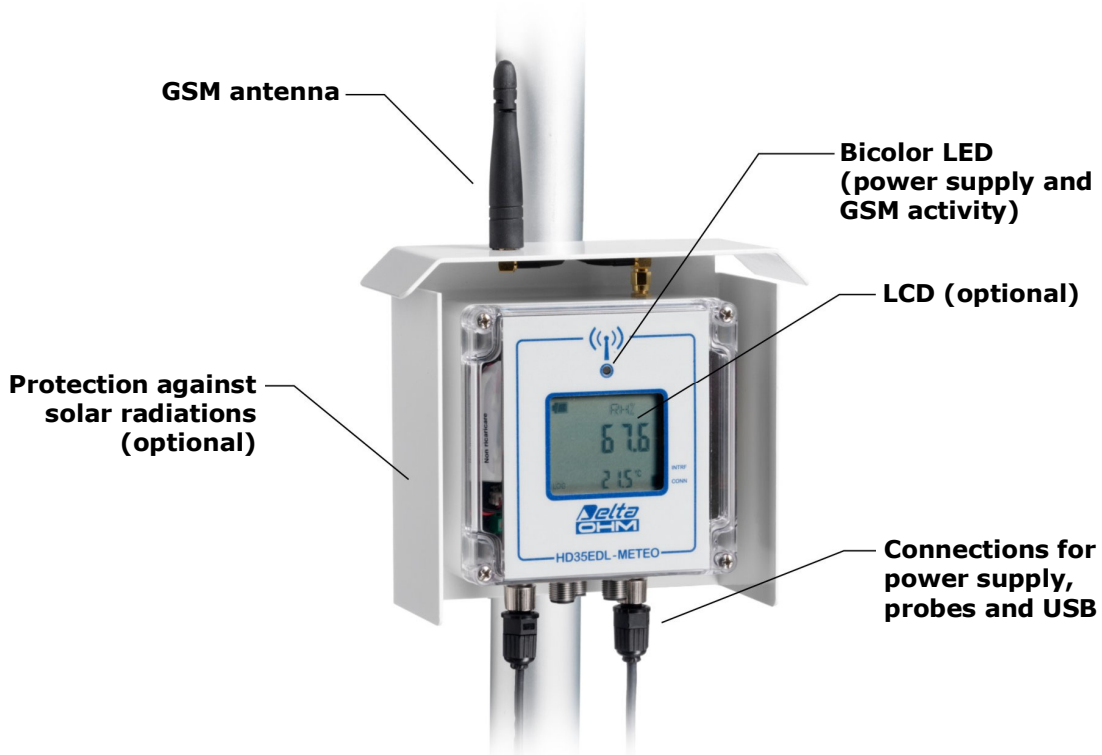
The **HD33[L]M.GSM** data logger has 5 inputs with M12 connectors:

- One input for relative humidity and temperature with NTC sensor combined probe or, alternatively, for temperature only probe with NTC sensor.
- One input for pyranometer.
- One input for rain gauge.
- One input for cup anemometer.
- One input for wind direction vane.

It detects the atmospheric pressure by means of an **optional** internal sensor.

If an anemometer is connected, the data logger calculates the **Wind gust** and **Wind chill** (only if the data logger also measures the temperature) parameters.

On request, one of the inputs can be replaced by a 4...20 mA analog input for the connection of a transmitter with current output, this allows the monitoring capability to be extended to many other quantities in addition to the ones mentioned above (for example, a level sensor can be connected).



HD33[L]M-MB.GSM

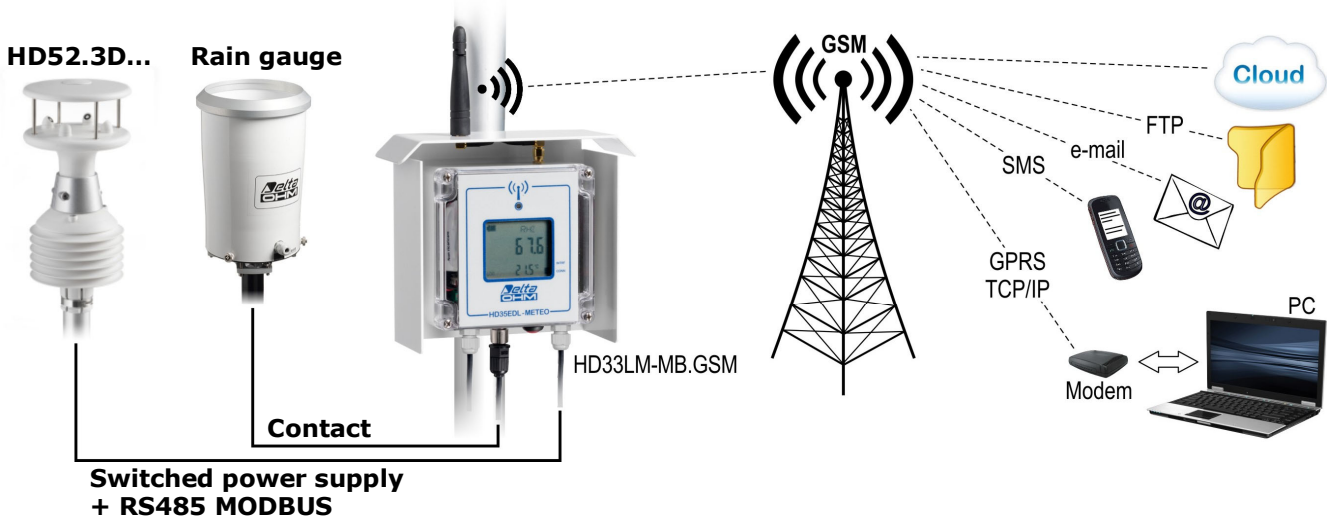
The **HD33[L]M-MB.GSM** data logger is equipped with a "Master" **RS485 MODBUS-RTU** input to which a network of sensors with "Slave" RS485 MODBUS-RTU output can be connected (e.g. an anemometer of the HD52.3D... series can be connected).

