

## User Manual



# *tSENSE (Disp) T RH RL*

CO<sub>2</sub>-, temperature- and  
relative humidity transmitter



### General

*tSENSE (Disp)* for wall mounting measures indoor air carbon dioxide concentration, temperature and relative humidity in rooms. *tSENSE (Disp)* is available with or without colour touch display (LCD).

The unit connects to Direct Digital Control (DDC).

Linear outputs are pre-programmed as CO<sub>2</sub>-, temperature- and relative humidity transmitter.

Measuring ranges can be modified from PC (Windows) software UIP (version 5 or higher) and USB communication cable, alternative via Modbus or BACnet.

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# Display Overview

Will be added.

## Opening of housing

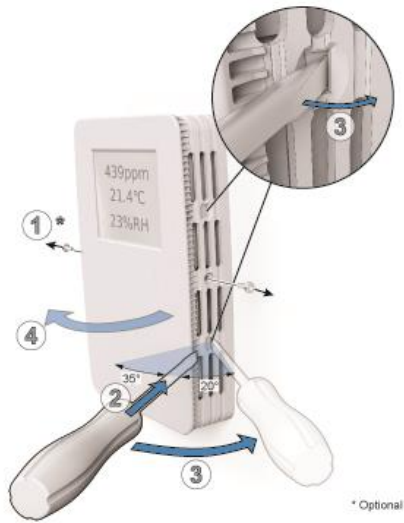


Figure 1

## Download of software UIP

[senseair.se/products/software/uiip-5/](http://senseair.se/products/software/uiip-5/)

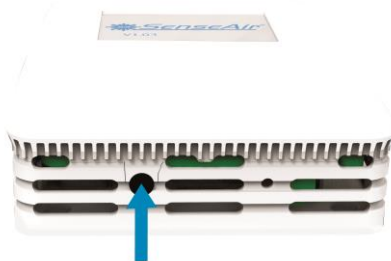















Figure 2: Connection to PC via phone jack  
Connect Interface cable USB – 3.5mm Art.no.:00-0-0070

## Check for updates

<p><b>1</b></p>	<p><b>2</b> New version available</p>	<p><b>2</b></p>
<p><b>3</b></p>	<p><b>4</b></p>	

## Enter PIN code

<p><b>0</b> Power ON</p> 	<p><b>1</b></p> <table border="1"> <tr><td>CO<sub>2</sub></td><td>429ppm</td></tr> <tr><td>Temperature</td><td>23.1°C</td></tr> <tr><td>Humidity</td><td>21%RH</td></tr> <tr><td colspan="2"></td></tr> </table>	CO <sub>2</sub>	429ppm	Temperature	23.1°C	Humidity	21%RH			<p><b>2</b> PIN1: 1111</p> <table border="1"> <tr><td>Enter PIN</td><td colspan="2">1111</td></tr> <tr><td></td><td>2</td><td>3</td></tr> <tr><td></td><td>5</td><td>6</td></tr> <tr><td></td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>	Enter PIN	1111			2	3		5	6		8	9	Del	0	«	<p><b>3</b></p> <table border="1"> <tr><td>CO<sub>2</sub></td><td>Screen</td></tr> <tr><td>Temperature</td><td>Set</td></tr> <tr><td>Humidity</td><td></td></tr> <tr><td></td><td>«</td></tr> </table>	CO <sub>2</sub>	Screen	Temperature	Set	Humidity			«
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Humidity																																		
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<p><b>4</b> PIN2: 2001</p> <table border="1"> <tr><td>Enter PIN</td><td colspan="2">2001</td></tr> <tr><td></td><td>2</td><td>3</td></tr> <tr><td></td><td>5</td><td>6</td></tr> <tr><td></td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>	Enter PIN	2001			2	3		5	6		8	9	Del	0	«	<p><b>5</b></p> <table border="1"> <tr><td>Meter</td></tr> <tr><td>Measurements</td></tr> <tr><td>Outputs</td></tr> <tr><td>Misc</td><td>«</td></tr> </table>	Meter	Measurements	Outputs	Misc	«													
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	8	9																																
Del	0	«																																
Meter																																		
Measurements																																		
Outputs																																		
Misc	«																																	

## Output Configurations

Terminal	Default Output	Default Output Range	Outputs of this sensor	Output Ranges of this sensor
OUT(1)	0 - 10 VDC	0 - 2000ppm CO <sub>2</sub>	See label	See label
OUT(2)	0 - 10 VDC	0 - 50°C	See label	See label
OUT(3)	0 - 10 VDC	0 - 100%RH	See label	See label

Table 1. Default output configurations of tSENSE (Disp)

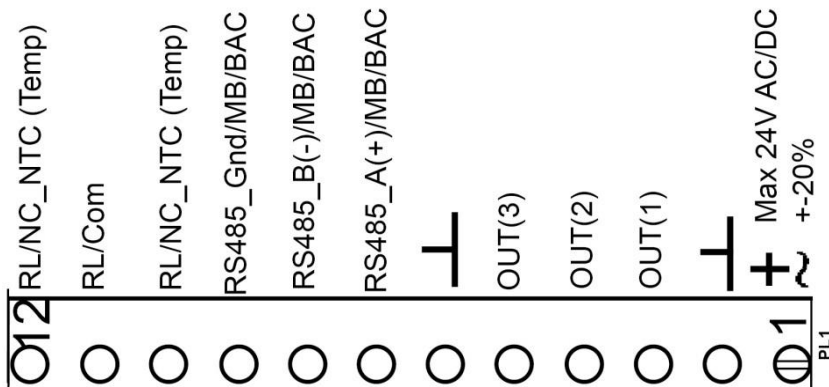


Figure3: Screw Terminal

Connect the sensor to PC with the connect interface cable USB – 3.5mm Art.no.: 00-0-0070

The sensor is supplied with 0 - 10VDC linear outputs for Out(1), Out(2) and Out(3) (see Table 1). Alternative output ranges can be configured with PC software UIP (version 5 or higher). See information at [senseair.com](http://senseair.com).

