Member of GHM GROUP

English

Operating manual

GSM/GPRS Data Logger
HD33[L]M-MB.2



Companies / Brands of GHM

Members of GHM GROUP:

GREISINGER
HONSBERG
Martens
IMTRON
DeltaOHM
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www.deltaohm.com

Keep for future reference.

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1 INTRODUCTION

The HD33[L]M-MB.2 data logger allows several physical quantities to be monitored in a large variety of application fields.

To the "Master" **RS485 MODBUS-RTU** input you can connect a network of sensors for measuring, for example, temperature, humidity, atmospheric pressure, solar radiation, wind speed and direction, etc.

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. The contact can be configured as normally closed or normally open. 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.

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

If a pyranometer is connected, the daily Wh/m^2 (Wh = watt hour) are calculated.

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.

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.

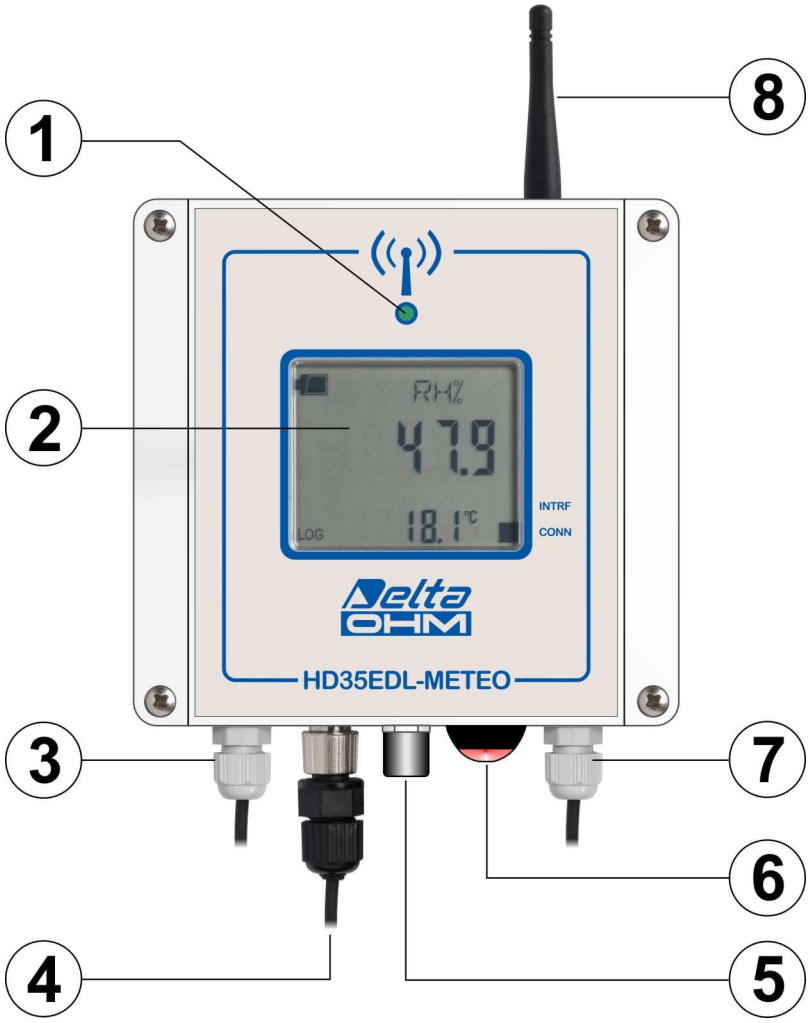
The data logger operates with 7…30 Vdc direct power supply voltage and can be powered by a solar panel through an appropriate **optional** power supply unit.

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.

IP 67 waterproof housing.

Optional custom LCD display.

2 DESCRIPTION



1. Bicolor LED: red blinking indicates that the instrument is powered, blinks green to signal the GSM activity.
2. Custom LCD display. The cyclic automatic scrolling of the measurements can be set with the HD35AP-S software (see the instructions of the software).
3. Power supply.
4. M12 connector for the connection of the rain gauge.
5. USB port with mini-USB connector (with protective cap).
6. Push-button for manually scrolling the measurements on the display.
7. RS485 MODBUS-RTU input.
8. GSM Antenna.

