# Installation manual

## *CF3-W-US, CF3-W-US-Disp*

## CO$_2$ transmitter



CF3-W-US        CF3-W-US-Disp

## General

The IAQ-sensor product *CF3-W-US* (sensor for wall mounting) is designed to measure carbon dioxide (CO$_2$) in rooms. Option - Disp displays the measured CO$_2$ value in ppm (parts-per-million) on the LCD.

The units are designed for connecting to Direct Digital Control (DDC). The two parallel signal outputs OUT1 (0-10 V) and OUT2 (2-10 V or 4-20 mA) give linear signals corresponding to the measuring range.

The OUT2 output also indicates the *status* by setting the output voltage to 1 V or current to 2 mA when the sensor self-diagnostics detects any error.

### To open the wall mounted housing



Front        Insert screw driver
Push upwards to open        Front

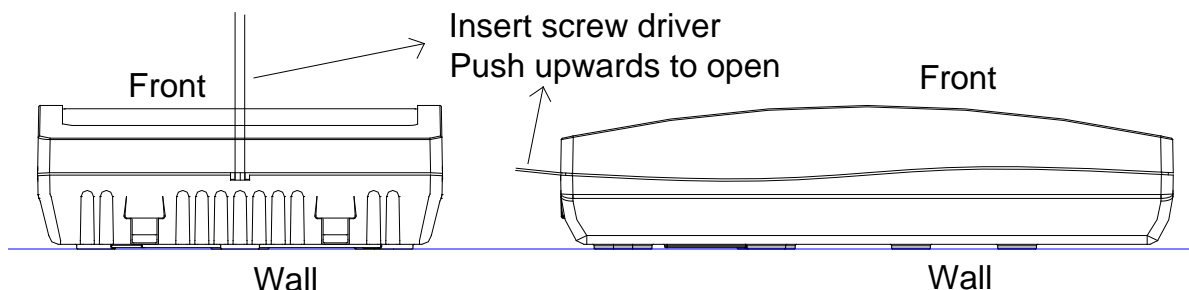Wall                                    Wall

*Figure 1 Closed housing seen from the top and the side. The housing is opened by inserting a screw driver and pushing to the front side of the housing. The locking hooks will then be released.*
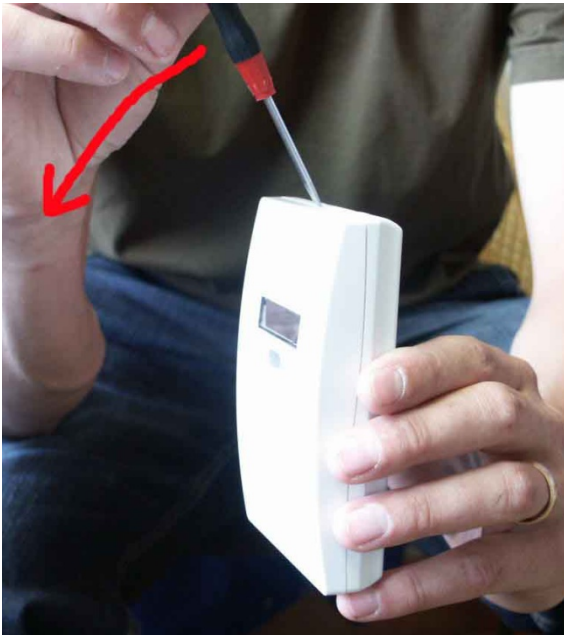
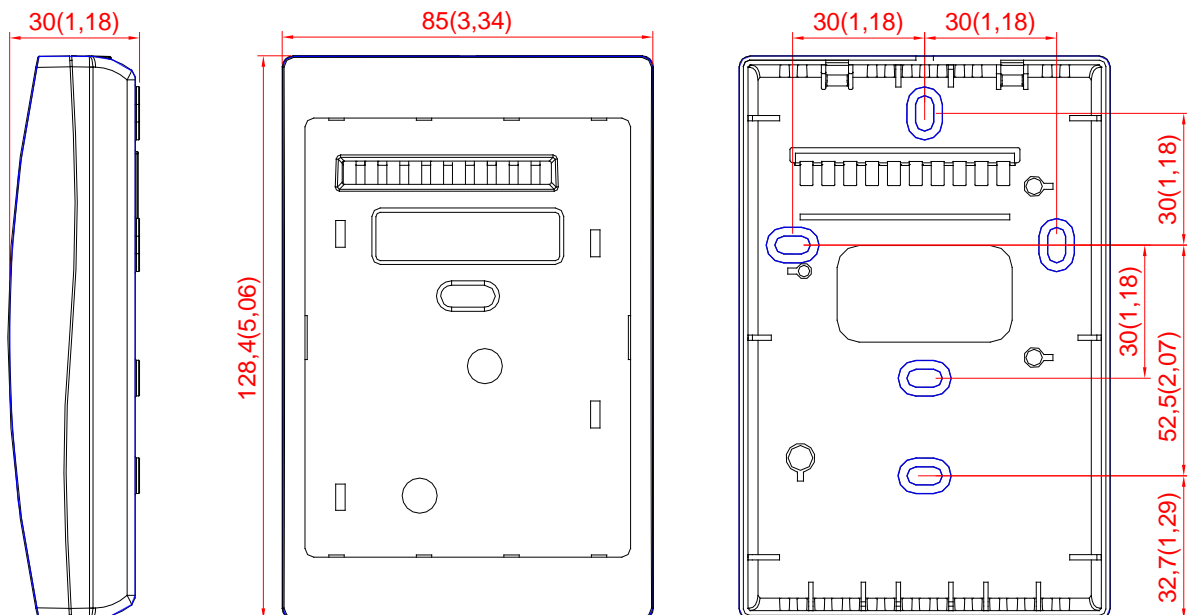| Figure 3 *Closed housing seen from the side The housing is opened by inserting a screw driver and pushing left (to the front side). The locking hooks will then be released.* | Figure 2 *Closed housing seen from the side Never push to the right. The locking hooks may break and the housing is damaged.* |