# Outputs

## Out1/Out2/Out3

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b> Outputs																																	
<table border="1"> <tr><td>CO<sub>2</sub></td><td>429ppm</td></tr> <tr><td>Temperature</td><td>23.1°C</td></tr> <tr><td>Humidity</td><td>21%RH</td></tr> <tr><td colspan="2" style="text-align: center;"></td></tr> </table>	CO <sub>2</sub>	429ppm	Temperature	23.1°C	Humidity	21%RH			<table border="1"> <tr><td>CO<sub>2</sub></td><td>Screen</td></tr> <tr><td>Temperature</td><td>Set</td></tr> <tr><td>Humidity</td><td>«</td></tr> </table>	CO <sub>2</sub>	Screen	Temperature	Set	Humidity	«	<table border="1"> <tr><td>Enter PIN</td><td colspan="2">2001</td></tr> <tr><td></td><td>2</td><td>3</td></tr> <tr><td></td><td>5</td><td>6</td></tr> <tr><td></td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>	Enter PIN	2001			2	3		5	6		8	9	Del	0	«	<table border="1"> <tr><td>Meter</td></tr> <tr><td>Measurements</td></tr> <tr><td>Outputs</td></tr> <tr><td>Misc</td></tr> </table>	Meter	Measurements	Outputs	Misc
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## Voltage range

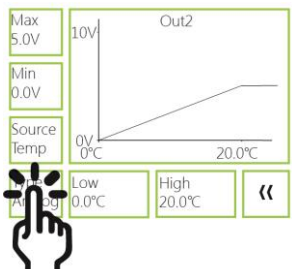
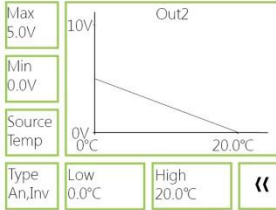
Max (the same approach with "Min")

<b>5</b> Out2	<b>6</b>	<b>7</b> Max	<b>8</b> 10.0V, 9.9V..5.0V..																																
<table border="1"> <tr><td>Out1</td><td>10.0V</td></tr> <tr><td>Out2</td><td>4.8V</td></tr> <tr><td>Out3</td><td>4.8V</td></tr> <tr><td>Relay</td><td>1(active)</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Out1	10.0V	Out2	4.8V	Out3	4.8V	Relay	1(active)	«		<table border="1"> <tr><td>Out2</td><td>Temp</td></tr> </table>	Out2	Temp	<table border="1"> <tr><td>10V</td><td>Out2</td></tr> <tr><td>0V</td><td>0°C</td></tr> <tr><td>50°C</td><td></td></tr> <tr><td>Type</td><td>Analog</td></tr> <tr><td>Low</td><td>0°C</td></tr> <tr><td>High</td><td>50°C</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	10V	Out2	0V	0°C	50°C		Type	Analog	Low	0°C	High	50°C	«		<table border="1"> <tr><td>Max limit</td><td>5.0V</td></tr> <tr><td colspan="2" style="text-align: center;">+</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Max limit	5.0V	+		«	
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<b>9</b>	<b>10</b>	<b>UIP</b>																																	
<table border="1"> <tr><td>Max limit</td><td>5.0V</td></tr> <tr><td colspan="2" style="text-align: center;">- +</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Max limit	5.0V	- +		«		<table border="1"> <tr><td>Max</td><td>5.0V</td></tr> <tr><td>Min</td><td>0.0V</td></tr> <tr><td>Source</td><td>Temp</td></tr> <tr><td>Temp</td><td>0°C</td></tr> <tr><td>50°C</td><td></td></tr> <tr><td>Type</td><td>Analog</td></tr> <tr><td>Low</td><td>0°C</td></tr> <tr><td>High</td><td>50°C</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Max	5.0V	Min	0.0V	Source	Temp	Temp	0°C	50°C		Type	Analog	Low	0°C	High	50°C	«											
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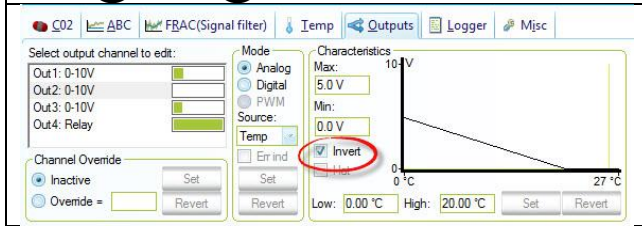
## Select source

<b>7</b> Source	<b>8</b>	<b>9</b>	<b>10</b>																																																																		
<table border="1"> <tr><td>Max</td><td>5.0V</td></tr> <tr><td>Min</td><td>0.0V</td></tr> <tr><td>Source</td><td>Temp</td></tr> <tr><td>Temp</td><td>0°C</td></tr> <tr><td>50°C</td><td></td></tr> <tr><td>Type</td><td>Analog</td></tr> <tr><td>Low</td><td>0°C</td></tr> <tr><td>High</td><td>50°C</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Max	5.0V	Min	0.0V	Source	Temp	Temp	0°C	50°C		Type	Analog	Low	0°C	High	50°C	«		<table border="1"> <tr><td>Source</td><td>CO<sub>2</sub></td></tr> <tr><td>Ch1</td><td>Temp</td></tr> <tr><td>Ch2</td><td>RH</td></tr> <tr><td>Ch3</td><td>Ch4</td></tr> <tr><td>Ch4</td><td>Ch5</td></tr> <tr><td>Ch5</td><td>Ch6</td></tr> <tr><td>Ch6</td><td>Ch7</td></tr> <tr><td>Ch7</td><td>Disable</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Source	CO <sub>2</sub>	Ch1	Temp	Ch2	RH	Ch3	Ch4	Ch4	Ch5	Ch5	Ch6	Ch6	Ch7	Ch7	Disable	«		<table border="1"> <tr><td>Source</td><td>CO<sub>2</sub></td></tr> <tr><td>Ch3</td><td>Temp</td></tr> <tr><td>Ch4</td><td>RH</td></tr> <tr><td>Ch5</td><td>Ch4</td></tr> <tr><td>Ch6</td><td>Ch5</td></tr> <tr><td>Ch7</td><td>Disable</td></tr> </table>	Source	CO <sub>2</sub>	Ch3	Temp	Ch4	RH	Ch5	Ch4	Ch6	Ch5	Ch7	Disable	<table border="1"> <tr><td>Max</td><td>5.0V</td></tr> <tr><td>Min</td><td>0.0V</td></tr> <tr><td>Source</td><td>CO<sub>2</sub></td></tr> <tr><td>CO<sub>2</sub></td><td>0ppm</td></tr> <tr><td>2000ppm</td><td></td></tr> <tr><td>Type</td><td>Analog</td></tr> <tr><td>Low</td><td>0ppm</td></tr> <tr><td>High</td><td>2000ppm</td></tr> <tr><td colspan="2" style="text-align: center;">«</td></tr> </table>	Max	5.0V	Min	0.0V	Source	CO <sub>2</sub>	CO <sub>2</sub>	0ppm	2000ppm		Type	Analog	Low	0ppm	High	2000ppm	«	
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<b>UIP 1</b> Source CO <sub>2</sub> selected		<b>2</b> Set (Save)																																																																			