As an alternative to the Modbus-RTU protocol, a proprietary protocol can be used to connect the HD2003 anemometer.

A voltage-free contact input allows connecting a rain gauge with contact output.

It is equipped with a switched power supply output to power the sensors only when the measurement has to be carried out. The power output, when enabled, has the same value as the power input.

In the version with LCD, a button at the bottom of the data logger allows you to manually scroll the various quantities on the display.



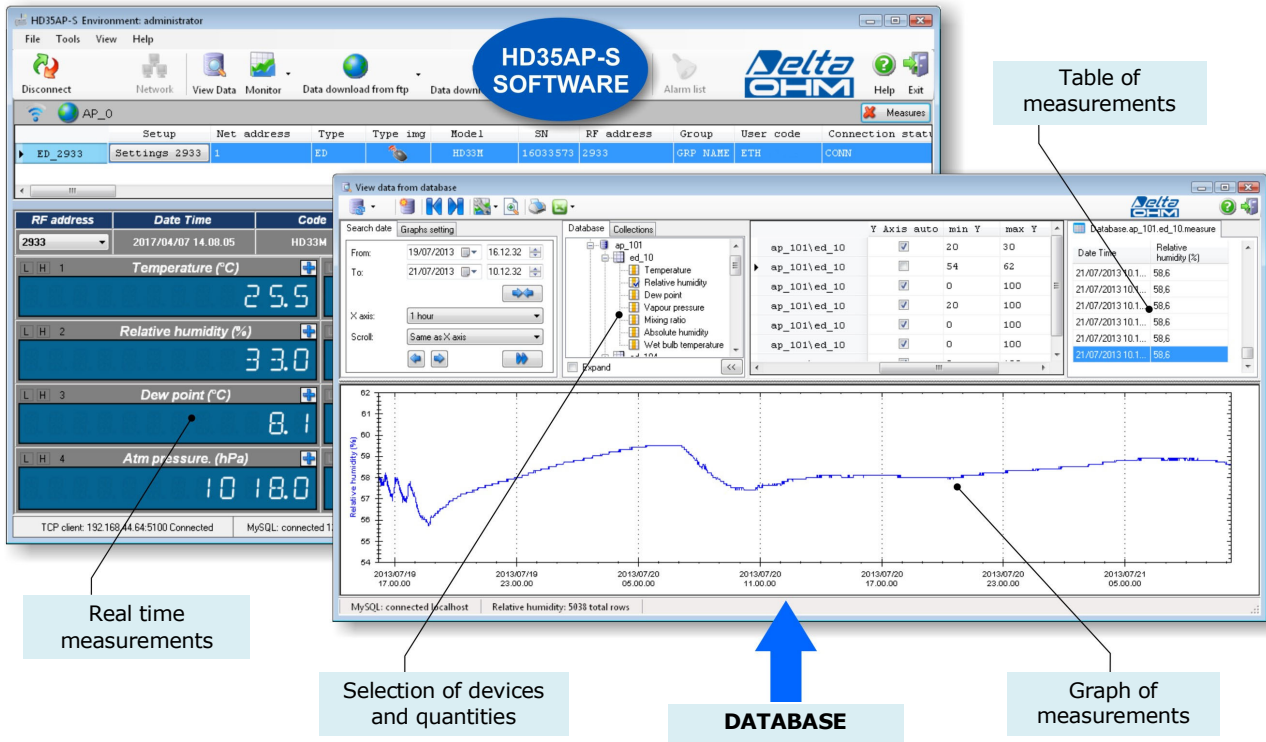
CLOUD

The data logger can automatically send, at regular intervals, the data to an HTTP server, and in particular to the Delta OHM portal "**www.deltaohm.cloud**". This allows you to view the data from anywhere in the world, even by using mobile devices (tablet, smartphone, notebook), simply having an Internet connection and using a web browser. The data sending interval is configurable.