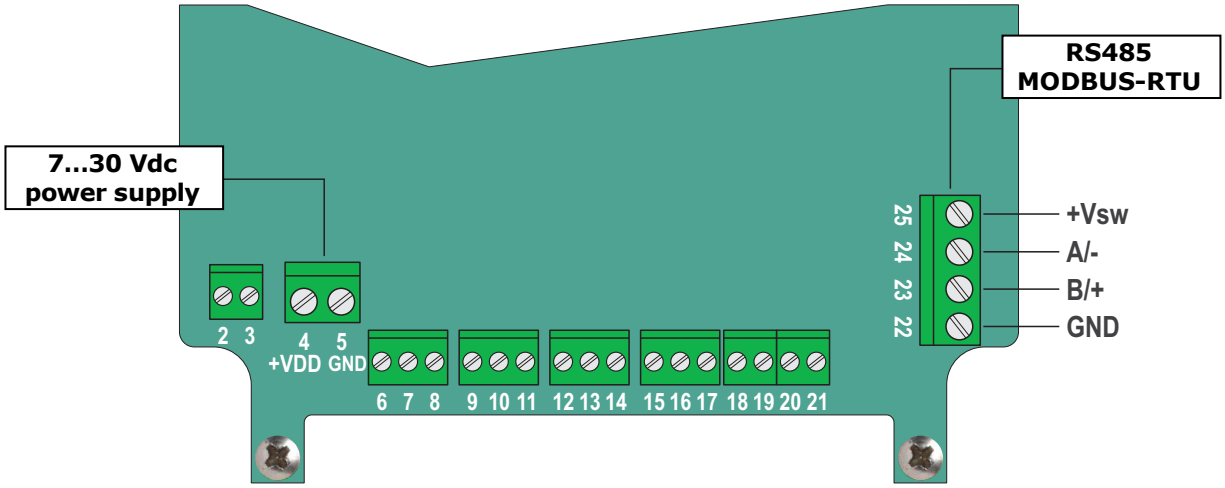
3 TECHNICAL CHARACTERISTICS

Power supply	7…30 Vdc
Power consumption	< 2 mA during measurement < 0.8 A peak during GSM activity
Antenna	External
Measuring interval	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Logging interval	1, 2, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 30, 60 min
Internal memory	Circular management or stop logging if memory is full. Number of samples: from 120,000 to 424,000 depending on the number of detected quantities.
Alarm	Acoustic through internal buzzer. Sending of alarm e-mail and SMS.
Display	Custom LCD (**optional**)
LED indicator	2-color LED: power on (blinks red), GSM activity (blinks green)
Inputs for external probes	RS485 MODBUS-RTU input and input for rain gauge with contact output.
Connection to PC	USB port with mini-USB connector
Operating conditions	-20…+70 °C (with LCD) or -40…+70 °C (without LCD) 0…100 %RH
Weight	1 kg approx. (including shield and fixing clamping)
Housing	Dimensions: 122 x 120 x 56 mm (excluding external antenna) Material: Polycarbonate (PC) Protection degree: IP 67 (with protective cap on the USB connector)
Installation	Fixing to a 40 mm diameter mast through the clamping HD2003.77/40 (**optional**). Protection shield against solar radiations (**optional**) for outdoor installation.

The measurement characteristics depend on the sensors connected.

4 CONNECTIONS

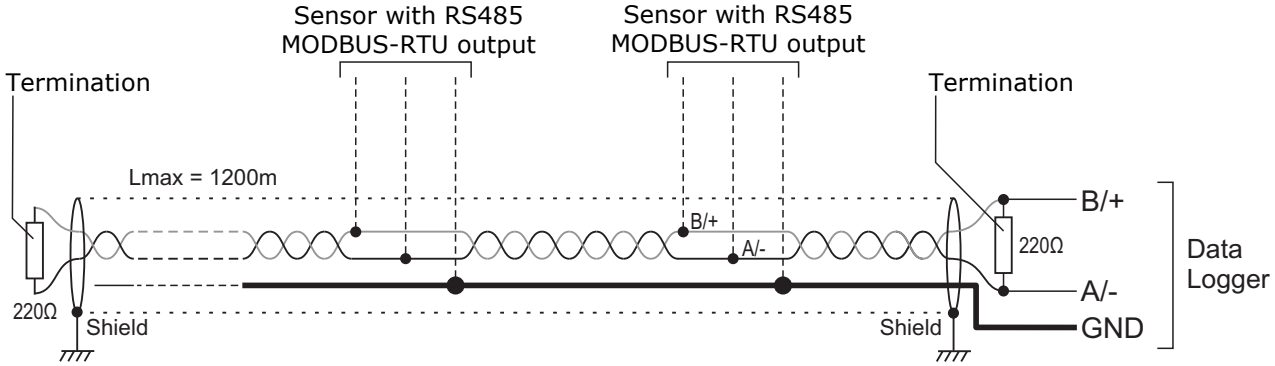
The power supply and the RS485 MODBUS-RTU sensors network are connected to the internal terminal header via the cable glands at the bottom of the housing.