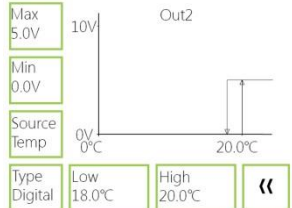
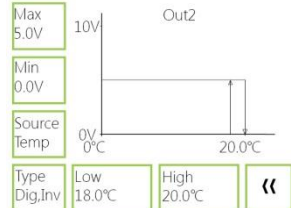
Types  
Analogue/Analogue Invert

<p><b>7</b> Analogue</p> 	<p><b>8</b></p> <p>Type An,Inv</p> <p>Analog Analog Invert</p> <p>Digital Digital Invert</p> <p>«</p>	<p><b>9</b></p> <p>Type An,Inv</p> <p>Analog Analog invert</p> <p>Digital Digital invert</p> <p>«</p>	<p><b>10</b> Analogue invert</p> 
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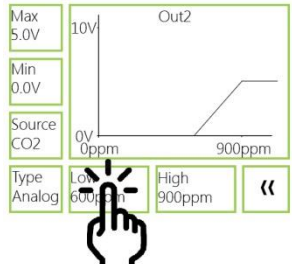
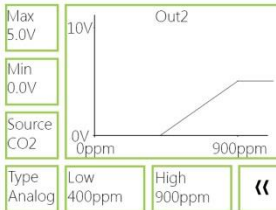
UIP5 **1** Invert **2** Save (Set)



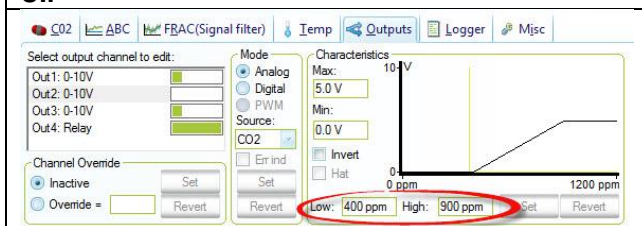
Digital/Digital Invert

<p><b>10</b> Digital</p> 	<p><b>10</b> Digital Invert</p> 
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Measure range settings  
Low (the same approach with "High")

<p><b>7</b> Low 600ppm</p> 	<p><b>8</b> 600, 550...400ppm</p> <p>Low 400ppm</p> <p>«</p>	<p><b>9</b> Low 400ppm</p> <p>«</p>	<p><b>10</b></p> 
--	--	-------------------------------------	--







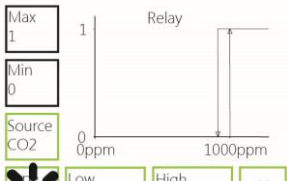



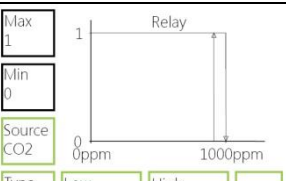
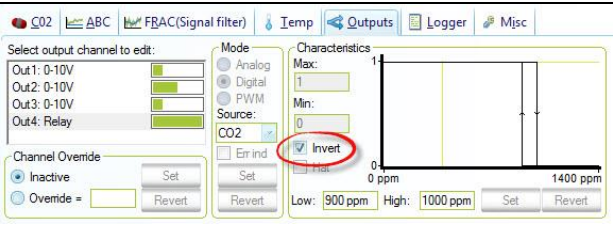
UIP












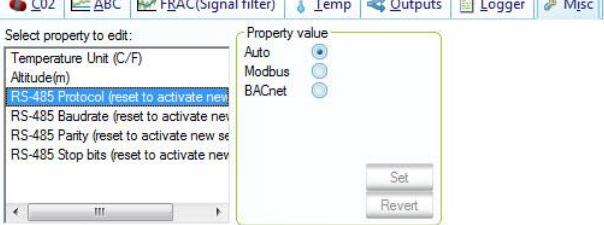
# Outputs

## Relay

<p><b>1</b></p> <p>CO<sub>2</sub> 429ppm          Temperature 23.1°C          Humidity 21%RH</p> 	<p><b>2</b></p> <p>CO<sub>2</sub> Screen          Temperature Setup          Humidity</p> 	<p><b>3</b></p> <p>Enter PIN 2001</p> <table border="1"> <tr><td>2</td><td>3</td></tr> <tr><td>5</td><td>6</td></tr> <tr><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td></tr> <tr><td></td><td>«</td></tr> </table> 	2	3	5	6	8	9	Del	0		«	<p><b>4</b> Outputs</p> <p>Meter          Measurements          Outputs           Misc «</p>
2	3												
5	6												
8	9												
Del	0												
	«												
<p><b>5</b> Relay</p> <p>Out1 10.0V          Out2 4.8V          Out3 4.8V          Relay 1(active)</p> 	<p><b>6</b></p> <p>Relay  CO<sub>2</sub></p>	<p><b>7</b> Type Digital</p> <p>Max 1          Min 0          Source CO<sub>2</sub></p>  <p>Low 900ppm High 1000ppm «</p> 	<p><b>8</b></p> <p>Type Dig,Inv</p> <p>Digital  Digital invert «</p>										
<p><b>9</b></p> <p>Type Dig,Inv</p> <p>Digital Digital invert</p> 	<p><b>10</b></p> <p>Max 1          Min 0          Source CO<sub>2</sub></p>  <p>Type Low High          Dig,Inv 900ppm 1000ppm «</p>	<p><b>UIP</b></p> 											

