- Temperature, humidity and differential pressure data logging
- Calculation of absolute humidity, Dew Point, wet bulb temperature, mixing ratio and partial vapour pressure
- Available version with **Auto-Zero circuit** for a higher long-term stability and temperature changes compensation.
- Connection to local network via Wi-Fi (IEEE 802.11b/g/n) or ETHERNET
- Multi-client integrated web server for monitoring the measurements and setting the instrument, even from mobile devices (smartphones and tablets)
- Supplied with PC software, for configuration, monitor and data download in a database
- Sending of data via e-mail, FTP and our portal
- Software option available for compliance to **FDA 21 CFR part 11** recommendations
- Alarm notification via e-mail when configurable measurement thresholds are exceeded
- Custom or graphic LCD
- Internal clock regularly synchronized with a reference server

Connectivity

The data logger can be connected to a local network via the **Wi-Fi** or **Ethernet** interface (the two interfaces are mutually exclusive; they can not be used simultaneously). The data logger 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 Internet, the data can be regularly sent to an **FTP** address, to an **HTTP server** (Cloud) and via **e-mail** (as attachments).

Multiple devices can be connected to the same local network, either via Wi-Fi (through a router or Wi-Fi access point) or via Ethernet. The data of all the devices connected to the network can be collected in the same database and can be viewed with a "Cloud" service, or can be downloaded via e-mail or FTP.

The **HDServer1** PC software allows downloading and viewing easily the data of multiple HD50 connected to the same local network. The IP scanner functionality of the software allows detecting all the HD50 available in the network.

Alarms

For each detected quantity, two alarm thresholds can be set by the user. Exceeding a threshold is signaled acoustically, by means of the internal buzzer, visually, by lighting the alarm LED on the front panel, 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.

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Integrated Web Server

Thanks to the integrated web server, you can configure the data logger and view the real time measurements from any PC, tablet or smartphone connected to the same local network of the data logger by simply using a web browser and typing the IP address of the data logger, without the need to install specific software.

The measurements in alarm appear on a red background that immediately highlights them. Measurements can be displayed graphically or in a table form. The data received with the MONITOR feature can be saved in a file (not in the database) and exported in CSV format.

Cloud

The data logger can automatically send, at regular intervals, the data to an HTTP server, and in particular to our portal. This allows you to view the da-ta 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 allows configuring the data logger, viewing the real time measurements both graphically and numerically, downloading the data in a database.

The **HD35AP-CFR21** option 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.

Internal clock

The internal clock can be regularly **synchronized** with a NIST reference server (if the data logger is connected to the local network via Wi-Fi or Ethernet and the Internet connection is available), thereby eliminating any problems due to the clock drift. The feature is particularly useful if you want to compare the measures acquired by various detecting systems at the same time.

Long-term stability

The data logger can be equipped with an **optional Auto-Zero circuit** which periodically corrects the offset of the differential pressure sensor, compensating the sensor drift due to aging or temperature changes.

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 full. The number of samples that can be stored is from 356,180 to 906,640 depending on the number of quantities selected for logging.
Interfaces	Wi-Fi (IEEE 802.11b/g/n) and ETHERNET (RJ45 connector)
Protocols	Proprietary, Modbus TCP/IP, SMTP, FTP, HTTP, NIST
Wi-Fi security settings	WEP64, WEP128, WAP, WAP2
Alarm	Acoustic by means of the internal buzzer, LED on the front panel, sending of e-mails.
Power supply	External 7...30 Vdc (no internal battery)
Power consumption	Average: 40 mA @ 24 V / 80 mA @ 12 V Peak: < 200 mA
Display	Optional custom or graphic LCD
LED indicators	Power supply, Network connection (LAN/WLAN) and Alarm
Operating temperature and humidity	-20...+70 °C / < 100%RH non-condensing without Auto-Zero circuit -5...+50 °C / < 100%RH non-condensing with Auto-Zero circuit
Housing	Material: Polycarbonate Dimensions: 130 x 90 x 40 mm (156 x 90 x 44 mm with flanges) Protection degree: IP 54 (with protective cap on RJ45 connector)
Weight	300 g approx.
Installation	Wall mount, indoor

Measurement characteristics:

Temperature	
Sensor	NTC 10 kΩ @ 25 °C
Measuring range	-40...+105 °C
Resolution (of the instrument)	0.1 °C
Accuracy	± 0.3 °C in the range 0...+70 °C / ± 0.4 °C outside
Stability	.1 °C/year