+Vsw is the switched power supply output that allows powering the sensors only when the measurements has to be carried out. The power output, when enabled, has the same value as the power input.

RS485 connection:

Thanks to RS485 connection, several instruments can be connected in a multi-point network. The instruments are connected in sequence by means of a shielded cable with twisted pair wires for signals and a third wire for the ground.



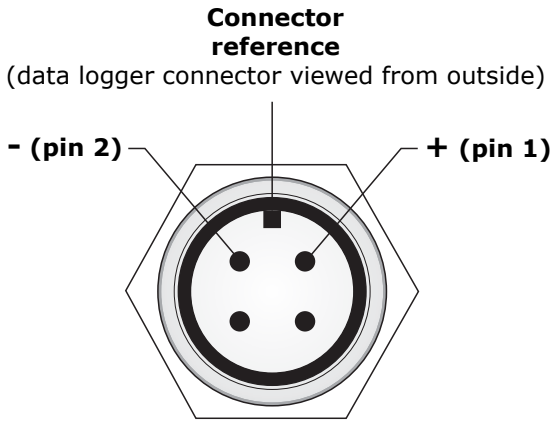
Line terminations must be placed at the ends of the network. The cable shield must be connected to both ends of the line.

The maximum number of devices that can be connected to the line (Bus) RS485 depends on the load characteristics of the devices to be connected. The RS485 standard requires that the total load doesn't exceed 32 (Unit Loads). If the total load is higher than 32 unit loads, divide the network in segments and add a signal repeater between a segment and the following. A line termination must be placed at both ends of each segment.

The cable maximum length depends on the transmission speed and on the cable characteristics. Typically, the maximum length is 1200 m. The data line must be kept separated from any power lines to avoid interferences to the transmitted signal.

Each instrument in the RS485 network is univocally identified by an address ranging within 1 and 247. **No more than one transmitter with the same address can be present in the same network**.

Ran gauge connection:



USB connection:

The data logger can be connected to a PC through the mini-USB connector located at the bottom of the housing. Remove the connector protective cap and connect the **CP23** cable.

USB connection doesn't require the installation of drivers: when the data logger is connected to a PC, Windows® operating system automatically recognizes the instrument as an HID device (Human Interface Device) and uses the drivers already included in the operating system.

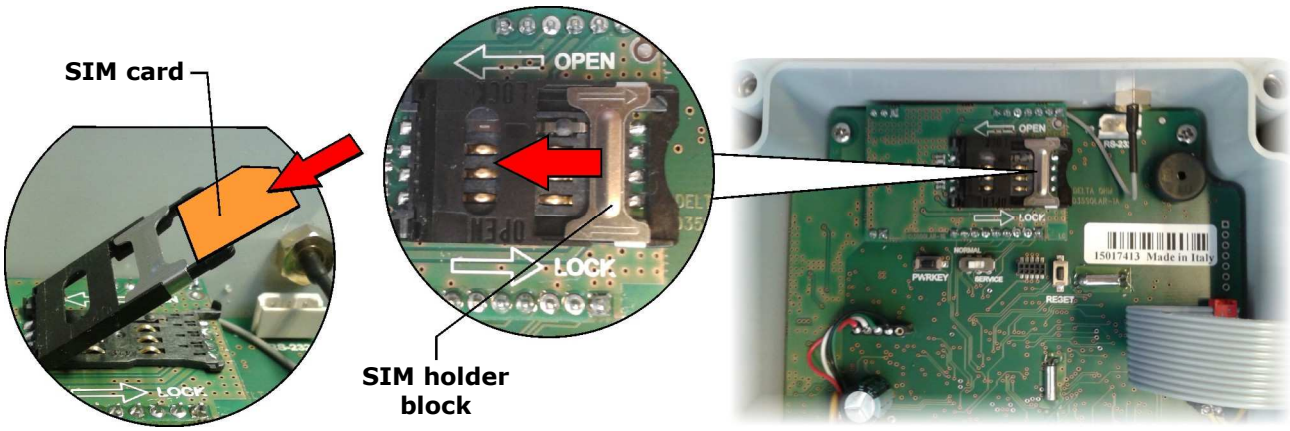
The data logger must be powered separately, it is not powered by the PC USB port.