PC APPLICATION SOFTWARE

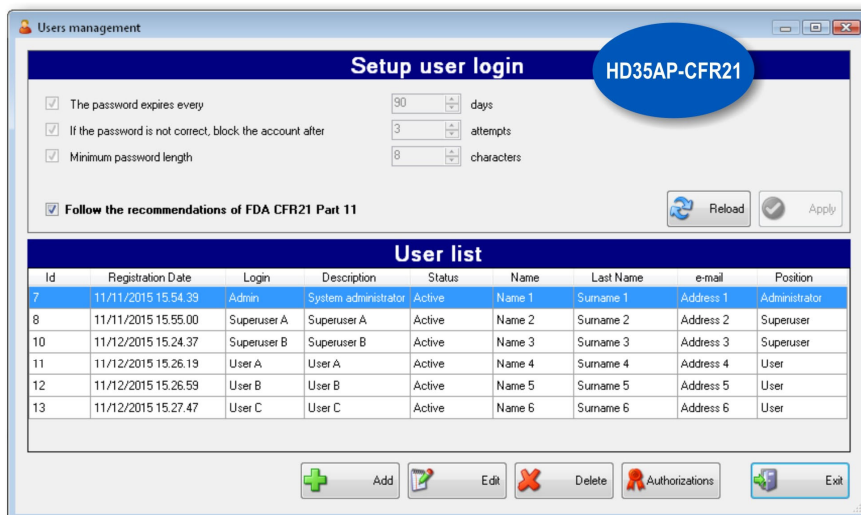
The PC software **HD35AP-S** allows configuring the data logger, viewing the real time measurements both graphically and numerically, downloading the data in a database. The data can be downloaded automatically, at regular intervals, or upon user request.



The database functions allow viewing the data coming from multiple data loggers simultaneously. The connection to the database is **multi-client**: it is possible to store the data in a remote database on the local network to which the PC is connected, and the data can be viewed from any PC on the network via the HD35AP-S software.

The **HD35AP-CFR21** option (enabled by a USB hardware key to be connected to any PC connected to the same local network of the PC in which the HD35AP-S software is installed) allows, in addition to the features of the basic software, the protection of recorded data and configuration in response to **FDA 21 CFR part 11** recommendations. In particular become available:

- The traceability of activities (audit trail) performed with the software; for example, which users connected and what changes were possibly made to the configuration of the data logger.
- The management of users access for the data logger configuration and viewing of data in the database. Each user can be assigned a different password for using the software. There are also three levels of access (Administrator, Super-user and standard User); for each level, the allowed operations can be defined.



TECHNICAL SPECIFICATIONS

<i>Power supply</i>	7...30 Vdc
<i>Power consumption</i>	< 2 mA during measurement / < 0.8 A peak during GSM activity
<i>Antenna</i>	External
<i>Measuring interval</i>	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
<i>Logging interval</i>	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
<i>Internal memory</i>	Circular management or stop logging if memory is full. The number of samples depends on the number of detected quantities: <ul style="list-style-type: none"> • from 128,000 to 440,000 for HD33[L]M.GSM • from 120.000 to 424.000 for HD33[L]M-MB.GSM
<i>Alarm</i>	Acoustic through internal buzzer. Sending of alarm e-mail and SMS.
<i>Display</i>	Optional custom LCD
<i>LED indicator</i>	2-color LED: power on (blinks red), GSM activity (blinks green)
<i>Connection to PC</i>	USB port with mini-USB connector
<i>Operating conditions</i>	-20...+70 °C (with LCD) or -40...+70 °C (without LCD) / 0...100 %RH
<i>Weight</i>	1 kg approx. (including shield and fixing clamping)
<i>Housing</i>	Dimensions: 122 x 120 x 56 mm (excluding external antenna) Material: Polycarbonate (PC) Protection degree: IP 67 (with protective cap on the USB connector)
<i>Installation</i>	Fixing to a 40 mm diameter mast through the clamping HD2003.77/40 (optional). Protection shield against solar radiations (optional) for outdoor installation.

