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senseca HD50R-MB Ethernet Data Logger Instruction Manual

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senseca HD50R-MB Ethernet Data Logger

Product Information

Specifications

- **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. The number of storable samples is from 259,000 to 890,500 depending on the number of acquired quantities.
- **Interfaces:** Ethernet (RJ45 connector) with proprietary TCP/IP or Modbus TCP/IP protocol, USB (mini-USB connector), Master RS485 Modbus-RTU (for acquiring the sensors)
- **Alarm:** Acoustic through the internal buzzer and sending of e-mails
- **Power supply:** External 7…30 Vdc, 40 mA @ 24 Vdc
- **Consumption:** Power supply and LAN connection
- **LED indicators:** Red POWER LED for external power supply presence, Bicolor NETWORK LED for LAN connection status
- **Operating conditions:** –
- **Housing:** 35 mm DIN rail
- **Weight:** 200 g approx.
- **Installation:** DIN rail (3 moduli DIN)
- **Dimensions (mm):** –

Product Usage Instructions

Connecting Sensors

- To measure various physical quantities, connect sensors to the Master RS485 MODBUS-RTU input. You can

connect sensors for temperature, humidity, atmospheric pressure, solar radiation, wind speed, etc.

Rain Gauge Connection

- Use the voltage-free contact input to connect a rain gauge with the contact output. The data logger calculates the rainfall rate in mm/h and quantity on the last day.

Network Connection

- Connect the data logger to an Ethernet local network. It supports proprietary and Modbus TCP/IP protocols. Data can be sent to FTP, Cloud, and via email if connected to the Internet.

Setting Alarms

- Set two alarm thresholds for each detected quantity. An alarm is signaled acoustically and via email upon exceeding a threshold.
- Configure alarm hysteresis and delay for each quantity.

Installation

- Install the data logger on a 35 mm DIN rail for proper functioning.

Frequently Asked Questions

Q: Can I connect multiple sensors to the data logger?

A: Yes, you can connect multiple sensors using the Master RS485 MODBUS-RTU input for various measurements.

Q: How can I know if there is a problem with the LAN connection?

A: The Bicolor NETWORK LED indicates the status of the LAN connection. It blinks green during normal operation and red to signal connection issues.

Introduction

- The HD50R-MB 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.
- A voltage-free contact input allows connecting a rain gauge with contact output. 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.
- The data logger can be connected to an Ethernet local network and allows the simultaneous operation of two communication protocols: proprietary and Modbus TCP/IP. The data logger manages up to 10 "TCP/IP Client" simultaneously. If the local network is connected to the Internet, the data can be regularly sent to an FTP
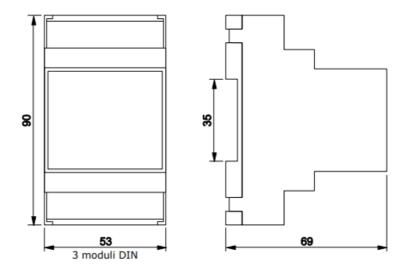
address, to the Cloud, and via e-mail.

For each detected quantity, two alarm thresholds can be set by the user. Exceeding a threshold is signaled acoustically, through the internal buzzer, and remotely, by sending alarm e-mails.

- An alarm hysteresis and a delay in the generation of the alarm can be configured for each detected quantity.
- The PC software HD35AP-S allows configuring the data logger, viewing the real-time measurements, and downloading and viewing the data into a database. The HD35AP-S software allows connecting one data logger at a time.
- If there are several data loggers in the local network, the PC software HDServer1 allows detecting automatically all the data loggers connected to the network and connecting simultaneously to all the data loggers; it also allows entering the data received by the data loggers into a database, viewing the data in the database and configuring the main measurement parameters of the devices (alarms, logging interval, …).
- The HD35AP-CFR21 software option (available with both HD35AP-S and HDServer1) allows the protection of recorded data and configuration in response to FDA 21 CFR part 11 recommendations.
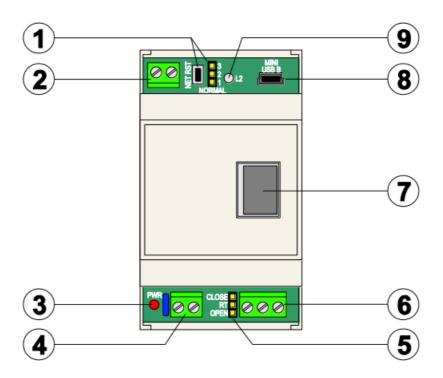- 35 mm DIN rail installation.