When the data logger is not connected to the PC, replace the mini-USB connector protective cap to ensure the watertight integrity of the instrument.

5 SIM CARD

In order to use the GSM functionalities, a **SIM** card enabled for data transmission must be inserted into the data logger. The card should be requested to an operator that has an adequate coverage of the GSM network in the place where the data logger will be installed. To insert the card, proceed as follows.

1. Disconnect the power supply.
2. Unscrew the 4 front screws on the housing and remove the cover.
3. Push the metal block of the SIM tray in the direction of the arrow OPEN, and rotate the tray upward.



4. Insert the SIM card into its tray so as the SIM card contacts face down and correspond to the contacts on the electronic board. The SIM has to be inserted between the metal block and the plastic part.
5. Put the SIM tray back in place and push the metal block in the direction of the arrow LOCK.
6. Close again the housing by fixing the 4 front screws.

Through the HD35AP-S software, set the necessary information for GSM operation: SIM PIN, name of the APN access point, e-mail account and addresses, FTP address, telephone numbers, data transmission mode, etc. (see chapter "GSM Options" of the software online help).

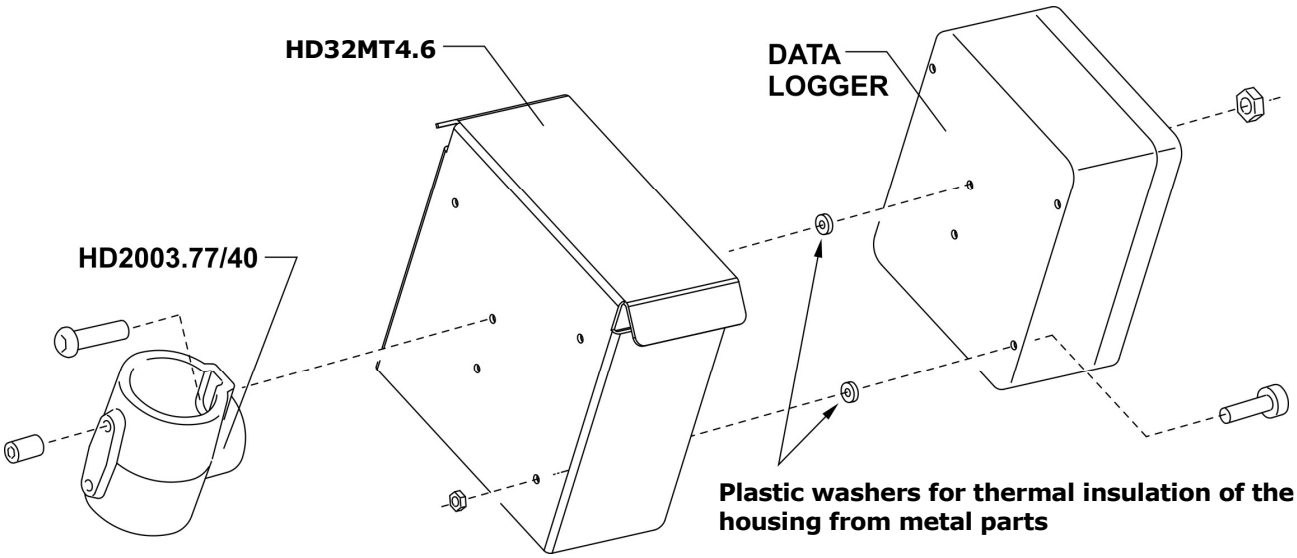
Note: the NORMAL/SERVICE switch located under the SIM card must be in NORMAL position. The SERVICE position and the PWRKEY button are used to update the GSM module firmware.

The connection symbol (CONN) on the display is ON when the instrument is connected to the GSM network (the symbol blinks while connecting).

Among the information that you can scroll on display with the button in the lower part of the data logger, there is also the strength RSSI (Received Signal Strength Indication) in dBm of the GSM signal received.

6 INSTALLATION

The data logger can be fixed to a wall or, for outdoor installations, to a 40 mm diameter mast by means of HD2003.77/40 clamping.



For outdoor installations, use the optional protection shield against solar radiations.

Data loggers supplied with clamping already mounted on the back of the housing are equipped with protection devices against over-voltages connected to the clamping. For a correct operation of the protecting devices, the yellow/green wire with fast-on connector connected to the clamping should be connected to ground.

