

User Manual

tSENSE VAV (Disp) T RH RL

CO₂-, temperature- and
relative humidity transmitter



General

tSENSE VAV for wall mounting measures indoor air carbon dioxide concentration, temperature and relative humidity in rooms. *tSENSE VAV* is available with colour touch display (LCD).

The unit connects to Direct Digital Control (DDC).

Linear outputs are pre-programmed as CO₂-, temperature- and relative humidity transmitter.

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

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Opening of housing

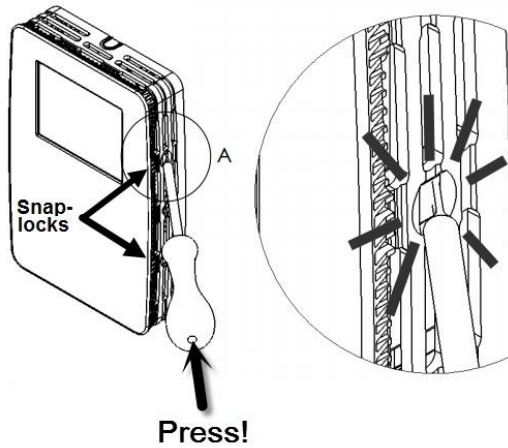


Figure 1

Download of software UIP5

senseair.se/products/software/uiip-5/

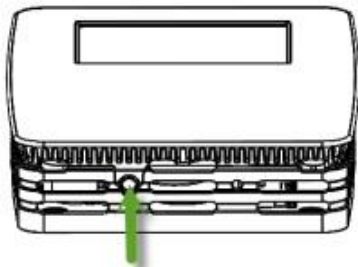











Figure 2: Connection to PC via phone jack
Connect Interface cable USB – 3.5mm Art.no.:00-0-0070

Enter PIN code

		0 Power ON																																			
PIN1 Delivered product 0000, Code off PIN2 Delivered product 2001 (if not implemented: 0000)		 V1.03																																			
1	2	3	4																																		
<table border="1"> <tr><td>CO₂</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 ₂	429ppm	Temperature	23.1°C	Humidity	21%RH			<table border="1"> <tr><td>CO₂</td><td>Screen</td></tr> <tr><td>Temperature</td><td>Settings</td></tr> <tr><td>Humidity</td><td></td></tr> </table> 	CO ₂	Screen	Temperature	Settings	Humidity		<table border="1"> <tr><td colspan="2">Enter PIN</td><td>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><td>«</td></tr> </table>	Meter	Measurements	Outputs	Misc	«
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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) CO ₂ : Temperature: Relative Humidity:	0 - 10 VDC	600 - 900ppm 22 - 23°C 75 - 85%	See label	See label
OUT(2) CO ₂ :	0 - 10 VDC	0 - 2000ppm	See label	See label
OUT(3) Temp:	0 - 10 VDC	0 - 50°C	See label	See label
Relay CO ₂ :	0 - 10 VDC	900 - 1000ppm	See label	See label