Technical specifications

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. The number of storable samples from 259,000 a 890,500 depending on the number of acquired quantities.
Interfaces	Ethernet (RJ45 connector) with proprietary TCP/IP or Modbus TCP/IP protocol USB (mini-USB connector) Master RS485 Modbus-RTU (for acquiring the sensors)
Alarm	Acoustic by means of the internal buzzer and sending of e-mails
Power supply	External 7…30 Vdc
Consumption	40 mA @ 24 Vdc
LED indicators	Power supply and LAN connection
Operating conditions	-10…+60 °C / 0…85 %RH non-condensing
Housing	PC+ABS
Weight	200 g approx.
Installation	35 mm DIN rail

Dimensions (mm)

3 moduli DIN

- The minimum interval may be greater than 1 s if the instrument acquires several sensors.
- The measurement characteristics depend on the sensors connected.
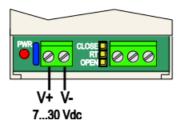
Description

1. Push-button and short-jumper for restoring the factory LAN configuration.
2. Input for contact rain gauge.
3. Red POWER LED: indicates the presence of the external power supply.
4. Power supply input.
5. RS485 line termination.
6. Input for RS485 Modbus-RTU sensors.
7. RJ45 connector for Ethernet connection.
8. Mini-USB connector.
9. Bicolor NETWORK LED: indicates the status of the connection to the LAN (blinks green when the unit is in normal operation mode; blinks red to signal problems in LAN connection).

Connections

POWER SUPPLY

RS485 MODBUS-RTU CONNECTION

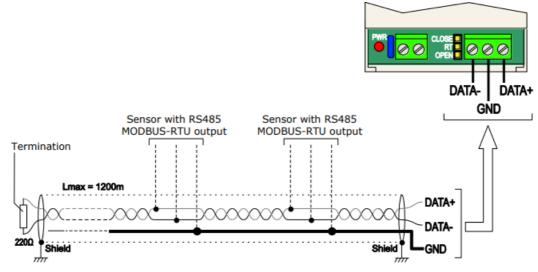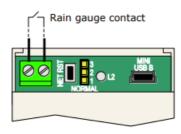- Thanks to the RS485 connection, several sensors can be connected in a multi-point network.
- The instruments are connected in sequence by means of a shielded cable with twisted pair wires for signals and a third wire for the ground.
- The RS485 ground is isolated from the power supply.

- Line terminations must be placed at the ends of the network. If the instrument is at one end of the line, insert the termination placing the short jumper next to the RS485 connector between the "RT" and "CLOSE" indications.
- Otherwise, remove the termina-tion placing the short jumper between the "RT" and "OPEN" indications.
- The cable shield must be connected to both ends of the line.
- 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 sensor in the RS485 network is univocally identified by an address ranging between 1 and 247. No more than one sensor with the same address can be present in the network.
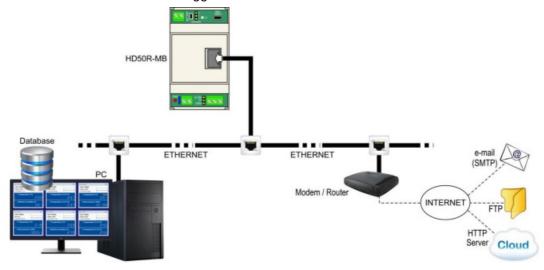
RAIN GAUGE CONNECTION

USB CONNECTION

- The data logger can be connected to a PC via the mini-USB connector and the CP23 cable.
- USB connection doesn't require the installation of drivers: when the data logger is connected to a PC, the Windows® operating system automatically recognizes the instrument as an HID device (Human Interface Device) and uses the drivers already included in the operating system.

ETHERNET CONNECTION

- Connect the RJ45 connector of the data logger to a socket of the local network via a standard Ethernet cable.