7 HD35AP-S SOFTWARE

The HD35AP-S software allows:

- Configuring the data logger: measurements to be displayed, alarm thresholds and hystereses, logging and transmitting intervals, date and time, etc. (see chapters "data loggers configuration", "Alarms configuration", "GSM settings" and "Clock setting" of the software online help).
- Transferring stored data to PC (see chapters "Data download" and "Data download from FTP" of the software online help).
- Displaying measurements in real time, also in graphic format (see chapter "Monitor" of the software online help).
- Managing the graphical representation, print and export of acquired data (see chapter "Displaying data in the database" of the software online help).

For the connection of the data logger to the HD35AP-S software see chapter "Connection" of the software online help.

8 SMS COMMANDS

SMS messages containing commands can be sent by a mobile phone to the data logger. The SMS must be sent to the number of the SIM card inserted into the data logger. The following table lists the available commands:

SMS commands

Command	Description
RESET	Reset of the device
EMAIL-ON	Activates periodic download of measurement data via e-mail
EMAIL-OFF	Deactivates periodic download of measurement data via e-mail
EMAIL-PERIOD= *period index*	Set the transmission interval via e-mail, where *period index*: 0->15 min, 1->30 min, 2->1 hour, 3->2 hours, 4->4 hours, 5->8 hours, 6->12 hours, 7->24 hours, 8->2 days, 9->4 days, 10->1 week
EMAIL-FORMAT= *format index*	Set the format of the data sent via e-mail, where *format index*: 1->log (format for database), 2->csv (format for Excel®), 3->log+csv
EMAIL-DL-START	Activates immediate data download by e-mail starting from the last measurement transmitted
EMAIL-DL-FROM=*YYYY/MM/DD HH:MM:SS*	Downloads data by e-mail starting from the specified date, where YYYY: year, MM: month, DD: day, HH: hour, MM: minutes, SS: seconds
EMAIL-DL-INTERVAL=*YYYY/MM/DD HH:MM:SS - YYYY/MM/DD HH:MM:SS*	Downloads by e-mail all data between the specified dates, where YYYY: year, MM: month, DD: day, HH: hour, MM: minutes, SS: seconds
EMAIL-ALARM-REPORT	Transmits by e-mail a report containing the measurements that can generate alarms
EMAIL-REPORT	Transmits by e-mail a report containing the current measurements
EMAIL-HELP	Transmits an e-mail containing a list of all SMS commands
FTP-ON	Activates the periodic download of measurement data via FTP
FTP-OFF	Deactivates the periodic download of measurement data via FTP
FTP-PERIOD= *period index*	Set the transmission interval via FTP, where *period index*: 0->15 min, 1->30 min, 2->1 hour, 3->2 hours, 4->4 hours, 5->8 hours, 6->12 hours, 7->24 hours, 8->2 days, 9->4 days, 10->1 week
FTP-FORMAT= *format index*	Set the format of the data sent via FTP, where *format index*: 1->log (format for database), 2->csv (format for Excel®), 3->log+csv
FTP-DL-START	Activates immediate data download by FTP starting from the last measurement transmitted
FTP-DL-FROM=*YYYY/MM/DD HH:MM:SS*	Downloads data via FTP starting from the specified date, where YYYY: year, MM: month, DD: day, HH: hour, MM: minutes, SS: seconds
FTP-DL-INTERVAL=*YYYY/MM/DD HH:MM:SS - YYYY/MM/DD HH:MM:SS*	Downloads by FTP all data between the specified dates, where YYYY: year, MM: month, DD: day, HH: hour, MM: minutes, SS: seconds
FTP-ALARM-REPORT	Transmits by FTP a report containing the measurements that can generate alarms
FTP-REPORT	Transmits by FTP a report containing the current measurements
FTP-HELP	Transmits by FTP a file containing a list of all SMS commands
SMS-ALARM-ON	Activates the transmission of alarm SMS for the overrun of the measurement thresholds (if the device is selected for sending alarm SMS)
SMS-ALARM-OFF	Deactivates the transmission of alarm SMS for the overrun of the measurement thresholds for the selected devices
EMAIL-ALARM-ON	Activates the transmission of e-mail measurements alarms (if the device is selected for sending alarm e-mail)
EMAIL-ALARM-OFF	Deactivates the transmission of e-mail alarms for measurement alarms
SMS-ALARM-REPORT	Indicates whether the measurements are in alarm. Only the selected measurements are taken into consideration for SMS alarms