# Communication settings

## Protocol

<p><b>5</b> RS-485</p> <p>Meter info RS-485           PIN1 PIN1           Reset</p>	<p><b>6</b></p> <p>Protocol  Auto          Address  10          Baudrate 9600          Parity,Stop bits None,1          Reset needed to activate new communication settings «</p>	<p><b>7</b> NOTE!</p> <p>Protocol Auto</p> <p> Modbus BACnet</p>	<p><b>8</b></p> <p>Protocol Auto</p> <p>Auto Modbus BACnet</p> 
<p><b>9</b> NOTE!</p> <p>Meter info RS-485          PIN1 PIN2          Reset </p>	<p><b>UIP 1</b></p> 		<p><b>2</b></p> <p>Property value</p> <p>Auto <input checked="" type="radio"/>          Modbus <input type="radio"/>          BACnet <input type="radio"/></p> <p>Set          Revert</p>



## Address/Baud rate

<p><b>6</b></p>	<p><b>7</b></p>	<p><b>8</b></p>	<p><b>9 NOTE!</b></p>
<p><b>UIP Address 1</b></p>	<p><b>2</b></p>	<p><b>3</b></p>	
<p><b>UIP Baud rate 1 Misc</b></p>	<p><b>2</b></p>	<p><b>3</b></p>	

## Connection configurations

<p><b>1</b></p>	<p><b>2 ModBus 3 Choose SenseAir Cable if bought from SenseAir, otherwise choose COM Port 4 Save</b></p>
<p><b>5 Lower right corner of screen</b></p>	<p><b>6</b></p>

### NOTE!

UIP baud rate  $\neq$  RS-485 baud rate if *tSENSE (Disp)* is connected via *phone jack* (see fig. 2).


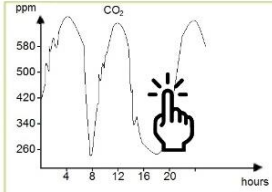


UIP baud rate = RS-485 baud rate if *tSENSE (Disp)* is connected via *screw terminal* (see fig. 3).

RS-485 Protocol parameter set to "Auto": the sensor selects protocol depending on the protocol used on the network it is connected to. After power on the sensor then listens to the traffic on the RS-485 network. If the sensor detects valid BACnet or Modbus messages the sensor will start to use the detected protocol.

Change communication settings via UIP requires Reset (Power OFF – Power ON) to be executed.

# Measured values

CO<sub>2</sub>/Temperature/Humidity

<p><b>1</b></p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">CO<sub>2</sub></div> <div>429ppm</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Temperature</div> <div>23.1°C</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Humidity</div> <div>21%RH</div> </div> <div style="text-align: center; margin-top: 5px;">  </div>	<p><b>2</b></p> <div style="text-align: center;"> <p>CO<sub>2</sub></p> <p style="font-size: 2em;">429</p> <p>ppm</p> </div>	<p><b>3</b></p> <div style="text-align: center;">  </div>	<p><b>4</b></p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">CO<sub>2</sub></div> <div>429ppm</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Temperature</div> <div>23.1°C</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Humidity</div> <div>21%RH</div> </div> <div style="text-align: center; margin-top: 5px;">  </div>
<p><b>5</b></p> <div style="text-align: center;"> <p>CO<sub>2</sub></p> <p>429ppm</p> <p>Temperature</p> <p>23.1°C</p> <p>Humidity</p> <p>21%RH</p> </div>	<p><b>6</b></p> <div style="text-align: center;"> <p>CO<sub>2</sub></p> <p style="font-size: 2em;">429</p> <p>ppm</p> </div>	<p><b>7</b></p> <div style="text-align: center;"> <p>Temperature</p> <p style="font-size: 2em;">23.1</p> <p>°C</p> </div>	<p><b>8</b></p> <div style="text-align: center;"> <p>Humidity</p> <p style="font-size: 2em;">21.0</p> <p>%RH</p> </div>
<p><b>9</b></p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">CO<sub>2</sub></div> <div>429ppm</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Temperature</div> <div>23.1°C</div> </div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">Humidity</div> <div>21%RH</div> </div> <div style="text-align: center; margin-top: 5px;">  </div>			

# Display settings

## Limits

CO<sub>2</sub>/(Temperature)/(Humidity)

CO<sub>2</sub> Orange/Red limit (Temp./Humidity, the same approach as for CO<sub>2</sub> limit settings)

<p><b>1</b></p> <p>CO<sub>2</sub> 429ppm Temperature 23.1°C Humidity 21%RH</p>	<p><b>2</b></p> <p>CO<sub>2</sub> Screen Temp Settings Humidity</p>	<p><b>3</b></p> <p>Yellow limit 600ppm Red limit 1000ppm Chart 24h</p>	<p><b>4</b> 100,200...700ppm</p> <p>Yellow limit 700ppm</p>
<p>CO<sub>2</sub> red limit 1000ppm RH orange limit 70%RH</p>	<p>CO<sub>2</sub> red limit 1000ppm</p>	<p>RH orange limit 70%RH</p>	
<p>CO<sub>2</sub> 1205ppm Temperature 73.6°F Humidity 72%RH</p>			

## Chart 24h/Week

<p><b>1</b></p> <p>CO<sub>2</sub> 429ppm Temperature 23.1°C Humidity 21%RH</p>	<p><b>2</b></p> <p>CO<sub>2</sub> Screen Temp Settings Humidity</p>	<p><b>3</b></p> <p>Yellow limit 600ppm Red limit 1000ppm Chart 24h</p>	<p><b>4</b></p> <p>CO<sub>2</sub> Chart Week</p> <p>24h</p>
--	---	--	---