- The data logger is preset to get a dynamic IP address from the network DHCP server. The IP address can be displayed and changed by connecting the data logger to a PC via USB and using the HD35AP-S application software. A static IP address can also be set.
- The IP address can also be displayed by connecting the data logger to a PC via Ethernet and using the HDServer1 software, which can automatically detect the data loggers connected to the network.
- Thanks to the availability of two TCP/IP ports, each of which can operate with proprietary (for the connection with HD35AP-S software) or MODBUS TCP/IP protocol, and ten sockets (in total, to be divided between the two ports), the data logger allows the simultaneous operation of two communication protocols (proprietary and Modbus TCP/IP) and manages up to 10 "TCP/IP Client" simultaneously.

The default setting of the ports is the following:

- **Port number** = 5100 for proprietary protocol (8 sockets)
- **Port number** = 502 for Modbus TCP/IP protocol (2 sockets)
- The Ethernet settings can be changed with the HD35AP-S software. It is possible to restore the factory parameters by placing the short jumper next to the NET RST push-button between the "2" and "3" indications and then pressing the NET RST push-button.
- After the reset, replace the short jumper between the "2" and "1 (NOR-MAL)" indications.
- If the local network is connected to the Internet, the data can be regularly sent to an FTP address, to the Cloud, and via e-mail (as attachments).
- **Note:** if the communication with the Cloud is used, the maximum number of "clients" with proprietary or MODBUS TCP/IP protocol is nine.

Software

- The parameters of the instrument (logging parameters, alarm thresholds, quantities to be acquired, network settings, etc.) can be configured by connecting the instrument to the PC via USB or Ethernet local network and using the HD35AP-S.
  Some basic parameters (alarms, logging interval, user code, …) can also be set with the HDServer1 application software.
- Both software can be downloaded from the website.
- To download the data in a database, the HD35AP-S (it allows connecting one data logger at a time) or HDServer1 (it allows connecting several data loggers simultaneously) application software and the MySQL database management system (included in the application software packages) must be installed.

HD35AP-CFR21 SOFTWARE OPTION

- The HD35AP-CFR21 option allows, in addition to the features of the basic software (both HD35AP-S and HDServer1), the protection of recorded data and instrument 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 instrument.
- The management of the user's access to the instrument 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.
- The HD35AP-CFR21 option works with a USB hardware key to be connected to any PC connected to the same local network of the PC in which the basic software is installed.

Modbus

The device's general information can be read through the function code 0x2B/0x0E:

- Manufacturer (Delta OHM)
- Model
- Firmware version
- The list of MODBUS registers is shown below. Depending on the connected sensors, some of the registers could not be significant for the system.

The following conventions have been used in the tables:

- **Type:** b = bit, B = 8 bits (Byte), W = 16 bits without sign (Word), SW = 16 bits with sign
- **(x10)** = decimal value expressed as an integer (e.g., if the content of the register is 184, the value is to be intended as 18,4).

- **(x100)** = centesimal value expressed as an integer (e.g., if the content of the register is 500, the value is to be intended as 5,00).
- The commands for requesting units of measurement return an index according to the correspondence indicated in the table below.

Indexes of the units of measurement

Index	Unit of meas.	Index	Unit of meas.	Index	Unit of meas.	Index	Unit of meas.	Index	Unit of meas.
0	°C	13	inchHg	26	J/m2	39	inch	52	l/min
1	°F	14	inchH2O	27	µJ/cm2	40	counts	53	gallon/min
2	%UR	15	kgf/cm2	28	V	41	mm/h	54	m3/min
3	g/m3	16	PSI	29	mV	42	inch/h	55	m3/h
4	g/kg	17	m/s	30	mA	43	counts/h	56	µmol/(m2s)
5	mbar	18	km/h	31	ppm	44	mW/m2	57	mm/day
6	bar	19	ft/s	32	Hz	45	m	58	kV
7	Pa	20	mph	33	%	46	s	59	A
8	hPa	21	knot	34	degrees	47	µW/lumen	60	kA
9	kPa	22	W/m2	35	lux	48	dB		
10	atm	23	µW/cm2	36	m2/s	49	dBA		
11	mmHg	24	Wh/m2	37	g (*)	50	kWh		
12	mmH2O	25	kWh/m2	38	mm	51	l/s	255	Not Defined

(*) Gravity acceleration

Discrete Inputs – Read-only parameters

Address	Type	Discrete Input description
7	b	If 1, at least a quantity is in alarm.