Command	Description
SMS-DEVICE-ALARM-REPORT	Transmits via SMS a report of the measurements selected for SMS alarms
SMS-DEVICE-REPORT	Transmits via SMS a report of the measurements of the device
SMS-HELP	Transmits an SMS containing the list of all SMS commands
TCP-SERVER-ON	Activates a TCP connection with AP acting as a TCP server
TCP-SERVER-OFF	Deactivates the TCP connection with the device acting as a TCP server
TCP-CLIENT-ON	Activates a TCP connection with the device acting as a TCP client
TCP-CLIENT-OFF	Deactivate the TCP connection with the device acting as a TCP client
TCP-SERVER-ADDRESS="*server address***"**	Specifies the server address for TCP connection when the device acts as TCP client. The server-address string can be a domain or a IP address
TCP-SERVER-PORT=*port number*	Specifies the number of the TCP port used by the remote server to accept connections with the device when the device acts as TCP client
TCP-LISTEN-PORT=*port number*	Specifies the number of the TCP listening port used by the device when the device acts as TCP server
HTTP-ON	Activates the periodic upload of measurement data on the HTTP server
HTTP-OFF	Deactivates the periodic upload of measurement data on the HTTP server
HTTP-PERIOD= *period index*	Set the transmission interval via HTTP, where *period index*: -1⇒Real time, 0⇒15 min, 1⇒30 min, 2⇒1 hour, 3⇒2 hours, 4⇒4 hours, 5⇒8 hours, 6⇒12 hours, 7⇒24 hours, 8⇒2 days, 9⇒4 days, 10⇒1 week
HTTP-DL-START	Activates immediate data upload on the HTTP server starting from the last measurement transmitted
HTTP-DL-FROM=*YYYY/MM/DD HH:MM:SS*	Uploads data on the HTTP server starting from the specified date, where YYYY: year, MM: month, DD: day, HH: hour, MM: minutes, SS: seconds
HTTP-DL-INTERVAL=*YYYY/MM/DD HH:MM:SS - YYYY/MM/DD HH:MM:SS*	Uploads on the HTTP server all data between the specified dates, where YYYY: year, MM: month, DD: day, HH: hour, MM: minutes, SS: seconds
ADD-PHONE="*phone number***"**	Adds a phone number to the list of numbers considered for SMS alarms
CANC-PHONE	Delete my phone number and don't consider it any more for SMS alarms. The primary phone number cannot be deleted
ERASE-PHONE=*phone number index*	Deletes the phone number with specified index. This command is accepted only by the primary phone number
MEASURE-INTERVAL=*interval index*	Set the measuring interval, where *interval index*: 0->1 s, 1->2 s, 2->5 s, 3->10 s, 4->15 s, 5->30 s, 6->1 min, 7->2 min, 8->5 min, 9->10 min, 10->15 min, 11->30 min, 12->1 hour
LOG-INTERVAL= *interval index*	Set the logging interval, where *interval index*: 0->1 s, 1->2 s, 2->5 s, 3->10 s, 4->15 s, 5->30 s, 6->1 min, 7->2 min, 8->5 min, 9->10 min, 10->15 min, 11->30 min, 12->1 hour

Up to 16 commands can be written in the same text message, separated by spaces or commas.

For safety, commands are executed only if they are coming from the cell numbers set in the HD35AP-S software and if the SMS text starts with a user-defined key word. The key word is set through the HD35AP-S software, going to the menu " *GSM options* " at the item " *SMS recipients* " and setting the field " *SMS keyword* " (see chapter " *GSM settings* " of the software online help).

Example: supposing you entered the string "**>>>**" in the *SMS keyword* field and you wish to activate periodic download via e-mail of the measured data with an interval of 1 hour, you will have to send the following text message:

>>> EMAIL-ON EMAIL-PERIOD=2

With the commands EMAIL-HELP, FTP-HELP and SMS-HELP you can ask the base unit to send respectively by e-mail, to an FTP address and through SMS the complete list of the available SMS commands.

9 GPRS TCP/IP CONNECTION

Through GPRS TCP/IP protocol, it is possible to interact with the data logger from a remote PC with an Internet connection.

The connection can be of two types:

1) **Data Logger = Client** , **PC = Server**

   The data logger acts as TCP client and requests the connection to the PC, the PC acts as TCP server and waits for the connection request. The server IP address (PC or Router) must be public and can be either static or dynamic; if the IP address is dynamic, it is convenient to register the server to a DDNS (Dynamic Domain Name System) service.

2) **Data Logger = Server** , **PC = Client**

   The PC acts as TCP client and requests the connection to the data logger, the data logger acts as TCP server and waits for the connection request. The server IP address (data logger) must be public and static.