Table 1. Default output configurations of *tSENSE VAV*

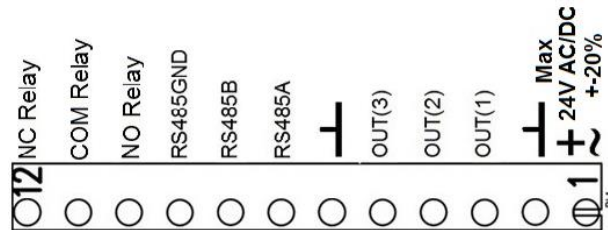


Figure 3: Screw Terminal

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

Outputs

Out1/Out2/Out3

<p>1</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ Screen</p> <p>Temperature Settings</p> <p>Humidity</p> <p></p> <p>«</p>	<p>3</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>4 Outputs</p> <p>Meter</p> <p>Measurements</p> <p>Outputs </p> <p>Misc «</p>																
	2	3																													
	5	6																													
	8	9																													
Del	0	«																													
<p>5 Out1</p> <table border="1"> <tr><td></td><td>Out1</td><td>10.0V</td></tr> <tr><td></td><td>Out2</td><td>4.8V</td></tr> <tr><td></td><td>Out3</td><td>4.8V</td></tr> <tr><td></td><td>Relay</td><td>1(active)</td></tr> </table> <p>«</p>		Out1	10.0V		Out2	4.8V		Out3	4.8V		Relay	1(active)	<p>6</p> <table border="1"> <tr><td></td><td>Out1_a</td><td>CO2</td></tr> <tr><td></td><td>Out1_b</td><td>Temp</td></tr> <tr><td></td><td>Out1_c</td><td>RH</td></tr> <tr><td></td><td>Out1_d</td><td>Temp</td></tr> </table> <p>«</p>		Out1_a	CO2		Out1_b	Temp		Out1_c	RH		Out1_d	Temp	<p>7</p> <p>Max 10.0V</p> <p>Min 0.0V</p> <p>Source CO2</p> <p>0V 0ppm 900ppm</p> <p>Out1_a</p> <p>Type Analog</p> <table border="1"> <tr><td>Low</td><td>600ppm</td></tr> <tr><td>High</td><td>900ppm</td></tr> </table> <p>«</p>	Low	600ppm	High	900ppm	
	Out1	10.0V																													
	Out2	4.8V																													
	Out3	4.8V																													
	Relay	1(active)																													
	Out1_a	CO2																													
	Out1_b	Temp																													
	Out1_c	RH																													
	Out1_d	Temp																													
Low	600ppm																														
High	900ppm																														

e.g.

The *largest* demand from Proportional-bands is OUT1.
 Max of Out1_a/ Out1_b/ Out1_c minus (sub) Out1_d => OUT1

Out1Standard Out1_a CO2 Out1_b Temp Out1_c RH Out1_d Disabled «				Out1_a: CO ₂ has a Proportional-band of 600-900ppm Out1_b: Temp has a Proportional-band of 22-23°C Out1_c: RH has a Proportional-band of 75-85%RH Out1_d: Disabled			
Out1_a CO ₂ = 714ppm =>3V		Out1_b Temp = 22.4°C =>4V		Out1_c Humidity = 80%RH=>5V		Out1_d Disabled	
Max 10.0V Min 0.0V Source CO2 Type Analog Low 600ppm High 900ppm «		Max 10.0V Min 0.0V Source Temp Type Analog Low 22°C High 23°C «		Max 10.0V Min 0.0V Source RH Type Analog Low 75%RH High 85%RH «		Max 10.0V Min 0.0V Source Disabled Type An,Inv Low 17 °C High 18 °C «	

5V (Out1_c) – 0V (Out1_d Disabled) = 5V => OUT1

The (e.g.) VAV valve opens from minimum set-point position with full opened state at the maximum set-point.

U _{Out} = 0V if space has the value: CO ₂ ≤ 600ppm and Temp ≤ 22°C and RH ≤ 75%RH (Out1_d = Disabled)	U _{Out} will be increased if space has the value: 600ppm ≤ CO ₂ < 900ppm or 22°C ≤ Temp < 23°C or 75%RH ≤ RH < 85%RH (Out1_d = Disabled)	U _{Out} = 10V if space has the value: CO ₂ > 900ppm or Temp > 23°C or RH > 85% (Out1_d = Disabled)
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e.g. Temp protection (Out1_d) Enabled

Out1_a CO ₂ : 1205ppm=> 10V		Out1_b Temp: 16.4°C => 0V		Out1_c Humidity: 80%RH=>5V		Out1_d Temp: 16.4°C =>10V NOTE! (sub) (Temp protection)	
Max 10.0V Min 0.0V Source CO2 Type Analog Low 600ppm High 900ppm «		Max 10.0V Min 0.0V Source Temp Type Analog Low 22°C High 23°C «		Max 10.0V Min 0.0V Source RH Type Analog Low 75%RH High 85%RH «		Max 10.0V Min 0.0V Source Temp Type An,Inv Low 17 °C High 18 °C «	