Measurement characteristics (Only for HD33[L]M.GSM in line with the probes. For HD33[L]M-MB.GSM the measurement characteristics depend exclusively on the sensors connected):

Temperature	
<i>Sensor</i>	NTC 10 k Ω @ 25 °C
<i>Measuring range</i>	-40...+105 °C
<i>Resolution (of instrument)</i>	0.1 °C
<i>Accuracy</i>	± 0.3 °C in the range 0...+70 °C / ± 0.4 °C outside
<i>Stability</i>	0.1 °C / year
Relative Humidity	
<i>Sensor</i>	Capacitive
<i>Measuring range</i>	0...100 %RH
<i>Resolution (of instrument)</i>	0.1 %
<i>Accuracy</i>	± 1.8 %RH (0...85 %RH) / ± 2.5 %RH (85...100 %RH) @ T=15...35 °C $\pm (2 + 1.5\%$ measure) $\%$ @ T=remaining range
<i>Sensor operating temperature</i>	-40...+80 °C
<i>Response time</i>	T ₉₀ < 20 s (air speed = 2 m/s, without filter)
<i>Temperature drift</i>	$\pm 2\%$ over the whole operation temperature range
<i>Stability</i>	1% / year
Calculated quantities	Dew Point
Atmospheric pressure	
<i>Sensor</i>	Piezoresistive
<i>Measuring range</i>	300...1100 hPa
<i>Resolution (of instrument)</i>	0.1 hPa
<i>Accuracy</i>	± 0.5 hPa (800...1100 hPa) @ T=25°C ± 1 hPa (300...1100 hPa) @ T=0...50°C
<i>Stability</i>	1 hPa / year
<i>Temperature drift</i>	± 3 hPa tra -20...+60 °C

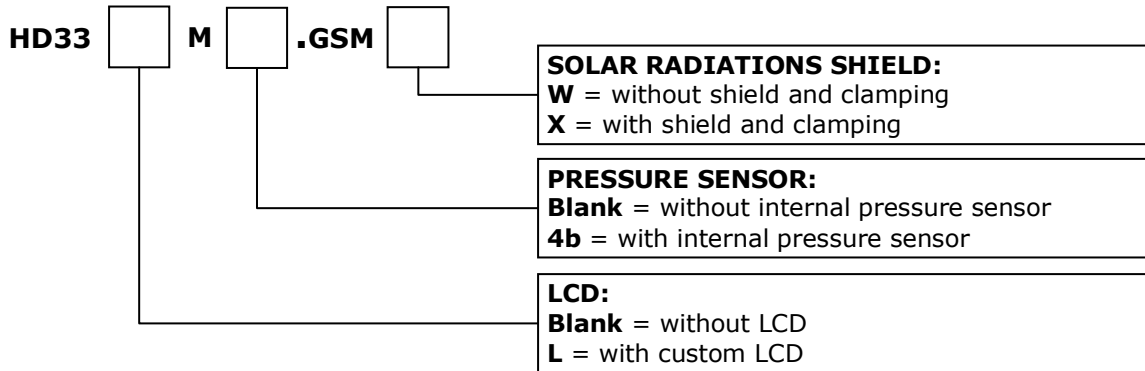
Solar radiation	
<i>Sensor</i>	Thermopile
<i>Measuring range</i>	0...2000 W/m ²
<i>Resolution (of the instrument)</i>	1 W/m ²
<i>Sensitivity</i>	Configurable in mV/(kW m ⁻²)
Calculated quantities	Daily Wh/m ² (Wh = watt hour)
For the other characteristics, please refer to the data sheet of the chosen pyranometer.	
Rainfall quantity	
<i>Sensor</i>	With contact output (configurable NC or NO in the data logger)
<i>Resolution (of the instrument)</i>	Configurable 0.1 – 0.2 – 0.5 mm/tipping
Calculated quantities	Rainfall rate in mm/h, rainfall quantity in the last day. The rainfall rate is calculated by referring the rainfall quantity in the last five minutes to an hourly value.
For the other characteristics, please refer to the data sheet of the chosen rain gauge.	
Wind speed – Characteristics of the HD54.3 cup anemometer	
<i>Sensor</i>	Passive 3-cup anemometer
<i>Measuring range</i>	1...75 m/s
<i>Resolution (of the instrument)</i>	0.1 m/s
<i>Accuracy</i>	± 0.14 m/s @ 10 m/s installed on a flat terrain site
<i>Offset</i>	0.35 m/s
<i>Gain</i>	0.765 m s ⁻¹ /Hz
<i>Distance constant (63% recovery)</i>	2.55 m @ 5 m/s / 2.56 m @ 10 m/s (ASTM D 5096-02)
Calculated quantities	Felt air temperature as a function of the wind speed: Wind Chill index (only if the logger measures also temperature). Wind gust: maximum wind speed obtained from the 3 seconds averages of the measurements acquired once per second.
Wind direction – Characteristics of the HD54.D vane	
<i>Sensor</i>	continuous rotation potentiometric vane
<i>Measuring range</i>	0...359.9°
<i>Resolution (of the instrument)</i>	0.1°
<i>Accuracy</i>	< 1%
<i>Dead band</i>	4° typical, 8° max.
<i>Threshold</i>	1 m/s
4...20 mA input (only if requested)	
<i>Shunt resistance</i>	Internal (50 Ω)
<i>Resolution</i>	12 bit
<i>Accuracy</i>	± 2 μA

ORDERING CODES

HD33M.GSM GSM data logger. It stores the measurements in the internal memory and transmits the acquired data via FTP, via e-mail or to an HTTP server (Cloud). **Optional** LCD Display. Alarm functions. Power supply: 7...30 Vdc. It includes **HD35AP-S** software downloadable from Delta OHM web site.