Connection Data Logger = Client , PC = Server

1. Open a port (port forwarding) in the Modem/Router through which your PC connects to Internet (follow the instructions of your Modem/Router).
2. Connect the data logger to a PC USB port and perform the connection procedure with the HD35AP-S software.
3. In the HD35AP-S software select *Instruments setup >> GSM options >> GPRS TCP/IP client settings* and set the server IP address or domain name and port number (number of the port opened in the Modem/Router).
4. Disconnect the data logger from the USB port.
5. In the HD35AP-S software select *Tools >> Type of connection*, select the *TCP server* option and set the number of the port opened in the Modem/Router.
6. In the HD35AP-S software, select the *Connect* icon.
7. Send to the data logger the SMS command **TCP-CLIENT-ON**.

If the connection is not established within 30 minutes after sending the SMS command TCP-CLIENT-ON, the command must be sent again.

Alternatively, the server IP address or domain name and port number can be set in the data logger without connecting the data logger to the PC and without the HD35AP-S software by using the SMS commands **TCP-SERVER-ADDRESS** and **TCP-SERVER-PORT**.

Connection Data Logger = Server , PC = Client

1. Open a listening port in the data logger by using the SMS command **TCP-LISTEN-PORT** (for example, TCP-LISTEN-PORT=2020).
2. Send to the data logger the SMS command **TCP-SERVER-ON**.
3. The data logger replies with a first SMS to confirm that the command has been accepted. Wait for a second SMS with the confirmation that the *TCP server* functionality has been activated and with the IP address (and port number) assigned to the data logger.
4. In the HD35AP-S software select *Tools >> Type of connection*, select the *TCP client* option and set the IP address and port number of the datalogger.
5. In the HD35AP-S software, select the *Connect* icon.

If the connection is not established within 1 hour after sending the SMS command TCP-SERVER-ON, the command must be sent again.

10 STORAGE OF INSTRUMENTS

Storage conditions of the instruments:

- Temperature: -20…+70 °C.
- Humidity: less than 90 %RH no condensation.
- For storage, avoid places where:
    - There is a high level of humidity;
    - Instruments are exposed to direct sun radiation;
    - Instruments are exposed to a high temperature source;
    - There are strong vibrations;
    - There is vapor, salt and/or corrosive gases.

11 SAFETY INSTRUCTIONS

General instructions for safety

These instruments have been manufactured and tested in compliance with the safety standards EN61010-1:2010 for electronic instruments of measure and left the factory in perfect safety technical conditions.

The regular functioning and operational safety of these instruments can be ensured only if all normal safety measures, as well as the specific measures described in this manual, are followed.

The regular functioning and operational safety of the instruments can only be guaranteed under the climatic conditions specified in the manual.

Do not use the instruments in places where there are:

- Corrosive or flammable gases.
- Direct vibrations or bumps to the instrument.
- High-intensity electromagnetic fields, static electricity.

Obligations of the User

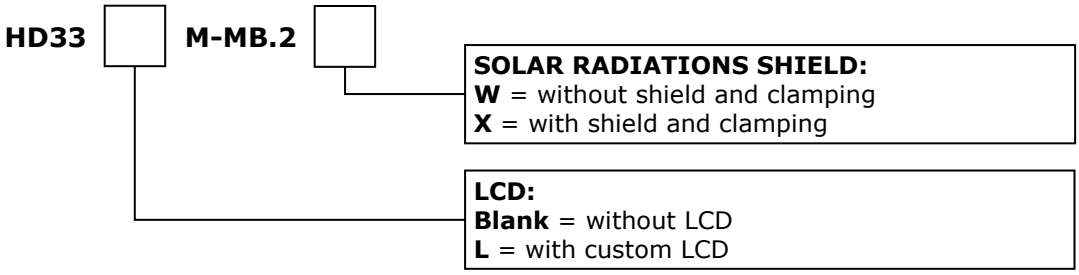
The user of the instruments must ensure compliance with the following standards and guidelines for the treatment of hazardous materials:

- EEC directives on workplace safety
- National low regulations on workplace safety
- Accident prevention regulations

12 ORDERING CODES

HD33M-MB.2 GSM/GPRS 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.



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.

HD2005.20 Tripod kit with adjustable legs for installing environmental sensors (pyranometers, temperature and humidity, etc.). Material: anodized aluminum. Max. height 225 cm. 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 335 cm. It can be fixed on a flat base with screws or to the ground with pegs. Foldable legs for the transport.