10V (Out1_a) – 10V (Out1_d) = 0V => OUT1

Voltage range

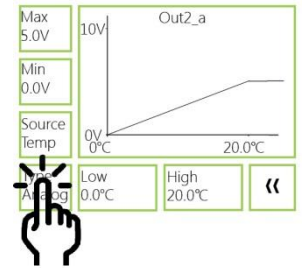
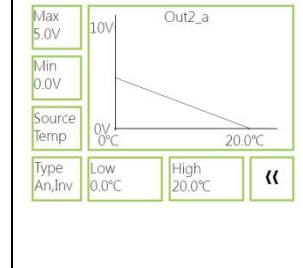
Max (the same approach with "Min")

<p>1</p>	<p>2</p>	<p>3</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>7</td><td>8</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	7	8	8	9	Del	0		«	<p>4 Outputs</p>				
2	3																		
5	6																		
7	8																		
8	9																		
Del	0																		
	«																		
<p>5 Out2</p> <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> </table>	Out1	10.0V	Out2	4.8V	Out3	4.8V	Relay	1(active)	<p>6 Out2_a</p> <table border="1"> <tr><td>Out2_a</td><td>CO2</td></tr> <tr><td>Out2_b</td><td>Disabled</td></tr> <tr><td>Out2_c</td><td>Disabled</td></tr> <tr><td>Out2_d</td><td>Disabled</td></tr> </table>	Out2_a	CO2	Out2_b	Disabled	Out2_c	Disabled	Out2_d	Disabled	<p>7 Max</p>	<p>8 10.0V, 9.9V..5.0V..</p>
Out1	10.0V																		
Out2	4.8V																		
Out3	4.8V																		
Relay	1(active)																		
Out2_a	CO2																		
Out2_b	Disabled																		
Out2_c	Disabled																		
Out2_d	Disabled																		
<p>9</p> <p>Max limit 5.0V</p>	<p>10</p>	<p>UIP5</p>																	

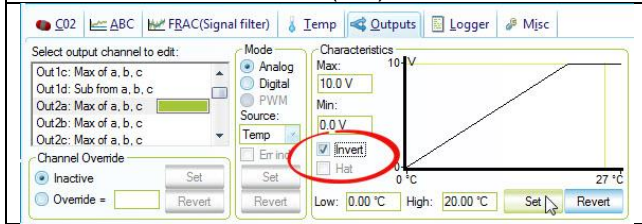
Select source

<p>7 Source</p>	<p>8</p> <table border="1"> <tr><td>Source</td><td>Temp</td></tr> <tr><td>CO2</td><td>RH</td></tr> <tr><td>Ch3</td><td>Ch5</td></tr> <tr><td>Ch6</td><td>Ch7</td></tr> <tr><td>Ch</td><td>Disable</td></tr> </table>	Source	Temp	CO2	RH	Ch3	Ch5	Ch6	Ch7	Ch	Disable	<p>9</p> <table border="1"> <tr><td>Source</td><td>Temp</td></tr> <tr><td>CO2</td><td>RH</td></tr> <tr><td>Ch3</td><td>Ch4</td></tr> <tr><td>Ch6</td><td>Ch7</td></tr> <tr><td>Ch</td><td>Disable</td></tr> </table>	Source	Temp	CO2	RH	Ch3	Ch4	Ch6	Ch7	Ch	Disable	<p>10</p>
Source	Temp																						
CO2	RH																						
Ch3	Ch5																						
Ch6	Ch7																						
Ch	Disable																						
Source	Temp																						
CO2	RH																						
Ch3	Ch4																						
Ch6	Ch7																						
Ch	Disable																						
<p>UIP5 1 Source: CO₂ selected</p>		<p>2 Save</p>																					