Coils – Read/Write parameters

Address	Type	Coil description
1	b	Logging status: 0=active, 1=inactive
2	b	Logging mode: 0=non cyclic, 1=cyclic
3	b	Set 1 to delete the device logging memory. Bit zeroing is automatic.
4	b	Buzzer activation in case of measurement alarm: 0=no, 1=yes

Address	Type	Coil description
9	b	Protection of configuration with password: 0=no, 1=yes Changing the parameter requires the Administrator password (see Holding Register 100 36).

Input Registers – Read-only parameters

Address	Type	Input Register description
Measured values and status of measurement alarms		
0	SW	**TEMPERATURE** in the set measurement unit (x10).
1	B	Alarm for temperature: 0=OFF, 1= lower threshold alarm, 2= higher threshold alarm
2	SW	**RELATIVE HUMIDITY** in % (x10).
3	B	Relative humidity alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
4	SW	**DEW POINT** in the set measurement unit (x10).
5	B	Dew Point alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
6	SW	**PARTIAL VAPOR PRESSURE** in hPa (x100).
7	B	Partial vapor pressure alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.

8	SW	**MIXING RATIO** in g/Kg (x10).
9	B	Mixing ratio alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
10	SW	**ABSOLUTE HUMIDITY** in g/m3 (x10).
11	B	Absolute humidity alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
12	SW	**WET BULB TEMPERATURE** in the set measurement unit (x10).
13	B	Wet bulb temperature alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
18	SW	**SOLAR RADIATION** in W/m2.
19	B	Alarm for solar radiation: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
20	SW	**ILLUMINANCE** in lux.
21	B	Illuminance alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
24	SW	**ATMOSPHERIC PRESSURE** in the set measurement unit (the multiplier depends on the set unit).
25	B	Atmospheric pressure alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
30	SW	**DAILY SOLAR RADIATION** in Wh/m2.
31	B	Alarm for daily solar radiation: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
32	SW	**CO2** in ppm.

33	B	CO2 alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
86	SW	**RAIN RATE** in counts/h.
87	B	Rain rate alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
88	SW	**DAILY RAIN** in counts.
89	B	Daily rain alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.

Address	Type	Input Register description
92	SW	**WIND SPEED** (HD52.3D anemometer) in m/s (x100).
93	B	Wind speed (HD52.3D anemometer) alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
94	SW	**WIND DIRECTION** (HD52.3D anemometer) in degrees (x10).
95	B	Wind direction (HD52.3D anemometer) alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
118	SW	**AIR SPEED** (HD404…SR transmitter) in m/s (x100).
119	B	Air speed (HD404…SR transmitter) alarm: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
122	SW	**RAINFALL QUANTITY IN THE LAST HOUR** in counts.
123	B	Alarm for rainfall quantity in the last hour: 0=OFF, 1=lower threshold alarm, 2=higher threshold alarm.
Measurement units and resolution		

5000	W	**TEMPERATURE** unit of measurement: 0=°C, 1=°F.
5004	W	**DEW POINT** unit of measurement: 0=°C, 1=°F.
5012	W	**WET BULB TEMPERATURE** unit of measurement: 0=°C, 1=°F.
5021	SW	**ILLUMINANCE** resolution: -2=100, -1=10, 0=1
5024	W	**ATMOSPHERIC PRESSURE** unit of measurement: see the table of indexes
5025	SW	**ATMOSPHERIC PRESSURE** resolution: …, -2=100, -1=10, 0=1, 1=0.1, 2=0.01, …
5052	W	**WIND SPEED** measurement unit: see TAB 12.1
5053	SW	**WIND SPEED** resolution: …, -2=100, -1=10, 0=1, 1=0.1, 2=0.01, …
General information		
10000	W	Year of last measurement.
10001	W	The month of the last measurement.
10002	W	Day of last measurement.
10003	W	Hour of last measurement.
10004	W	Minutes of last measurement.
10005	W	Seconds of last measurement.
10013	W	Password level for the current connection: 0=no password, 1=user level, 2= administrator level