Delta OHM has a wide range of sensors for measuring environmental physical quantities. Please visit www.deltaohm.com or contact Delta OHM directly.

DELTA OHM metrology laboratories LAT N° 124 are accredited ISO/IEC 17025 by ACCREDIA for Temperature, Humidity, Pressure, Photometry / Radiometry, Acoustics and Air Velocity. They can supply calibration certificates for the accredited quantities.

Member of GHM GROUP

DICHIARAZIONE DI CONFORMITÀ UE
EU DECLARATION OF CONFORMITY

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Documento Nr. / Mese.Anno:
Document-No. / Month.Year : **5096 / 02.2020**

Si dichiara con la presente, in qualità di produttore e sotto la propria responsabilità esclusiva, che i seguenti prodotti sono conformi ai requisiti definiti nelle direttive del Consiglio Europeo:
We declare as manufacturer herewith under our sole responsibility that the following products are in compliance with the requirements defined in the European Council directives:

Codice prodotto:
Product identifier : **HD33[L]M-MB.2**

Descrizione prodotto:
Product description : **Datalogger con modulo GSM/GPRS**
Data logger with GSM/GPRS module

I prodotti sono conformi alle seguenti Direttive Europee:
The products conform to following European Directives:

Direttive / *Directives*	
2014/53/EU	Direttiva apparecchiature radio / *Radio Equipments Directive (RED)*
2011/65/EU	RoHS / *RoHS*

Norme armonizzate applicate o riferimento a specifiche tecniche:
Applied harmonized standards or mentioned technical specifications:

Norme / *Standards*	
EN 61010-1:2010	Requisiti di sicurezza elettrica / *Electrical safety requirements*
EN 61326-1:2013	Requisiti EMC / *EMC requirements*
EN 62479:2010	Esposizione umana a campi elettromagnetici / *Human exposure to EMF*
ETSI EN 301 511 V12.5.1	Dispositivi GSM / *GSM Devices*
ETSI EN 301 489-1 V2.1.1	EMC per dispositivi radio / *EMC for radio equipments*
ETSI EN 301 489-52 V1.1.0	EMC per dispositivi radio mobili di comunicazione cellulare / *EMC for Cellular Communication Mobile radio equipments*
EN 50581:2012	RoHS / *RoHS*

Il produttore è responsabile per la dichiarazione rilasciata da:
The manufacturer is responsible for the declaration released by:

Johannes Overhues

Amministratore delegato
Chief Executive Officer

Caselle di Selvazzano, 24/02/2020



Questa dichiarazione certifica l'accordo con la legislazione armonizzata menzionata, non costituisce tuttavia garanzia delle caratteristiche.
This declaration certifies the agreement with the harmonization legislation mentioned, contained however no warranty of characteristics.

GUARANTEE

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TERMS OF GUARANTEE

All DELTA OHM instruments are subject to accurate testing, and are guaranteed for 24 months from the date of purchase. DELTA OHM will repair or replace free of charge the parts that, within the warranty period, shall be deemed non efficient according to its own judgement. Complete replacement is excluded and no damage claims are accepted. The DELTA OHM guarantee only covers instrument repair. The guarantee is void in case of incidental breakage during transport, negligence, misuse, connection to a different voltage than that required for the appliance by the operator. Finally, a product repaired or tampered by unauthorized third parties is excluded from the guarantee. The instrument shall be returned FREE OF SHIPMENT CHARGES to your dealer. The jurisdiction of Padua applies in any dispute.



The electrical and electronic equipment marked with this symbol cannot be disposed of in public landfills. According to the Directive 2011/65/EU, the european users of electrical and electronic equipment can return it to the dealer or manufacturer upon purchase of a new one. The illegal disposal of electrical and electronic equipment is punished with an administrative fine.

This guarantee must be sent together with the instrument to our service centre.
IMPORTANT: Guarantee is valid only if coupon has been correctly filled in all details.

Instrument Code: **HD33[L]M-MB.2**

Serial Number _____

RENEWALS

Date _____	Date _____
Inspector _____	Inspector _____
Date _____	Date _____
Inspector _____	Inspector _____
Date _____	Date _____
Inspector _____	Inspector _____

CE

RoHS 2011/65/EU

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The quality level of our instruments is the result of the constant development of the product. This may produce some differences between the information written in this manual and the instrument you have purchased. We cannot completely exclude the possibility of errors in the manual, for which we apologize.

The data, images and descriptions included in this manual cannot be legally asserted. We reserve the right to make changes and corrections with no prior notice.

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V2.0
09/04/2020