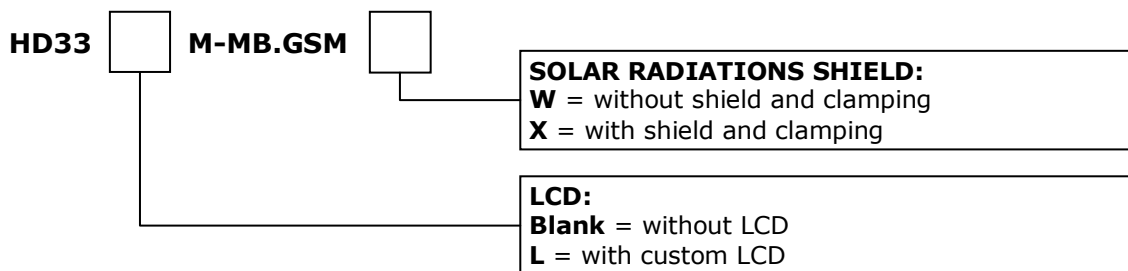
SIM card not included. External probes and USB cable CP23 have to be ordered separately. Specify upon ordering if the data logger should be supplied with protection shield against solar radiations and HD2003.77/40 clamping.

HD33M4b.GSM HD33M.GSM data logger equipped with an internal barometric sensor.



HD33M-MB.GSM GSM data logger. RS485 MODBUS-RTU input and contact input for rain gauge. Stores measurements in the internal memory. Transmits the acquired data via FTP, via e-mail or to an HTTP server (Cloud). **Optional** LCD Display. Alarm functions. Power supply: 7...30 Vdc. It includes **HD35AP-S** software downloadable from Delta OHM web site.

SIM card not included. External probes and USB cable CP23 have to be ordered separately. Specify upon ordering if the data logger should be supplied with protection shield against solar radiations and HD2003.77/40 clamping.

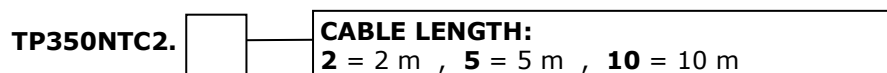


RELATIVE HUMIDITY AND TEMPERATURE PROBES FOR HD33[L]M.GSM

HP3517TC2... Relative humidity and temperature combined probe. R.H. measuring range: 0...100%. Temperature sensor: NTC 10KΩ. Temperature measuring range: -40...+105 °C. R.H. sensor operating temperature: -20...+80 °C. Probe stem: AISI 304, Ø 14 mm, length 150 mm. Cable length 2, 5 or 10 m standard. 4-pole M12 female connector.



TP350NTC2... NTC10KΩ sensor temperature probe. Measuring range: -40...+105 °C. Probe stem: AISI 304, Ø 14 mm, length 150 mm. Cable length 2, 5 or 10 m standard. 4-pole M12 female connector.



RELATIVE HUMIDITY AND TEMPERATURE PROBES FOR HD33[L]M-MB.GSM

- HD9817TVS** Relative humidity and temperature transmitter, Pt100 sensor. RS485 MODBUS-RTU output. Temperature measuring range: -40...+60 °C. Relative humidity measuring range: 0...100%. Power supply 5...30 Vdc. AISI 304 housing. IP 65 probe protection degree. Dimensions Ø14 x 155 mm. Output with 8-pole M12 male connector. Supplied with CP9817.3 cable, length 3 m.
- HD9008.T17S** Relative humidity and temperature transmitter, Pt100 sensor. RS485 MODBUS-RTU output. Temperature measuring range: -40...+80 °C. Relative humidity measuring range: 0...100%. Power supply 5...30 Vdc. Dimensions Ø 26 x 185 mm.
- HD9008.T7S** Temperature transmitter, Pt100 1/3 DIN sensor. Measuring range -40...+80 °C. RS485 MODBUS-RTU output. Dimensions Ø 26 x 185 mm. Power supply 5...30 Vdc.
- TP32MTT.03** Temperature probe with seven Pt100 1/3 DIN sensors for temperature measurement to a depth of: 0, -5 cm, -10 cm, -20 cm, -50 cm, -1 m with respect to ground level, according to OMM indications. RS485 MODBUS-RTU output. 8-pole M12 male connector. 5...30 Vdc power supply. CPM12 AA8... cable has to be ordered separately.
- TP32MTT.03.1** Temperature probe with seven Pt100 1/3 DIN sensors for temperature measurement to a depth of: +5 cm, 0, -5 cm, -10 cm, -20 cm, -50 cm with respect to ground level, according to OMM indications. RS485 MODBUS-RTU output. 8-pole M12 male connector. 5...30 Vdc power supply. CPM12 AA8... cable has to be ordered separately.
- HD3910.1** 2-electrode probe for the measurement of the soil volumetric water content. With integrated NTC 10 kΩ temperature sensor. RS485 MODBUS-RTU output. Cable length 5 or 10 m.
- HD3910.2** 3-electrode probe for the measurement of the soil volumetric water content in restricted volumes. With integrated NTC 10 kΩ temperature sensor. RS485 MODBUS-RTU output. Cable length 5 or 10 m.

