



HD50CR - CLEANROOM PRESSURE TRANSMITTER AND DATA LOGGER

The HD50CR is a relative or differential low-pressure transmitter and data logger designed for flush-mounted installation. With a measuring range of ± 125 Pa and a resolution of 0.01 Pa, it provides continuous monitoring of pressure conditions in cleanrooms and other controlled environments.

The high-accuracy, temperature-compensated piezoresistive sensor ensures excellent linearity, repeatability and long-term stability. Automatic zero calibration compensates for sensor drift and maintains stable measurements without requiring periodic manual zero adjustment.

An optional combined temperature and relative humidity probe extends the system to environmental monitoring. In addition to temperature and relative humidity, the instrument calculates dew point, absolute humidity and wet-bulb temperature.

STABLE MONITORING AND IMMEDIATE ALARMS

Two alarm thresholds can be configured for each measured quantity. When a threshold is exceeded, the instrument can generate an acoustic warning through the internal buzzer, activate the front alarm LEDs and send alarm notifications by e-mail.

Alarm hysteresis and activation delay can be configured independently for each quantity, helping to prevent unwanted alarms caused by short-term fluctuations.

CONNECTED DATA LOGGING

The HD50CR combines internal data logging with analog, RS485 Modbus-RTU, Ethernet and USB connectivity. The integrated web server allows users to configure the instrument and view real-time measurements from a PC, tablet or smartphone connected to the same network.

Recorded data can be downloaded to a local PC or sent automatically to an FTP server, Cloud platform or e-mail address. The optional HD35AP-CFR21 software supports data protection,

user management and activity traceability in response to FDA 21 CFR Part 11 recommendations.

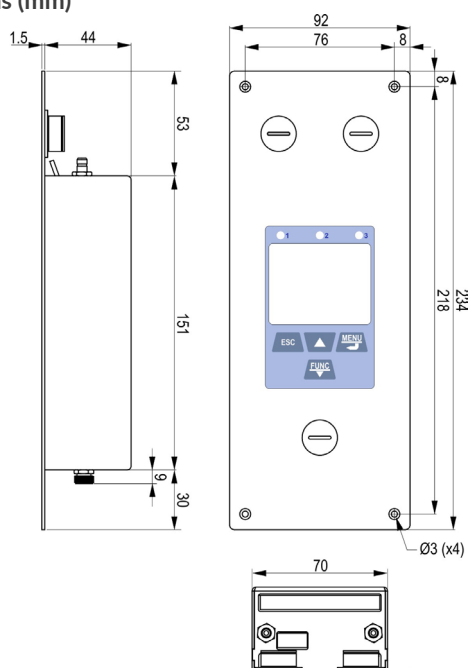
MAIN APPLICATIONS

- Cleanroom monitoring
- Air-conditioning and ventilation control
- Filter monitoring
- Pneumatic control systems
- Controlled environments
- Pharmaceutical and laboratory facilities