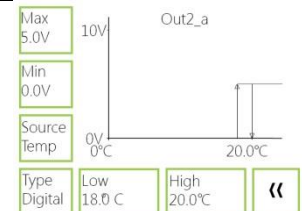
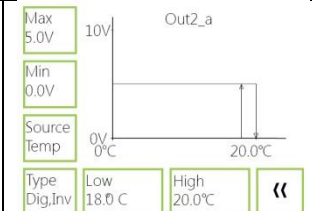
Types
Analogue/Analogue Invert

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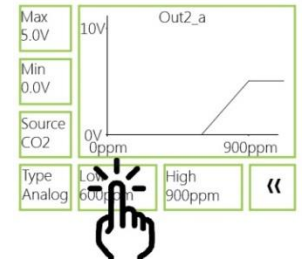
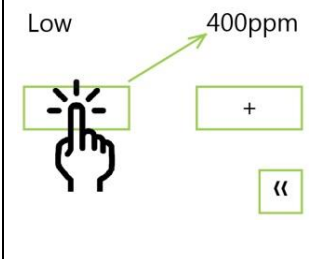
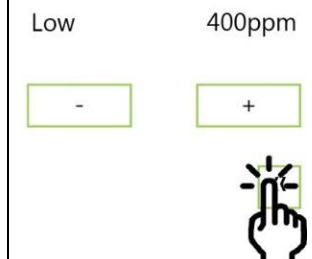
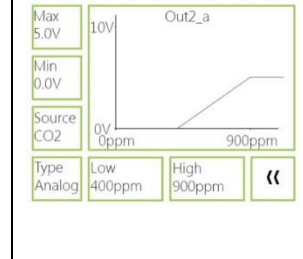
UIP5 **1** Invert **2** Save (Set)



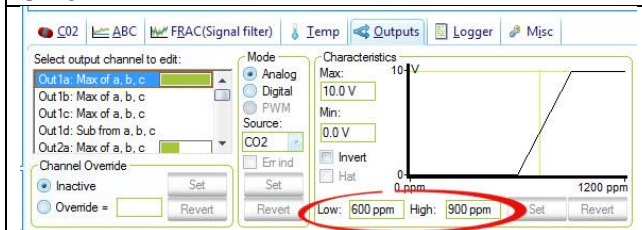
Digital/Digital Invert

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













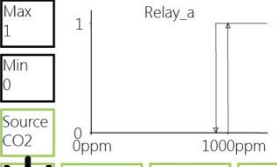



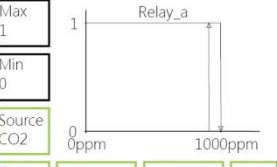
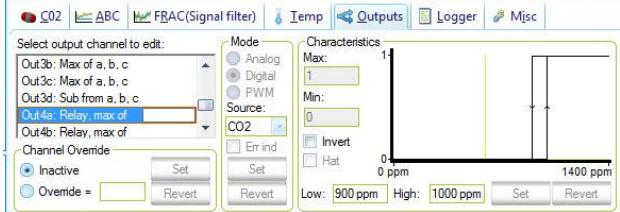
<p>7 Low 600ppm</p> 	<p>8 600, 550...400ppm</p> <p>Low 400ppm</p> 	<p>9 Low 400ppm</p> <p>Low 400ppm</p> 	<p>10</p> 
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UIP5