## Screen settings

<b>1</b>	<b>2</b>

## Brightness

<b>3</b>	<b>4</b> 10, 20,...50%

## Background

<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>















## Screensaver, Time setting

Interval








<b>3</b>	<b>4</b>	<b>5</b> 3,4,5...10 s	<b>6</b> 50 s

### Toggle (Time and CO<sub>2</sub> and/or Temperature and/or Humidity)

#### Toggle time






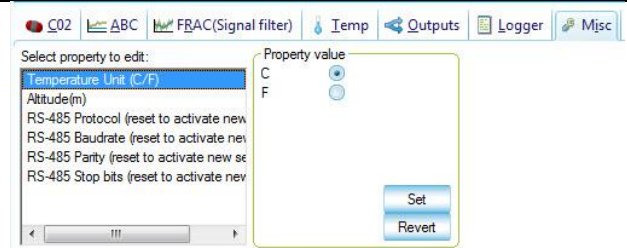
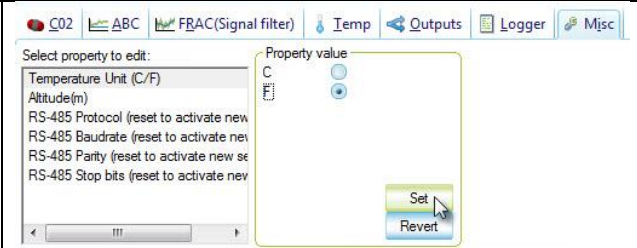
<p><b>3</b></p> <p>Brightness 50%</p> <p>Background Normal</p> <p>Display Scheme Interval</p> <p>Toggle Ind area «</p> 	<p><b>4</b></p> <p>Toggle Time 3s  </p> <p>CO<sub>2</sub> X</p> <p>Temperature X</p> <p>Humidity X «</p>	<p><b>5</b></p> <p>Toggle Time 3s - +</p> <p>CO<sub>2</sub> X</p> <p>Temperature X</p> <p>Humidity X </p>	<p><b>6</b></p> <p>Brightness 50%</p> <p>Background Normal</p> <p>Display Scheme Interval</p> <p>Toggle Ind area </p>
<p><b>7</b></p> <p>CO<sub>2</sub> Screen</p> <p>Temperature Settings</p> <p>Humidity</p> 	<p><b>8</b> Check</p> <p>CO<sub>2</sub> 429ppm</p> <p>Temperature 23.1°C </p> <p>Humidity 21.0%RH </p> <p></p>	<p><b>9</b></p> <p>CO<sub>2</sub> 429ppm</p> <p>Temperature 23.1°C </p> <p>Humidity 21.0%RH </p> <p></p>	<p><b>10</b> 3 s</p> <p>CO<sub>2</sub> 429 ppm</p>
<p><b>11</b> 3 s</p> <p>Temperature 23.1 °C</p>	<p><b>12</b> 3 s</p> <p>Humidity 21.0 %RH </p>	<p><b>13</b></p> <p>CO<sub>2</sub> 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21.0%RH</p> <p></p>	

#### Toggle CO<sub>2</sub> and/or Temperature and/or Humidity








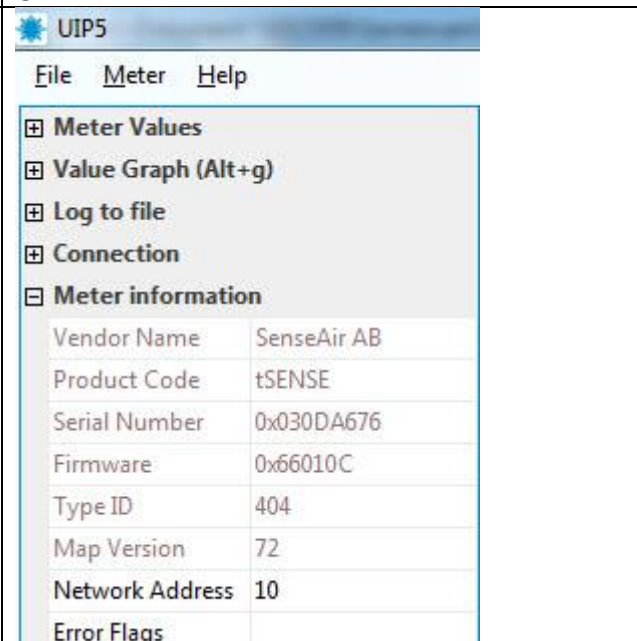
<p><b>3</b></p> <p>Brightness 50%</p> <p>Background Normal</p> <p>Display Scheme Interval</p> <p>Toggle Ind area «</p> 	<p><b>4</b></p> <p>Toggle Time 3s - +</p> <p>CO<sub>2</sub> </p> <p>Temperature </p> <p>Humidity X «</p>	<p><b>5</b></p> <p>Toggle Time 3s - +</p> <p>CO<sub>2</sub> </p> <p>Temperature X</p> <p>Humidity X </p>	<p><b>6</b></p> <p>CO<sub>2</sub> 429ppm</p> <p>Temperature 23.1°C </p> <p>Humidity 21.0%RH </p>
<p><b>7</b> Will NOT show up</p> <p><del>CO<sub>2</sub> 429 ppm</del></p>	<p><b>8</b> 3 s</p> <p>Temperature 23.1 °C</p>	<p><b>9</b> 3 s</p> <p>Humidity 21.0 %RH</p>	



## Temperature unit (°C/°F)

<p><b>1</b></p> <p>CO<sub>2</sub> 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p> <p></p>	<p><b>2</b></p> <p>CO<sub>2</sub> Screen</p> <p>Temperature Settings</p> <p>Humidity</p> <p></p> <p>«</p>	<p><b>3</b></p> <p>Yellow limit 30°C</p> <p>Red limit 40°C</p> <p>Chart Week</p> <p>Unit </p> <p>«</p>	<p><b>4</b></p> <p>Temperature Units °F</p> <p>Celsius Fahrenheit</p> <p></p> <p>«</p>
<p><b>1</b> UIP Miscellaneous</p> 		<p><b>2</b></p> 	