ACCESSORIES FOR RELATIVE HUMIDITY AND TEMPERATURE PROBES

- HD9007A-1** 12-ring protection against solar radiations. Includes support bracket.
- HD9007A-2** 16-ring protection against solar radiations. Includes support bracket.
- HD9007T26.2** Adapter for Ø 14 mm probes for protections against solar radiations HD9007A-1 and HD9007A-2.

BAROMETERS FOR HD33[L]M-MB.GSM

- HD9408.3B.1** Precision barometric transmitter. Measuring range: 0...1350 hPa. Accuracy: ± 0.1 hPa (500...1200 hPa) @ 23 °C. Working temperature -40...+85 °C. 0...5 V or 1...5 V configurable voltage analog output. RS232, RS422 or RS485 digital output. MODBUS-RTU and NMEA standard protocols. Power supply 10...30 Vdc. IP 67 housing. The cable CP18.2 (L=2m) or CP18.5 (L=5m) with free 8-pole M12 female connector must be ordered separately.

SOLAR RADIATION SENSORS FOR HD33[L]M.GSM

- LPPYRA02** First Class pyranometer according to ISO 9060. Output in $\mu\text{V}/(\text{Wm}^{-2})$. Supplied with: shade disk, cartridge with silica-gel crystals, 2 spare sachets, levelling device, connector and Calibration Report. On request 5 or 10 m cables with connector.
- LPPYRA03** Second Class pyranometer according to ISO 9060. Output in $\mu\text{V}/(\text{Wm}^{-2})$. Supplied with levelling device, connector and Calibration Report. On request 5 or 10 m cables with connector and shade disk.
- LPPYRA10** Secondary standard pyranometer according to ISO 9060. Output in $\mu\text{V}/(\text{Wm}^{-2})$. Supplied with: shade disk, cartridge with silica-gel crystals, 2 spare sachets, levelling device, connector and Calibration Report. On request 5 or 10 m cables with connector.
- LPSILICON-PYRA 04** Pyranometer with silicon photodiode for measuring the global solar irradiance, diffuser for cosine correction. Spectral range 350...1100 nm. Typical sensitivity: $10 \mu\text{V}/\text{W m}^{-2}$. Measuring range: 0...2000 W/m^2 . Fixed cable 5 m long, terminated

with open wires.

SOLAR RADIATION SENSORS FOR HD33[L]M-MB.GSM

- LPPYRA02S** First Class pyranometer according to ISO 9060. RS485 MODBUS-RTU output. Supplied with: shade disk, cartridge with silica-gel crystals, 2 spare sachets, levelling device, connector and Calibration Report. On request 5 or 10 m cables with connector.
- LPPYRA03S** Second Class pyranometer according to ISO 9060. RS485 MODBUS-RTU output. Supplied with levelling device, connector and Calibration Report. On request 5 or 10 m cables with connector.
- LPPYRA10S** "Secondary standard" pyranometer according to ISO 9060 including protection shield, cartridge for silica gel crystals, 2 spare charges, bubble level for alignment and Calibration Report. RS485 serial output with MODBUS-RTU protocol. 5÷30Vdc power supply. On request 5 or 10 m cables with connector.
- LPSD18.1** Sensor for the measurement of the solar radiation duration, referred to the 120 W/m² threshold of direct radiation, according to OMM indications. The sensor has no moving parts. RS485 MODBUS-RTU output and free-potential contact output. 7...30 Vdc power supply. It can be fastened to a rod with a proper accessory, or installed on a horizontal surface by means of the optional fixing base. Integrated bubble level for alignment. It doesn't require position adjustments during the year. Equipped with anti-condensation system (1W @ 12 Vdc if connected). 8-pole M12 connector. Upon request, standard 2, 5 or 10 m cables with female connector. Heating option available.
- LPPYRHE16S** First Class Pyrheliometer according to ISO 9060. Supplied with: light shade, cartridge with silica-gel crystals, 3 spare sachets, 8-pole M12 movable connector and Calibration Report. RS485 MODBUS-RTU serial output. Power supply 5...30 Vdc. On request 5 or 10 m CPM12-8D... cables with connector.