Outputs

Relay

<p>1</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ Screen</p> <p>Temperature Settings </p> <p>Humidity </p> <p>«</p>	<p>3</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>4 Outputs</p> <p>Meter</p> <p>Measurements</p> <p>Outputs </p> <p>Misc </p> <p>«</p>								
	2	3																					
	5	6																					
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Del	0	«																					
<p>5 Relay</p> <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> </table> <p></p> <p>«</p>	Out1	10.0V	Out2	4.8V	Out3	4.8V	Relay	1(active)	<p>6</p> <table border="1"> <tr> <td>Relay_a</td> <td></td> <td>CO2</td> </tr> <tr> <td>Relay_b</td> <td>Disabled</td> <td></td> </tr> <tr> <td>Relay_c</td> <td>Disabled</td> <td></td> </tr> <tr> <td>Relay_d</td> <td>Disabled</td> <td></td> </tr> </table> <p>«</p>	Relay_a		CO2	Relay_b	Disabled		Relay_c	Disabled		Relay_d	Disabled		<p>7 Type Digital</p> <p>Max 1</p> <p>Min 0</p> <p>Source CO2</p> <p>Digital</p> <p>Low 900ppm</p> <p>High 1000ppm</p> <p>«</p> 	<p>8</p> <p>Type Dig,Inv</p> <p>Digital Digital invert </p> <p>«</p>
Out1	10.0V																						
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Relay	1(active)																						
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Relay_c	Disabled																						
Relay_d	Disabled																						
<p>9</p> <p>Type Dig,Inv</p> <p>Digital Digital invert </p>	<p>10</p> <p>Max 1</p> <p>Min 0</p> <p>Source CO2</p> <p>Type Dig,Inv</p> <p>Low 900ppm</p> <p>High 1000ppm</p> <p>«</p> 	<p>UIP5</p> 																					

Communication settings

Address/Baudrate

<p>4</p> <p>Meter </p> <p>Measurements </p> <p>Outputs</p> <p>Misc </p>	<p>5 RS-485</p> <p>Meter info RS-485 </p> <p>PIN1 PIN1 </p> <p>Reset </p>	<p>6</p> <p>Address 10</p> <p>Baudrate 9600</p> <p>Parity None</p> <p>Stop bits 1</p>	<p>7</p> <p>Address 12</p> <p>- </p>
<p>8</p> <p>Address 12</p> <p>- + </p>	<p>9 NOTE!</p> <p>Meter info RS-485</p> <p>PIN1 PIN2</p> <p>Reset </p>		

UIP5 Address

<p>1</p> <p>Meter information</p> <p>Vendor Name SenseAir AB</p> <p>Product Code tSENSE</p> <p>Serial Number 0xFFFFFFFF</p> <p>Firmware 0x66010A</p> <p>Type ID 402</p> <p>Map Version 69</p> <p>Network Address 10</p> <p>Error Flags</p>	<p>2</p> <p>Meter information</p> <p>Vendor Name SenseAir AB</p> <p>Product Code tSENSE</p> <p>Serial Number 0xFFFFFFFF</p> <p>Firmware 0x66010A</p> <p>Type ID 402</p> <p>Map Version 69</p> <p>Network Address 12</p> <p>Error Flags</p>	<p>3</p> <p>Change Network Address?</p> <p>Are you sure you want to change meter network id from 10 to 12?</p> <p>Yes No</p>
---	---	---

UIP5 Baudrate

<p>1</p>	<p>2</p> <p>Property value</p> <p>Select: 19200</p> <p>9600</p> <p>19200</p> <p>38400</p> <p>57600</p>	<p>3</p> <p>Property value</p> <p>Select: 9600</p> <p>Set</p> <p>Revert</p>
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NOTE!

UIP baudrate ≠ RS-485 baudrate if *tSENSE VAV* is connected *via phone jack* (see fig. 2).
 UIP baudrate = RS-485 baudrate if *tSENSE VAV* is connected *via screw terminal* (see fig. 3).

To change settings via UIP requires Reset (Power OFF – Power ON) to execute them.

Connect meter

1 Connect meter

The screenshot shows the main application window for 'UIP5'. The 'Meter' menu is open, and the 'Connect...' option is highlighted. Other menu items include 'Connect to any (Ctrl+d)', 'Disconnect From Meter (Ctrl+d)', 'Connection configuration...', and 'Allow S8 connections for session'.

