

HDH-FL Wireless Room CO₂, Temperature and Humidity Transmitters

HDH-FL transmitters are designed to detect carbon dioxide concentration, temperature and relative humidity in the room spaces. The HDH-FL transmitters have built-in wireless interface transmitting the measurements to FLTA receiver. The CO₂ sensor will become self-calibrated regularly by using patented ABCLogic™ method. Local outputs, linear 0-10V signals related to CO₂-concentration, temperature and humidity, can be used for demand controlled ventilation locally.

HDH-FL wireless range uses 868.30 MHz frequency with FSK modulation to transmit data reliably. The transmission distance without repeaters is typically 40 to 100m in buildings, up to 500m line of sight. Up to 99 wireless sensors can be used in a single FLTA network. FLTA receivers have 0..10Vdc outputs as well as Modbus RTU communication built-in.

HDH-FL-N is like HDH-FL, but with a display. As a factory setting the display is scanning between temperature and CO₂ every 2 seconds. By pressing the button inside the desired display mode can be selected.



Model Type	Model	Description
	HDH-FL	Wireless Room CO ₂ and Temperature Transmitter
	HDH-FL-N	Wireless Room CO ₂ and Temperature Transmitter with Display
	HDH-FL-RH	Wireless Room CO ₂ , rH Humidity and Temperature Transmitter
	HDH-FL-RH-N	Wireless Room CO ₂ , rH Humidity and Temperature Transmitter with Display
Technical Data	Power supply	24Vac (15...28V) / 1VA 24Vdc (15...36V) / 1W
	Range (HDH-FL models):	CO ₂ : 0...2000ppm CO ₂ Temperature: 0..50°C
	Range (HDH-FL-RH models):	CO ₂ : 0...2000ppm CO ₂ Temperature: 0..50°C Humidity: 0..100%rH
	Accuracy - CO ₂	± 40ppm + 3% of the reading @ 25°C (ABCLogic™)
	Accuracy - Temperature	±0.5°C
	Stability / Year	<2% FS (ABCLogic™)
	Temperature dependence	0.2% FS / °C
	Pressure dependence	0.17% reading/mbar
	Operating temperature	0°C...+50°C
	Ambient humidity	0..95%rh (non-cond.)
	Response time (0...90%)	<1min
	Warm-up time	<10 min
	Outputs:	0..10V < 2mA
	Housing	ABS-plastic, IP 20

Technical Data Cont/d...	Transmission Frequency	868.30 MHz
	Transmission Power	+8 dBm
	Reception Sensitivity	-109 dBm
	Modulation Technology	FSK
	Transmission Range	Line of sight: Up to 500m In buildings: 20..100m, depending on the wall materials FLREP and FLREP-U modules can be used to extend the transmission range in difficult environments.
	Agency Approvals	EU Directive 2004/108 EMC Emissions EN61000-6-3: 2001 EMC Immunity EN61000-6-2: 2001
	Operating temperature	0°C...+50°C
	Ambient humidity	5...95%rh (non-cond.)
	Dimensions (Sensors)	86W x 85H x 30D mm

HDH-FL Wiring Terminals	1 - 24V	24Vac/dc power supply
	2 - 0V	0V common
	3 - CO2	CO2 output: 0..10Vdc = 0..2000ppm CO ₂
	4 - TE	Temperature output: 0...10Vdc = 0...50°C
	5 - AO3	%RH or selected controller output 0..10Vdc

Accessories for HDH-FL	Model	Description
	HDH-C	Calibration Tool for Non-Standard Environments
	FLSER	Service Tool for Addressing HDH-FL
	FLTA	Wireless Receiver with 8 x 0..10Vdc Outputs and Modbus

ABCLogic™ & Calibration ABCLogic™ is a patented self-calibration technique, that is designed to be used in applications where concentrations will drop to outside conditions (appr. 400 ppm) at least twice in a week period (= an unoccupied building). For applications that do not see periodic ambient conditions, ABCLogic can be turned off but a regular single point calibration of the sensor in 6 -12 months is necessary. Checking and calibration is recommended every 5th year even if ABCLogic is on.

HDH-FL Transmitter Start-Up

1. Install the device. Connect the power supply and outputs (if necessary). CO2 concentration output is available at terminal 3 and temperature output at terminal 4. At terminal 5 (AO3) may be either humidity output (%RH) if available or selected controller output.
2. Configure the Wireless Card sensor address (SID) and master ID (MID) at the power up using the FLSER service tool.
3. Let the transmitter be connected and warm-up for 10 min. The display (-N models) alternates CO2, temperature, (humidity %RH if chosen).

HDH-FL Wireless Network Addressing HDH-FL wireless transmitters operate at 868.30Mhz frequency and are transmitting measurements to the FLTA receivers. Each HDH_FL transmitter is required to be configured to operate in the specific FLTA network. Up to 99 wireless transmitters (HDH-FL, TEFL, TEU-FL, LA-FL, KLU-FL) can operate in a single FLTA network.