ACCESSORIES FOR SOLAR RADIATION SENSORS

- LPS2** Shade disk for LPPYRA03....
- LPS1** Attachment bracket for LPPYRA02... and LPPYRA10..., suitable for mast Ø 40 ÷ 50 mm.
- LPS3** Attachment bracket for LPPYRA03..., suitable for mast Ø 40 ÷ 50 mm.
- LPSD18.0** Base for installation of the sunshine duration sensor on a horizontal surface. Two adjustable feet and one fixed foot. Allows sensor inclination up to 80° to the vertical, in order to adapt it to the sun position at the latitude of the installation site.
- LPSD18.V1** Support for installation of the sunshine duration sensor on a Ø 40 mm rod. Allows sensor inclination up to 80° to the vertical, in order to adapt it to the sun position at the latitude of the installation site.
- LPSD18.19K** Basic support for installation of the LPSD18... sensor on a flat base. The Sunshine Duration Sensor has a fixed inclination of 45° with respect to the fixing plane.

RAIN GAUGES

- HD2013** Tipping bucket rain gauge, 400cm² area, for temperature ranging from 4 °C to +60 °C. Standard resolution 0.2 mm. 0.1 or 0.5 mm on request with order. Normally closed output contact.
- HD2013R** Tipping bucket rain gauge, 400cm² area, with heater for temperature ranging from -20 to +60 °C. Standard resolution 0.2 mm. 0.1 or 0.5 mm on request with order. Normally closed output contact. Power supply: 12 Vdc or 24 Vdc ± 10% / absorbed power 165 W.
- HD2015** Tipping bucket rain gauge, 200cm² area, for temperature ranging from 4 °C to +60 °C. Standard resolution 0.2 mm. 0.1 or 0.5 mm on request with order. Normally closed output contact.

HD2015R Tipping bucket rain gauge, 200cm² area, with heater for temperature ranging from -20 to +60 °C. Standard resolution 0.2 mm. 0.1 or 0.5 mm on request with order. Normally closed output contact. Power supply: 12 Vdc or 24 Vdc ± 10% / absorbed power 50 W.

HD2016 Weighing rain gauge, area 400 cm². 3000 cc collecting reservoir. Automatic water discharge when the amount of water collected exceeds a configurable percentage of the reservoir capacity (by default 10%, corresponding to 300 cc). Operating temperature from +4 °C to +60 °C. RS485 Modbus-RTU or SDI-12 output. Voltage-free output contact (NO). Power supply: 10...15 Vdc. Adjustable feet for ground installation included in the kit.

HD2016R Weighing rain gauge, area 400 cm². 3000 cc collecting reservoir. Automatic water discharge when the amount of water collected exceeds a configurable percentage of the reservoir capacity (by default 10%, corresponding to 300 cc). Operating temperature from -20 °C to +60 °C. RS485 Modbus-RTU or SDI-12 output. Voltage-free output contact (NO). Power supply: 10...15 Vdc for the measuring circuit, 12 Vdc / 90 W for the heater. Adjustable feet for ground installation included in the kit.

ACCESSORIES FOR RAIN GAUGES

HD2013.18 Bird dissuader.

HD2013.5K Kit of accessories for the installation of the HD2013 rain gauge raised 500 mm from the ground and the levelling.

HD2013.5K.1 Kit of accessories for the installation of the HD2013 rain gauge raised 1 m from the ground and the levelling.

HD2015.5K Kit of accessories for the installation of the HD2015 rain gauge raised 500 mm from the ground and the levelling.

HD2015.5K.1 Kit of accessories for the installation of the HD2015 rain gauge raised 1 m from the ground and the levelling.

HD2016.33K Kit of accessories for the installation of the HD2016 rain gauge raised 500 mm from ground and the levelling.

HD2016.33K.1 Kit of accessories for the installation of the HD2016 rain gauge raised 1 m from ground and the levelling.

HD2003.75 Base for 40 mm diameter mast, with tip to be driven into the ground (only for HD2013 and HD2015).

HD2003.78 Base for 40 mm diameter mast, to be fixed to the floor.

WIND SPEED AND DIRECTION SENSORS FOR HD33[L]M.GSM

HD54.3 Passive cup anemometer. Measuring range: 1...75 m/s. Operating conditions: -45...+60 °C / 0...100% RH. Rod mounting. Height 81 mm assembled.

HD54.D Wind direction vane probe. Measuring range: 0...360°. Dead band: typical 4°, maximum 8°. Threshold: 1 m/s. Operating conditions: -40...+60 °C / 0...100% RH. Rod mounting. Dimensions: 210 x 120 mm.