## Meter information

<p><b>1</b></p> <p>CO<sub>2</sub> 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p> <p></p>	<p><b>2</b></p> <p>CO<sub>2</sub> Screen</p> <p>Temperature Settings</p> <p>Humidity</p> <p></p> <p>«</p>	<p><b>3</b></p> <p>Enter PIN 2001</p> <table border="1"> <tr><td></td><td>2</td><td>3</td></tr> <tr><td></td><td>5</td><td>6</td></tr> <tr><td></td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>		2	3		5	6		8	9	Del	0	«	<p><b>4</b></p> <p>Meter </p> <p>Measurements</p> <p>Outputs</p> <p>Misc «</p>
	2	3													
	5	6													
	8	9													
Del	0	«													
<p><b>5</b></p> <p>Meter info RS-485</p> <p>PIN1 PIN2</p> <p>Reset</p> <p>«</p>	<p><b>6</b></p> <p>Meter information</p> <table border="1"> <tr><td>Meter status</td><td>0x0</td></tr> <tr><td>Version</td><td>1.06</td></tr> <tr><td>Serial Number</td><td>0x30DA676</td></tr> <tr><td>Type ID</td><td>404</td></tr> <tr><td>Map Version</td><td>72</td></tr> </table> <p>«</p>	Meter status	0x0	Version	1.06	Serial Number	0x30DA676	Type ID	404	Map Version	72	<p><b>UIP</b></p> 			
Meter status	0x0														
Version	1.06														
Serial Number	0x30DA676														
Type ID	404														
Map Version	72														

## Calibration options CO<sub>2</sub>

<b>4</b>	<b>5</b>
Meter	CO <sub>2</sub> 429ppm
Measurements	Temperature 23.1°C
Outputs	Humidity 21%RH
Misc	

## Zero cal/Background/Target cal












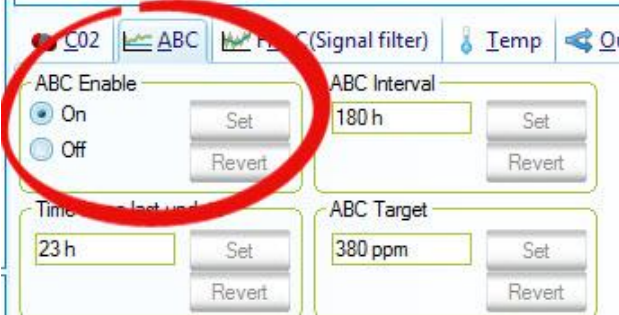
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
Zero ABC Background Altitude Target cal Restore cal	Start zero calibration cycle? Yes No Zero calibration in use 0ppm calibration target, calibration cycle takes ~5	Zero calibration active	Verifying
<b>10</b>	<b>11</b>	<b>UIP: If reference meter shows e.g. CO<sub>2</sub>-value 500ppm set Target to 500</b>	
Zero calibration succeeded	Zero cal ABC Background Altitude Target cal Restore cal		

## Background calibration button

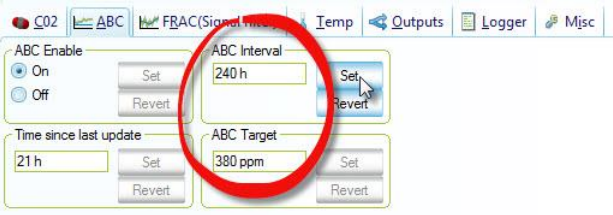
<b>1</b> Press for 15s, until...	<b>2</b> green LED blinks twice



ABC  
Enable/Disable

<p><b>1</b></p> <p>CO<sub>2</sub> 429ppm Temperature 23.1°C Humidity 21%RH</p> <p></p>	<p><b>2</b></p> <p>CO<sub>2</sub> Screen Temperature Set type Humidity</p> <p></p> <p>«</p>	<p><b>3</b></p> <p>Enter PIN 2001</p> <table border="1"> <tr><td></td><td>2</td><td>3</td></tr> <tr><td></td><td>5</td><td>6</td></tr> <tr><td></td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>		2	3		5	6		8	9	Del	0	«	<p><b>4</b></p> <p>Meter Measurements Outputs Misc</p> <p></p> <p>«</p>
	2	3													
	5	6													
	8	9													
Del	0	«													
<p><b>5</b></p> <p>CO<sub>2</sub> 429ppm Temperature 23.1°C Humidity 21%RH</p> <p></p> <p>«</p>	<p><b>6</b></p> <p>Zero cal ABC Background Altitude Target cal Restore cal</p> <p></p> <p>«</p>	<p><b>7</b></p> <p>ABC Inactive ABC period 180hours ABC target 380ppm</p> <p></p> <p>«</p>	<p><b>8</b></p> <p>ABC Active Enable Disable Save new ABC state? No</p> <p></p> <p>«</p>												
<p><b>9 Save</b></p> <p>ABC Active Enable Disable Save new ABC state? No</p> <p></p>	<p><b>UIP</b></p> 														

ABC period (ABC target/Altitude (msl)/Restore cal)

<p><b>5</b></p> <p>CO2 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p>«</p>	<p><b>6</b></p> <p>Zero cal ABC</p> <p>Background Altitude</p> <p>Target cal Restore cal</p> <p>«</p>	<p><b>7</b></p> <p>ABC Inactive</p> <p>ABC period 180hours</p> <p>ABC target 380ppm</p> <p>«</p>	<p><b>8</b></p> <p>ABC period 180 hours</p> <p>- +</p> <p>Save new ABC period?</p> <p>Yes No</p> <p>«</p>
<p><b>9</b></p> <p>ABC period 240 hours</p> <p>- +</p> <p>Save new ABC period?</p> <p>Yes No</p> <p>«</p>	<p><b>10</b> 180, 181, 240hours</p> <p>ABC period 240 hours</p> <p>- +</p> <p>Save new ABC period?</p> <p>Yes No</p> <p>«</p>	<p><b>11</b> Save</p> <p>Saving ABC period</p> <p>██████████</p>	<p><b>12</b></p> <p>Verifying</p> <p>██████████</p>
<p><b>13</b></p> <p>ABC period set to 240 hours</p>	<p><b>1 4</b></p> <p>Zero cal ABC</p> <p>Background Altitude</p> <p>Target cal Restore cal</p> <p>«</p>	<p><b>UIP</b></p> 	