2

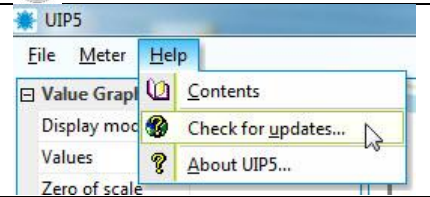
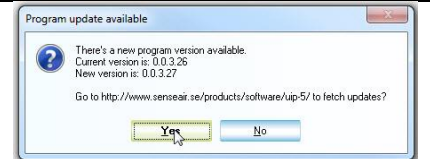

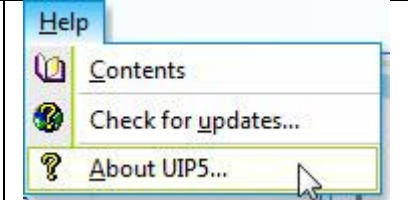

The 'Connection to meter' dialog box is shown. It has two sections: 'Interface types selection' and 'Address Mode'. Under 'Interface types selection', 'ModBus' is checked. Under 'Address Mode', 'Any Address' is selected. The 'Specified Address' and 'Scan From' fields both contain the value '104'. There are 'Connect' and 'Cancel' buttons at the bottom.

3 Information

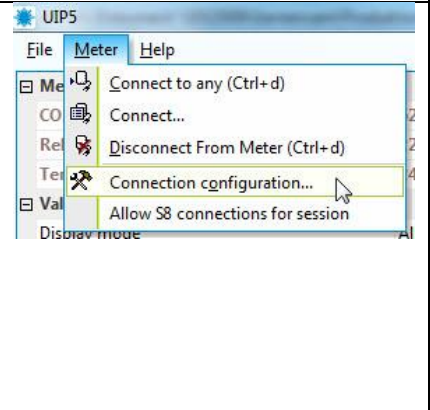
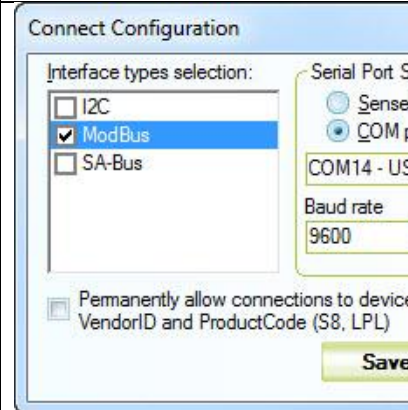


The 'Information' tab displays various settings and meter data in a table-like format.

Meter Values	
CO2 Value	625 ppm
Relative Humidity	22.5 %
Temperature	24.5 °C
Value Graph (Alt+g)	
Display mode	All data
Values	CO2 Value; Relative Humidity; Temperature
Zero of scale	
Lock scale	LockOnZoom
Number of points	80 (80)
Log to file	
Start/stop	Start
Log file	C:\Program Files\SenseAir\UIP5\LogData\log.txt
On start	New file (timestamp)
Save from	Now
Values	CO2 Value; Relative Humidity; Temperature
Log file size	
Connection	
Interface	ModBus
Port	COM14 - USB Serial Port
Network Address	254
Synchronization	Not supported
Period	5000 ms
Meter information	
Vendor Name	SenseAir AB
Product Code	tSENSE
Serial Number	0xFFFFFFFF
Firmware	0x66010A
Type ID	402
Map Version	69
Network Address	10
Error Flags	

Check for updates

<p>1</p> 		
<p>2 New version available</p> 		
<p>2 No new version</p> 	<p>3</p> 	<p>4</p> 

Connection configurations

<p>1</p> 	<p>2 ModBus 3 COM14-USB Serial Port 4 Save</p> 	
<p>5 Lower right corner of screen</p> 	<p>6</p> 	


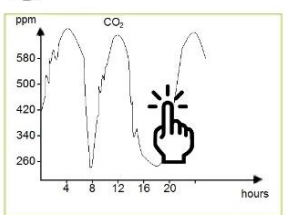


NOTE!