Holding Registers – Read/Write parameters

Address	Type	Holding Register description
Measurement alarm thresholds		
0	SW	**TEMPERATURE** lower alarm threshold in the set measurement unit (x10).
1	SW	Temperature higher alarm threshold in the set measurement unit (x10).
2	SW	**RH** lower alarm threshold in % (x10).
3	SW	RH higher alarm threshold in % (x10).
4	SW	**DEW POINT** lower alarm threshold in the set measurement unit (x10).
5	SW	Dew point higher alarm threshold in the set measurement unit (x10).
6	SW	**PARTIAL VAPOR PRESSURE** lower alarm threshold in hPa (x100).
7	SW	Partial vapor pressure higher alarm threshold in hPa (x100).
8	SW	**MIXING RATIO** lower alarm threshold in g/Kg (x10).
9	SW	Mixing ratio higher alarm threshold in g/Kg (x10).
10	SW	**ABSOLUTE HUMIDITY** lower alarm threshold in g/m3 (x10).
11	SW	Absolute humidity higher alarm threshold in g/m3 (x10).

Address	Type	Holding Register description
12	SW	**WET BULB TEMPERATURE** lower alarm threshold in the set measurement unit (x10).
13	SW	Wet bulb temperature higher alarm threshold in the set measurement unit (x10).
18	SW	Lower alarm threshold for **SOLAR RADIATION** in W/m2.
19	SW	Higher alarm threshold for solar radiation in W/m2.

20	SW	**ILLUMINANCE** lower alarm threshold in lux.
21	SW	Illuminance higher alarm threshold in lux
24	SW	**ATMOSPHERIC PRESSURE** lower the alarm threshold in the set measurement unit (the multiplier depends on the set unit).
25	SW	Atmospheric pressure higher alarm threshold in the set measurement unit (the multiplier depends on the set unit).
30	SW	Lower alarm threshold for **DAILY SOLAR RADIATION** in Wh/m2.
31	SW	Higher alarm threshold for daily solar radiation in Wh/m2.
32	SW	**CO2** lower alarm threshold in ppm.
33	SW	CO2 higher alarm threshold in ppm.
86	SW	**RAIN RATE** lower alarm threshold in counts/h.
87	SW	Rain rate higher alarm threshold in counts/h.
88	SW	**DAILY RAIN** lowers alarm threshold in counts.
89	SW	Daily rain higher alarm threshold in counts.
92	SW	**WIND SPEED** (ultrasonic anemometer) lower alarm threshold in m/s (x100).
93	SW	Wind speed (ultrasonic anemometer) higher alarm threshold in m/s (x100).
94	SW	**WIND DIRECTION** (ultrasonic anemometer) lower alarm threshold in degrees (x10).
95	SW	Wind direction (ultrasonic anemometer) higher alarm threshold in degrees (x10).
118	SW	**AIRSPEED** (HD404…SR transmitter) lower alarm threshold in m/s (x100).
119	SW	Airspeed (HD404…SR transmitter) higher alarm threshold in m/s (x100).

122	SW	Lower alarm threshold for **RAINFALL QUANTITY IN THE LAST HOUR** in counts.
123	SW	Higher alarm threshold for rainfall quantity in the last hour in counts.

General information

da 10000 a 10019	B	User code with ASCII codification. Acceptable values are in the set {32,…,126}.
10020	W	Current year
10021	W	Current month
10022	W	Current day
10023	W	Current hour
10024	W	Current minute
10025	W	Current second
10026	W	Measurement interval: 0=1s, 1=2s, 2=5s, 3=10s, 4=15s, 5=30s, 6=1min, 7=2min, 8=5min, 9=10min, 10=15min, 11=30min, 12=1h
10027	W	Logging interval: 0=1s, 1=2s, 2=5s, 3=10s, 4=15s, 5=30s, 6=1min, 7=2min, 8=5min, 9=10min, 10=15min, 11=30min, 12=1h
10036	W	Password to be supplied to enable configuration change commands. The reading provides a fixed value of 32768.
da 10037 a 10046	B	Device group with ASCII codification. Acceptable values are in the set {32,…,126}.