## Dimensions



30(1,18)  85(3,34)  30(1,18) 30(1,18)

128,4(5,06)

30(1,18)

30(1,18)

52,5(2,07)

32,7(1,29)

*Figure 4 The dimensions of the sensor in mm and (inches)*

# Electrical connections

**The power supply** has to be connected to **+** and ⏚. ⏚ is considered as system ground. *The same ground reference has to be used for the CF3-W-US unit and for the DDC/signal receiver.*

⚠️ **PLEASE NOTE! The same ground reference has to be used for the *CF3-W-US* unit and for the control system!**

| Terminal | Function | Electrical data | Standard settings | Settings of this sensor |
|---|---|---|---|---|
| ~ + | Power (+) | 24 VAC/DC+ (+-20%), 2W | | |
| ⏚ | Power ground (-) | 24 VAC/DC- | System voltage reference | |
| OUT(1) | Analogue output 1 (+) | 0-10 VDC | 0-2000 ppm $CO_2$ | |
| OUT(2) | Analogue output 2 (+) | 2,0…10,0 VDC or 4,0 … 20,0 mA | 0-2000 ppm $CO_2$ | |
| | | 0,9…1,6 VDC or 1.5 to 2,5 mA | Status = ERROR | |
| | | 0 VDC or 0mA | Status = NOT READY | |

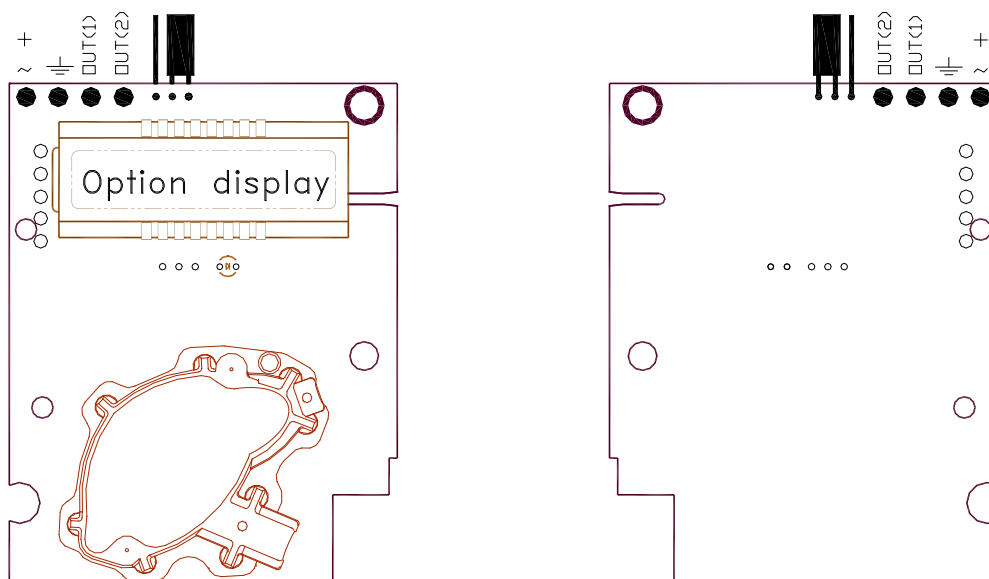*Table I. Connections of the main terminal of CF3-W-US*



*Figure 5 The CF3-W-US PCB seen from the front and the back. The OUT2 jumper is in the default position (voltage)*

# Configuration jumper for OUT2 output

The output OUT2 can be used as a voltage or current output. The output is configured by the jumper on top of the PCB. The configuration of the output can be changed by moving the jumper to the desired position. The output has to be reconfigured before the unit is powered up.
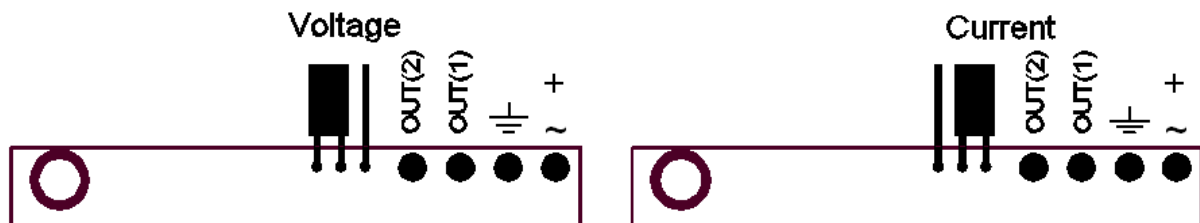


*Figure 6 The upper part of the CF3-W-US PCB seen from the back with the jumper in voltage (default) and current position*

# Self-diagnostics

The system contains complete self-diagnostic procedures that are executed automatically when the sensor is in operation. Sensors with display show a *wrench* if an error is found. The wrench is shown during the first seconds after power up and if the measuring range 2000 ppm is exceeded. The output OUT2 indicates the same information by setting the output to 1 V or 2 mA.

**PLEASE NOTE!**
**The sensor accuracy is defined at continuous operation (at least 3 weeks after installation)**