UIP baudrate \neq RS-485 baudrate if *tSENSE VAV* is connected via *phone jack* (see fig. 2).
 UIP baudrate = RS-485 baudrate if *tSENSE VAV* is connected via *screw terminal* (see fig. 3).

To change settings via UIP requires Reset (Power OFF – Power ON) to execute them.

Measured values

CO₂/Temperature/Humidity

<p>1</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">CO₂</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> 	<p>2</p> <div style="text-align: center;"> <p>CO₂</p> <p style="font-size: 2em;">429</p> <p>ppm</p> </div>	<p>3</p> 	<p>4</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">CO₂</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> 
<p>5</p> <div style="text-align: center;"> <p>CO₂</p> <p style="font-size: 1.5em;">429ppm</p> <p>Temperature</p> <p style="font-size: 1.5em;">23.1°C</p> <p>Humidity</p> <p style="font-size: 1.5em;">21%RH</p> </div>	<p>6</p> <div style="text-align: center;"> <p>CO₂</p> <p style="font-size: 2em;">429</p> <p>ppm</p> </div>	<p>7</p> <div style="text-align: center;"> <p>Temperature</p> <p style="font-size: 2em;">23.1</p> <p>°C</p> </div>	<p>8</p> <div style="text-align: center;"> <p>Humidity</p> <p style="font-size: 2em;">21.0</p> <p>%RH</p> </div>
<p>9</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">CO₂</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> 			

Display settings

Limits

CO₂/(Temperature)/(Humidity)

CO₂ Orange/Red limit (Temp./Humidity same method as for CO₂ limit settings)

<p>1</p> <p>CO₂ 429ppm Temperature 23.1°C Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ </p> <p>Screen Temperature Settings Humidity</p> <p>«</p>	<p>3</p> <p>Orange limit 600ppm Red limit 1000ppm Chart 24h</p> <p>«</p>	<p>4 100,200...700ppm</p> <p>Orange limit 700ppm</p> <p>-</p> <p>«</p>
<p>CO₂ red limit 1000ppm RH orange limit 70%RH</p> <p>CO₂ 1205ppm Temperature 73.6°F Humidity 72%RH</p> <p></p>	<p>CO₂ red limit 1000ppm</p> <p></p>	<p>RH orange limit 70%RH</p> <p></p>	

Chart 24h/Week

<p>1</p> <p>CO₂ 429ppm Temperature 23.1°C Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ </p> <p>Screen Temperature Settings Humidity</p> <p>«</p>	<p>3</p> <p>Orange limit 600ppm Red limit 1000ppm Chart 24h</p> <p>«</p>	<p>4</p> <p>CO₂ Chart Week</p> <p>24h </p> <p>«</p>
<p>5</p> <p>CO₂ Chart Week</p> <p>24h Week </p>			

Screen settings

1	2

Brightness

3	4	5

Background

3	4	5	6












Screensaver, Time setting

Interval





3	4	5	6

Toggle (Time and CO₂ and/or Temperature and/or Humidity)







Toggle time


<p>3</p> <p>Brightness 50%</p> <p>Background Normal</p> <p>Display Scheme Interval</p> <p>Toggle Ind area «</p> 	<p>4</p> <p>Toggle Time 3s  </p> <p>CO₂ X</p> <p>Temperature X</p> <p>Humidity X «</p>	<p>5</p> <p>Toggle Time 3s - +</p> <p>CO₂ X</p> <p>Temperature X</p> <p>Humidity X </p>	<p>6</p> <p>Brightness 50%</p> <p>Background Normal</p> <p>Display Scheme Interval</p> <p>Toggle Ind area </p>
<p>7</p> <p>CO₂ Screen</p> <p>Temperature Settings</p> <p>Humidity</p> 	<p>8</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C </p> <p>Humidity 21%RH</p> <p></p>	<p>9</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C </p> <p>Humidity 21%RH</p>	<p>10 3 s</p> <p>CO₂ 429 ppm</p>
<p>11 3 s</p> <p>Temperature 23.1 °C</p>	<p>12 3 s</p> <p>Humidity 21.0 %RH </p>	<p>13</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p>	