CONFIGURING HDH- WIRELESS CO2 TRANSMITTER NETWORK ADDRESSES

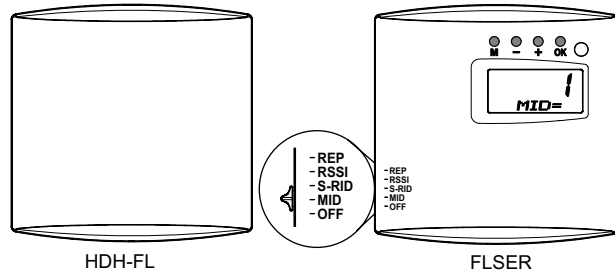
To configure the addresses FLSER service tool is required. This tool is used for addressing, device configuration, testing signal strengths and it can act as a temporary repeater for the wireless network design.

Please follow the following steps to address the HDH-FL transmitters:-

1. Position FLSER service tool close to HDH-FL transmitter. Select MID position on the FLSER service tool. Select using +/- buttons the required Master ID (MID 1..63).

Note: Typically the master ID is set as 1 if only one wireless FLTA network exists in the building. The matching master ID is set on the FLTA.

CONFIGURING HDH-FL

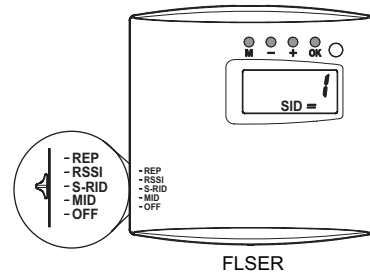


2. Please select S-RID on the FLSER service tool switch. SID is displayed on the screen. (Note: SID = OFF means that the sensor address has not been assigned and the sensor is dormant).

- Remove the HDH-FL sensor cover.

- Select sensor SID address by pressing + and - buttons on the FLSER tool.

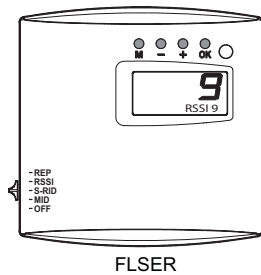
- Press OK button on FLSER after which the "WAIT" text starts to flash for 30 seconds on the FLSER service tool. Bring the FLSER service tool close to the HDH-FL and press S button on the HDH wireless card.



4. FLSER service tool sets the address of the HDH-FL sensor/transmitter. Once the HDH-FL has been successfully addressed the FLSER display shows OK.

5. The FLSER service tool now shows the signal strength from the HDH-FL to the service tool and back. Signal strength RSSI 1-2 = low signal quality, RSSI 3-5 = acceptable, RSSI 6-9 = good signal strength. The large number illustrates the FLSER service tool signal strength and the small number the HDH-FL signal strength.

6. Finally switch the FLSER switch to OFF position. Now the HDH-FL returns to normal mode and starts to communicate to the FLTA receiver.



Wireless Data Transmission Frequency

HDH-FL room CO2 and temperature transmitters send information to the FLTA every 1 minute.

Wireless FLTA Receiver Data Outputs (HDH-FL acts as a KLU-FL)

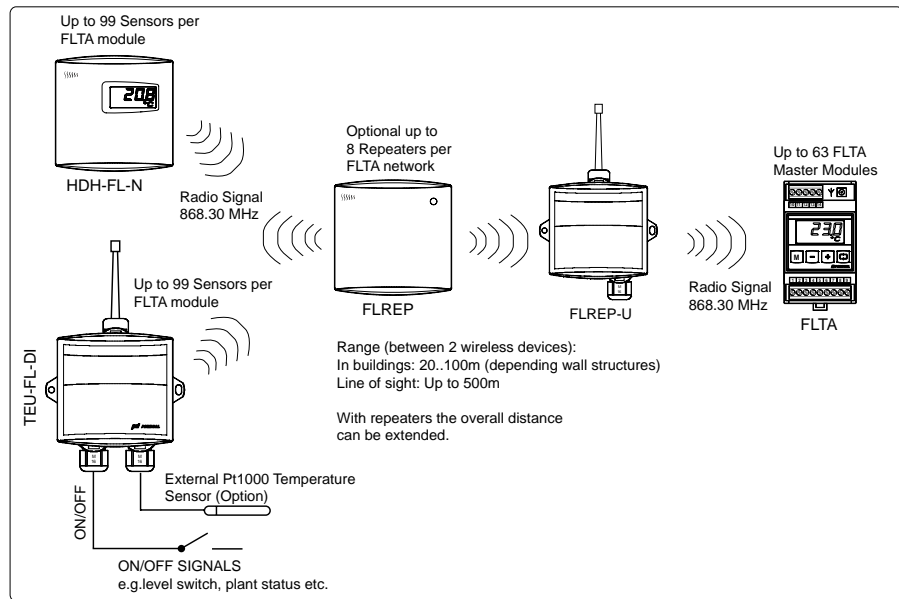
8 x 0..10Vdc Outputs

CO2 Measurement: 0...2,000 ppm = 0..10Vdc
 Temperature 0...50°C = 0...10V
 Humidity 0...100% = 0...10V

Modbus RS485

Modbus Function Code 04 - Input Registers
 CO2 Measurement: 0...2,000 ppm = 0...2,000 (0...2,000 ppm)
 Temperature -50...150°C = -500...1,500 (-50.0...+150°C)
 Humidity 0...100% = 0...1,000 (0..100% rH)

**Communication Diagram
Example for Wireless
Network**



Dimensions