Temperature/Humidity Offset

<p><b>5</b></p> <p>CO2 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p>«</p>	<p><b>6</b> 0.0..-0.1...-0.2°C</p> <p>Temperature offset -2.5°C</p> <p>+ -</p> <p>«</p>	<p><b>7</b></p> <p>Temperature offset -2.5°C</p> <p>- +</p> <p>«</p>
--	---	--

## Automatic system test

A full system test is executed automatically at every power-up. Sensor probes are checked constantly during operation against failure by checking valid dynamic measurement ranges.

System checks returns error bytes to RAM. Error codes are available by connecting the sensors to a PC with a special USB cable (art.no. 00-0-0070) connected (see fig. 2). Error codes are shown in the display at "Meter status" and in software UIP (version 5 or higher).

<p><b>1</b></p>	<p><b>2</b></p>	<p><b>3</b></p>	<p><b>4</b></p>
<p><b>5</b></p>	<p><b>6</b></p>	<p><b>UIP</b></p>	

## Error codes and action plans

Error symbol (a wrench appears when one or several error codes are active)



Bit #	Error code	Error description	Suggested action
0	CO <sub>2</sub> sensor Com. error	No ability to communicate with CO <sub>2</sub> sensor module.	Try to restart sensor by power OFF - power ON. Contact local distributor.
1	CO <sub>2</sub> sensor CO <sub>2</sub> measure error	CO <sub>2</sub> measurement error.	Try Background calibration ("Calibration options CO <sub>2</sub> " p.16). Contact local distributor. <i>See Note 1!</i>
2	T sensor T measure error	Temp measurement error.	Try to restart sensor by power OFF - power ON.  Contact local distributor.
3	RH/T sensor com error	No ability to communicate with RH/T sensor module.	
4	RH/T sensor RH measure error	RH measurement error.	
5	RH/T sensor T measure error	Temp measurement error, sensor will use CO <sub>2</sub> sensor temperature if RH/T Temperature is unavailable. S_Temp will be set to NTC_Temp.	
6			
7			
8	Output config. error	Error in output configuration. Output is still updated, i.e. can be 0-10V	Check connections and loads of outputs. Check detailed settings and configuration with UIP software version 5 or higher.  Contact local distributor.
9	Memory error	One or several bytes of sensors parameter memory (settings) are corrupt	Try to restart sensor by power OFF/ON Contact local distributor.

Table 2: Error codes and action plans.

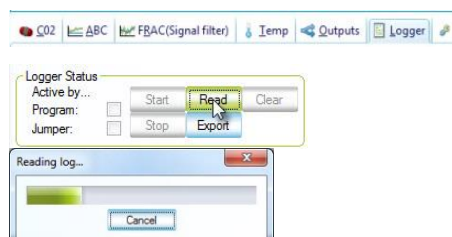
### NOTE!

Occurs if probe is out of range, at very high CO<sub>2</sub> values. Error code resets automatically when measured values returns to normal. May also indicate need of zero point calibration. If CO<sub>2</sub> values are normal and error code remains, the sensor can be defect or the connections to it are broken.

If several errors are detected at the same time, different error code numbers will be added together into one single error code!

Sensor accuracy is defined at continuous operation (at least three (3) weeks after installation).

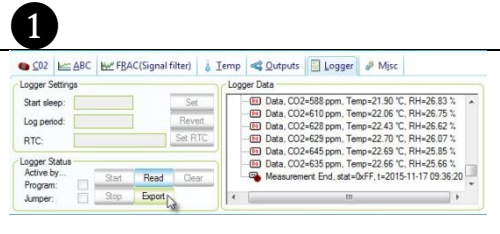
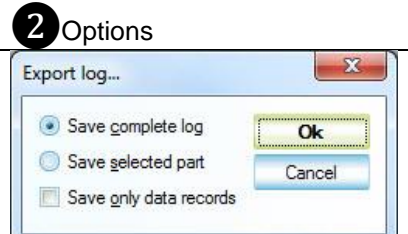
# UIP Logger Alternative 1

<p><b>1</b> Start to Read Log Data from sensor</p>	<p><b>2</b> Records for compability between UIP and other sensor types. <b>NOTE!</b> Sensor has no timer.</p>										
	<div data-bbox="657 362 981 504"> <p>Logger Data</p> <table border="1"> <tr><td>1</td><td>Measurement Start, stat=0xFF, t=2015-01-01 00:00:00</td></tr> <tr><td>2</td><td>Data, CO2=735 ppm, Temp=24.25 °C, RH=20.87 %</td></tr> <tr><td>3</td><td>Data, CO2=672 ppm, Temp=24.21 °C, RH=20.47 %</td></tr> <tr><td>4</td><td>Data, CO2=667 ppm, Temp=24.22 °C, RH=20.49 %</td></tr> <tr><td>5</td><td>Measurement End, stat=0xFF, t=2015-11-19 11:31:25</td></tr> </table> </div> <div data-bbox="1013 362 1514 548"> <p>1 Measurement Start. Record added by UIP for compatibility between UIP and other sensor types. Status = dummy value Timestamp = dummy value 2 Oldest data record in log, average values for 15 minutes 3 Average values for 15 minutes after point 2 4 Measurement end. Record added to readout by UIP Status = dummy value Timestamp = time log was read from sensor</p> </div>	1	Measurement Start, stat=0xFF, t=2015-01-01 00:00:00	2	Data, CO2=735 ppm, Temp=24.25 °C, RH=20.87 %	3	Data, CO2=672 ppm, Temp=24.21 °C, RH=20.47 %	4	Data, CO2=667 ppm, Temp=24.22 °C, RH=20.49 %	5	Measurement End, stat=0xFF, t=2015-11-19 11:31:25
1	Measurement Start, stat=0xFF, t=2015-01-01 00:00:00										
2	Data, CO2=735 ppm, Temp=24.25 °C, RH=20.87 %										
3	Data, CO2=672 ppm, Temp=24.21 °C, RH=20.47 %										
4	Data, CO2=667 ppm, Temp=24.22 °C, RH=20.49 %										
5	Measurement End, stat=0xFF, t=2015-11-19 11:31:25										