Technical specifications	
Differential Pressure	
Sensor	Piezoresistive
Measuring range	± 125 Pa
Resolution	0.01 Pa
Accuracy	$\pm 0.35\%$ typ. of measuring span (2 x full scale pressure)
Zero drift	Self-calibration
Temperature drift	$\pm 0.5\%$ typ. of measuring span (2 x full scale pressure)
Units of measurement	Pa, mmH ₂ O, mbar, inH ₂ O, mmHg, hPa
Connection	$\varnothing 6$ mm barbed inputs
Overpressure	24.9 kPa
Type of fluid	Air and neutral gases
Temperature (optional)	
Sensor	4-wire Pt100
Measuring range	-40...+150 °C
Resolution	0.01 °C
Accuracy	1/3 DIN
Stability	0.1 °C/year
Relative Humidity (optional)	
Sensor	Capacitive
Measuring range	0...100 %RH
Resolution	0.1 %RH
Accuracy	$\pm 1.8\%$ RH (0..85 %RH) / $\pm 2.5\%$ RH (85..100 %RH) @ T=15...35°C $\pm (2 + 1.5\%$ of the measure)% @ T=remaining range
Sensor operating temp.	-20...+80 °C
Response time	T ₉₀ < 20 s (air speed = 2 m/s, without filter)
Temperature drift	$\pm 2\%$ in all the operating temperature range
Stability	1%/year
General characteristics	
Display	Red electroluminescent
Keyboard	Yes (4 keys)
Configuration	Via front keys, via USB, Ethernet and RS485 Modbus
Alarm	Buzzer on, LED lighting and sending of e-mails
Analog output	3 x 0/4...20 mA (active) or 3 x 0...5/10 V galvanically isolated
USB	Yes, HID type (no USB drivers) with front Mini-USB type B connector
RS485	Yes, with Slave Modbus-RTU protocol
Ethernet	Yes, RJ45 connector
Web server	Yes, for configuration and viewing the real time measurements
Protocols	Modbus-RTU, Modbus TCP/IP, SMTP, FTP, HTTP, NIST

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 storable samples from 420,940 to 906,640 depending on the number of quantities selected for logging.
Power supply	24 Vac / Vdc $\pm$ 10%
Power consumption	5 W
Electrical connections	Screw terminal block (max. 1.5 mm ² / AWG16 cables)
Operating temperature	-10...+50 °C
Storage temperature	-10...+70 °C
Housing material	Stainless steel (AISI 316 front panel)
Weight	640 g approx.
Installation	Flush-mount
Protection degree	IP 65 (front panel, with protective cap on USB connector)

Dimensions (mm)



CONFIGURATION AND CONNECTIVITY

The instrument can be configured using:

- The four front keys
- The integrated web server
- HD35AP-S software via USB or Ethernet
- HDServer1 software via Ethernet for basic configuration of multiple instruments
- Modbus-RTU through the RS485 connection
- Modbus TCP/IP through the Ethernet connection

The HD35AP-S software allows the configuration and connection of one instrument at a time, real-time measurement display and data download to a database.

HDServer1 automatically detects multiple instruments connected to the same network and allows simultaneous data acquisition,

database management and basic configuration of all connected devices.

INSTALLATION

The HD50CR is designed for flush-mounted installation. A 196 × 70 mm wall cutout, at least 46 mm deep, is required. The instrument is secured using the four mounting holes on the stainless-steel front panel.

The IP65 protection rating applies to the front panel when the protective cap is correctly fitted on the USB connector.

ORDERING CODES

HD50CR - Relative or differential low-pressure transmitter and data logger designed for flush-mounted installation. The instrument is supplied factory calibrated. The HD35AP-S and HDServer1 software packages can be downloaded free of charge from the Senseca website.

The optional temperature and relative humidity probe, USB cable and HD35AP-CFR21 software must be ordered separately.

OPTIONAL PROBE

HP3517E... - Combined temperature and relative humidity probe with 4-wire Pt100 temperature sensor, Ø14 mm PBT filter with stainless-steel grid and 8-pole M12 connector.

If the probe is ordered together with the instrument, it is supplied factory calibrated with the HD50CR. If ordered separately at a later date, it must be calibrated in combination with the instrument.

Accessories	
CP23	Direct USB connection cable with Mini-USB male connector on the instrument side and USB Type-A male connector on the PC side.
HD35AP-CFR21	Advanced software option for HD35AP-S and HDServer1, providing data protection, user management and activity traceability in response to FDA 21 CFR Part 11 recommendations.
HD75	Saturated solution for testing the relative humidity sensor at 75% RH, including screw adapter for Ø14 mm probes.
HD33	Saturated solution for testing the relative humidity sensor at 33% RH, including screw adapter for Ø14 mm probes.
HD11	Saturated solution for testing the relative humidity sensor at 11% RH, including screw adapter for Ø14 mm probes.