WIND SPEED AND DIRECTION SENSORS FOR HD33[L]M-MB.GSM

HD2003 3-axes static ultrasonic anemometer for the measurement of wind speed and direction, air temperature, relative humidity and barometric pressure. wind speed U-V-W cartesian components, sonic temperature. Interfaces available RS232, RS485 MODBUS-RTU, RS422. Power supply: 12...30 Vdc. To be mounted on a mast. Free connector included.

HD2003R HD2003 with heating option.

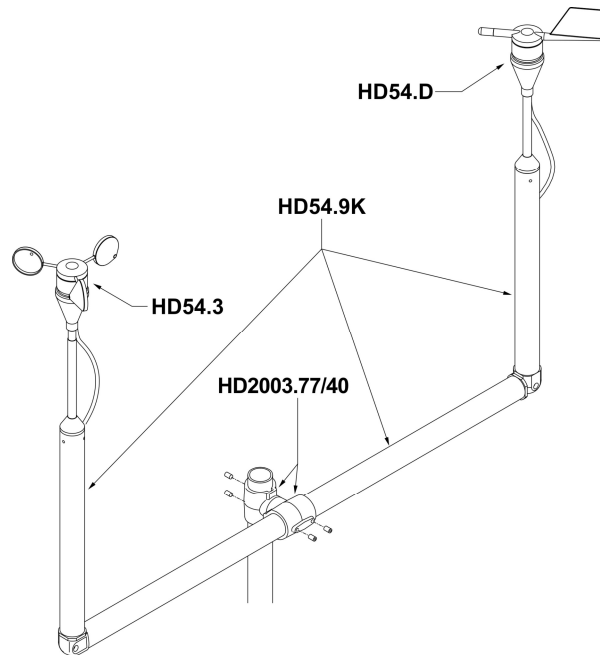
HD2003.1 3-axes static ultrasonic anemometer for the measurement of wind speed and direction. wind speed U-V-W cartesian components, sonic temperature. Interfaces available RS232, RS485 MODBUS-RTU, RS422. Power supply: 12...30 Vdc. To be mounted on a mast. Free connector included.

HD2003.1R HD2003.1 with heating option.

HD52.3D... 2-axes static ultrasonic anemometer for the measurement of wind speed and direction, relative humidity and temperature (**optional**), diffuse solar radiation (**optional**) and barometric pressure (**optional**). RS232, RS485, RS422 and SDI-12 serial outputs, NMEA, MODBUS-RTU and SDI-12 communication protocols. **Heating option** available. Power supply: 10...30 Vdc. Installation on \varnothing 40 mm external and \varnothing 36 mm internal mast. Input with 19-pole M23 male connector and 19-pole M23 free female connector.

ACCESSORIES FOR WIND SPEED AND DIRECTION SENSORS

HD54.9K Transverse mast kit including: transverse mast \varnothing 40 mm and L=1500 mm, two extension bars \varnothing 40 mm and accessories.



CP2003/5 26-pole connection cable with watertight connector on one side, free wires on the other. L = 5 m. For HD2003...

CP2003/10 26-pole connection cable with watertight connector on one side, free wires on the other. L = 10 m. For HD2003...

CP52.5 12-wire connection cable with 19-pole M23 free female connector on one side, free wires on the other. L = 5 m. For HD52.3D...

CP52.10 12-wire connection cable with 19-pole M23 free female connector on one side, free wires on the other. L = 10 m. For HD52.3D...

ACCESSORIES

HD35AP-CFR21 Advanced version of the HD35AP-S software for the management of the data logging system in accordance with the **FDA 21 CFR part 11 recommendations**.

CP23 Direct USB connection cable with mini-USB male connector on the instrument side and A-type USB male connector on the PC side.

HD32WSF.S12 Solar panel power supply unit with SDI-12 interface for reading the power supply voltage. Includes a 12 Vdc /7.2 Ah battery and a charge regulator. The power supply output is the unregulated voltage of the internal battery. IP 65 housing. Suitable for fastening to a rod. Includes fastening accessories.

HD32MT.SWD 100...240 Vac / 24 Vdc (adjustable) power supply unit with switch. IP 65 housing. Suitable for fastening to a rod. Includes fastening accessories.

HD2003.2.14 Three sectors flange for \varnothing 40 mm tube, 6 inputs \varnothing 16 mm.

HD2005.20 Tripod kit with adjustable legs for installing environmental sensors (pyranometers, temperature and humidity, etc.). Material: anodized aluminum.

Max. height 2 m. It can be fixed on a flat base with screws or to the ground with pegs. Foldable legs for the transport.

HD2005.20.1

Tripod kit with adjustable legs for installing environmental sensors (pyranometers, temperature and humidity, etc.). Material: anodized aluminum. Max. height 3 m. It can be fixed on a flat base with screws or to the ground with pegs. Foldable legs for the transport.