**NOTE!**

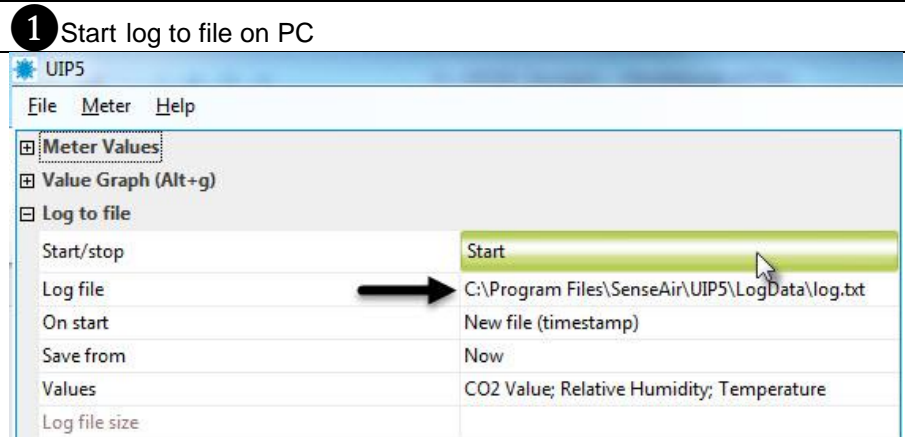

The sensor has no Real-time clock, if the sensor has not been powered on continuously, time between data points can be much longer than 15 minutes.

## Export Logger Data

<p><b>1</b></p> 	<p><b>2</b> Options</p> 	<p>tSENSE Standard.LOG</p> <table border="1"> <thead> <tr> <th>Status</th> <th>Type</th> <th>CO2 (ppm)</th> <th>Temp (°C)</th> <th>RH (%)</th> </tr> </thead> <tbody> <tr> <td>0xFF</td> <td>Measurement_Start, t=2015-01-01</td> <td>00:00:00</td> <td></td> <td></td> </tr> <tr> <td>0xFF</td> <td>Data</td> <td>574</td> <td>21.46</td> <td>327.66</td> </tr> <tr> <td>0xFF</td> <td>Data</td> <td>578</td> <td>21.50</td> <td>25.01</td> </tr> <tr> <td>0xFF</td> <td>Data</td> <td>579</td> <td>21.51</td> <td>25.08</td> </tr> </tbody> </table>	Status	Type	CO2 (ppm)	Temp (°C)	RH (%)	0xFF	Measurement_Start, t=2015-01-01	00:00:00			0xFF	Data	574	21.46	327.66	0xFF	Data	578	21.50	25.01	0xFF	Data	579	21.51	25.08
Status	Type	CO2 (ppm)	Temp (°C)	RH (%)																							
0xFF	Measurement_Start, t=2015-01-01	00:00:00																									
0xFF	Data	574	21.46	327.66																							
0xFF	Data	578	21.50	25.01																							
0xFF	Data	579	21.51	25.08																							

## Alternative 2

### Log to file

<p><b>1</b> Start log to file on PC</p> 															
<p><b>2</b></p> 															
<p><b>3</b></p> <table border="1"> <thead> <tr> <th>Time</th> <th>Offset ÅmsÅ</th> <th>Temperature ÅOCÅ</th> <th>CO2 Value ÅppmÅ</th> <th>Relative Humidity Å%Å</th> </tr> </thead> <tbody> <tr> <td>2015-11-17 13:11:58</td> <td>9149974</td> <td>685.00</td> <td>24.36</td> <td>24.36</td> </tr> <tr> <td>2015-11-17 13:12:03</td> <td>9154919</td> <td>685.00</td> <td>24.31</td> <td>24.36</td> </tr> </tbody> </table>	Time	Offset ÅmsÅ	Temperature ÅOCÅ	CO2 Value ÅppmÅ	Relative Humidity Å%Å	2015-11-17 13:11:58	9149974	685.00	24.36	24.36	2015-11-17 13:12:03	9154919	685.00	24.31	24.36
Time	Offset ÅmsÅ	Temperature ÅOCÅ	CO2 Value ÅppmÅ	Relative Humidity Å%Å											
2015-11-17 13:11:58	9149974	685.00	24.36	24.36											
2015-11-17 13:12:03	9154919	685.00	24.31	24.36											

## PIN codes

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

### Change PIN code for access to display settings (PIN1)

<b>5</b> PIN1	<b>6</b> (Default 0000)	<b>7</b>

### Toggle PIN1 On/Off

<b>6</b>	<b>7</b>

### Change PIN code for access to meter settings (PIN2)

<b>5</b> PIN2	<b>6</b> Create PIN2 Code	<b>7</b> Save



## Maintenance

*tSENSE (Disp)* is maintenance free. Internal self-adjusting calibration (ABC) function takes care of normal long term drift. To secure highest accuracy, a time interval of five years is recommended between CO<sub>2</sub> calibrations, unless some special situations have occurred.

Software can be downloaded free at [www.senseair.com](http://www.senseair.com).  
USB-cable and zero calibration kit can be ordered from SenseAir.

Check can be done on site without interfering with ventilation system.

## Directives

This product is in accordance with the  
EMC directive 2014/30/EC, 92/31/EEG, RoHS directive 2011/65/EU  
including amendments by the CE-marking directive 93/68/EEC

The product fulfils the following demands:

EN 61000-4-2 level 2,  
EN 61000-4-3 level 2,  
EN 61000-4-4 level 4,  
EN 61000-4-6,  
EN 61000-4-8 level 4,  
EN 55022 class B

CE