Address	Type	Holding Register description

da 20000 a 20011	B	User code with ASCII codification of measurement #1.
da 20012 a 20023	B	User code with ASCII codification of measurement #2.
da 20024 a 20035	B	User code with ASCII codification of measurement #3.
da 20036 a 20047	B	User code with ASCII codification of measurement #4.
da 20048 a 20059	B	User code with ASCII codification of measurement #5.
da 20060 a 20071	B	User code with ASCII codification of measurement #6.
da 20072 a 20083	B	User code with ASCII codification of measurement #7.
da 20084 a 20095	B	User code with ASCII codification of measurement #8.
da 20096 a 20107	B	User code with ASCII codification of measurement #9.
da 20108 a 20119	B	User code with ASCII codification of measurement #10.
da 20120 a 20131	B	User code with ASCII codification of measurement #11.
da 20132 a 20143	B	User code with ASCII codification of measurement #12.

Maintenance

- Do not use aggressive cleaning agents or incompatible with the materials indicated in the technical specifications. For cleaning, use a soft dry cloth or slightly dampened with clean water.

Safety instructions

- The instrument's proper operation and operating safety can be ensured only in the climatic conditions specified in this manual and if all standard safety measures as well as the specific measures described in this manual are followed.

Do not use the instrument in places where there are:

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

User obligations

- The instrument operator shall follow the directives and regulations below that refer to the treatment of dangerous materials.
- EU directives on workplace safety.
- National law regulations on workplace safety.
- Accident prevention regulations.

Accessories ordering codes

- The CP23 USB cable has to be ordered separately. The Ethernet cable is not included.
- **HD35AP-CFR21** Software option that adds to the features of the basic software (both HD35AP-S and HDServer1), the management of the data logging system in accordance with the FDA 21 CFR part 11 recommendations. For Windows operating systems.
- **CP23** USB connection cable with mini-USB connector on the instrument side and A-type USB connector on the PC side. Cable length 1.5 m.

WARRANTY

- The manufacturer is required to respond to the "factory warranty" only in those cases provided by Legislative Decree 6 September 2005 – n. 206. Each instrument is sold after rigorous inspections; if any manufacturing defect is found, it is necessary to contact the distributor where the instrument was purchased. During the warranty period (24 months from the date of invoice) any manufacturing defects found will be repaired free of charge. Misuse, wear, neglect, lack or inefficient maintenance as well as theft and damage during transport are excluded. Warranty does not apply if changes, tampering, or unauthorized repairs are made to the product.
- Solutions, probes, electrodes, and microphones are not guaranteed as improper use, even for a few minutes, may cause irreparable damages.
- The manufacturer repairs the products that show defects of construction in accordance with the terms and conditions of the warranty included in the manual of the product.

- For any dispute, the competent court is the Court of Padua.
- The Italian law and the "Convention on Contracts for the International Sales of Goods" apply.

TECHNICAL INFORMATION

- The quality level of our instruments is the result of continuous product development. This may lead to differences between the information reported in the manual and the instrument you have purchased.
- We reserve the right to change technical specifications and dimensions to fit the product requirements without prior notice.

DISPOSAL INFORMATION

- Electrical and electronic equipment marked with specific symbols in compliance with the 2012/19/EU Directive must be disposed of separately from household waste.
- European users can hand them over to the dealer or to the manufacturer when purchasing new electrical and electronic equipment, or to a WEEE collection point designated by local authorities. Illegal disposal is punished by law.
- Disposing of electrical and electronic equipment separately from normal waste helps to preserve natural resources and allows materials to be recycled in an environmentally friendly way without risks to human health.
- **senseca.com**
- **Senseca Italy S.r.l. Via Marconi, 5 35030 Selvazzano Dentro (PD) ITALY info@senseca.com**

Documents / Resources

	senseca HD50R-MB Ethernet Data Logger [pdf] Instruction Manual HD50R-MB Ethernet Data Logger, HD50R-MB, Ethernet Data Logger, Data Logger, Logger

References

- **User Manual**

- **User Manual**