Relative humidity	
Sensor	Capacitive
Measuring range	0...100 %RH
Resolution (of the instrument)	0.1 %
Accuracy	± 1.8 %RH (0..85 %RH) / ± 2.5 %RH (85..100 %RH) @ T=15...35 °C ± (2 + 1.5% of the measure)% @ T=remaining range
Sensor operating temperature	-20...+80 °C
Response time	T_{90} < 20 s (air speed = 2 m/s, without filter)
Temperature drift	±2% in all the operating temperature range
Stability	%/year

Differential pressure	
Sensor	Piezoresistive
Measuring range	± 125 Pa
Resolution (of the instrument)	0.01 Pa
Accuracy	± 0.35% of measuring span[1] typ. (Total Error Band[2])
Offset long-term drift	± 0.25% of measuring span[1]/year typ. @ 25 °C without Auto-Zero circuit < ±0.1 Pa with Auto-Zero circuit

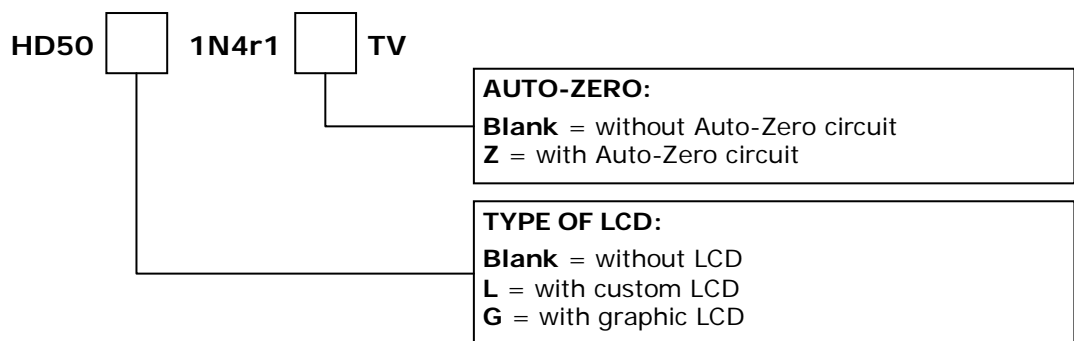| Offset temperature shift	±0.5% of measuring span[1] typ., relative to 25°C in the range 0...70 °C without Auto-Zero circuit < ±0.1 Pa with Auto-Zero circuit
Span temperature shift	±0.5% of measuring span[1] typ.
Connection	Tube Ø 4 mm.

[1] Measuring span is twice the full scale pressure (i.e. 2x125=250 Pa).

[2] Total Error Band consists of offset and span temperature and calibration errors, linearity and pressure hysteresis errors, offset warm-up shift, offset position sensitivity and long-term offset drift errors.

ORDERING CODES

HD50...   Data logger with integrated **Web Server**. It measures temperature, humidity and differential pressure. **Wi-Fi** and **Ethernet** connection. It stores the measures in the internal memory and transmits the acquired data to an **FTP** address, to an **HTTP server** (Cloud) and via **e-mail**. **Optional LCD display**. Acoustic alarm with internal buzzer. **Optional Auto-Zero circuit**. External 7...30 Vdc power supply. It includes **HD35AP-S** and **HDServer1** softwares downloadable from our web site. Supplied with: pair of flanges for wall mounting, adapter from M8 connector to screw terminals for connecting the power supply, operating manual.

The SWD10M8 power supply or the CPM8... power supply cable have to be ordered separately. The Ethernet cable is not included.

HD50 ☐ 1N4r1 ☐ TV

AUTO-ZERO:
Blank = without Auto-Zero circuit
Z = with Auto-Zero circuit

TYPE OF LCD:
Blank = without LCD
L = with custom LCD
G = with graphic LCD

Accessories

HD35AP-CFR21   Advanced version of the PC application software including, in addition to the features of the basic software, the management of the data logging system in accordance with the **FDA 21 CFR part 11 recommendations**. For Windows® operating systems.

CPM8.2   Power supply cable. Length 2 m. M8 connector on one side, free wires on the other.

CPM8.5   Power supply cable. Length 5 m. M8 connector on one side, free wires on the other.

CPM8.10   Power supply cable. Length 10 m. M8 connector on one side, free wires on the other.

CONM8H   Adapter from M8 connector to screw terminals.

SWD10M8   Stabilized mains power supply 100-240 Vac / 12 Vdc-1A. M8 connector.

HD75   Saturated solution to check Relative Humidity probes at 75% RH, includes ring adapter for 14 mm diameter probes, thread M12×1.

HD33   Saturated solution to check Relative Humidity probes at 33% RH, includes ring adapter for 14 mm diameter probes, thread M12×1.

HD11   Saturated solution to check Relative Humidity probes at 11% RH, includes ring adapter for 14 mm diameter probes, thread M12×1.

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