Toggle CO₂ and/or Temperature and/or Humidity










<p>3</p> <p>Brightness 50%</p> <p>Background Normal</p> <p>Display Scheme Interval</p> <p>Toggle Ind area «</p> 	<p>4</p> <p>Toggle Time 3s - +</p> <p>CO₂ </p> <p>Temperature X</p> <p>Humidity X «</p>	<p>5</p> <p>Toggle Time 3s - +</p> <p>CO₂ <input type="checkbox"/></p> <p>Temperature X</p> <p>Humidity X </p>	<p>6</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C </p> <p>Humidity 21%RH</p>
<p>7 Will NOT show up</p> <p>CO₂ 429 ppm</p>	<p>8 3 s</p> <p>Temperature 23.1 °C</p>	<p>9 3 s</p> <p>Humidity 21.0 %RH</p>	

Temperature unit selection

<p>1</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ Screen</p> <p>Temperature Settings</p> <p>Humidity</p> <p></p> <p>«</p>	<p>3</p> <p>Orange limit 30°C</p> <p>Red limit 40°C</p> <p>Chart Week</p> <p>Unit </p> <p>«</p>	<p>4</p> <p>Temperature Units °F</p> <p>Celsius Fahrenheit</p> <p></p> <p>«</p>
<p>5</p> <p>Temperature Units °F</p> <p>Celsius Fahrenheit</p> <p></p>			

<p>1 UIP5 Misc</p> <p>CO₂ ABC FRAC(Signal filter) Temp Outputs Logger Misc</p> <p>Select property to edit:</p> <ul style="list-style-type: none"> Temperature Unit (C/F) RS-485 parity (reset to activate new se RS-485 stop bits (reset to activate new RS-485 Baudrate (reset to activate new Altitude(m) <p>Property value: C</p> <p>Set Revert</p>	<p>2</p> <p>CO₂ ABC FRAC(Signal filter) Temp Outputs Logger Misc</p> <p>Select property to edit:</p> <ul style="list-style-type: none"> Temperature Unit (C/F) RS-485 parity (reset to activate new se RS-485 stop bits (reset to activate new RS-485 Baudrate (reset to activate new Altitude(m) <p>Property value: C</p> <p>Set Revert</p> <p></p>
---	--

Meter information

<p>1</p> <p>CO₂ 429ppm</p> <p>Temperature 23.1°C</p> <p>Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ Screen</p> <p>Temperature Settings</p> <p>Humidity</p> <p></p> <p>«</p>	<p>3</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>4</p> <p>Meter </p> <p>Measurements</p> <p>Outputs</p> <p>Misc «</p>
	2	3													
	5	6													
	8	9													
Del	0	«													
<p>5</p> <p>Meter info RS-485</p> <p>PIN1 PIN2</p> <p>Reset</p> <p>«</p> <p></p>	<p>6</p> <p>Meter information</p> <table border="1"> <tr> <td>Product code</td> <td>0x0</td> </tr> <tr> <td>Version</td> <td>1.03</td> </tr> <tr> <td>Serial Number</td> <td>0x30DA676</td> </tr> <tr> <td>Type ID</td> <td>402</td> </tr> <tr> <td>Map Version</td> <td>69</td> </tr> </table> <p></p>	Product code	0x0	Version	1.03	Serial Number	0x30DA676	Type ID	402	Map Version	69				
Product code	0x0														
Version	1.03														
Serial Number	0x30DA676														
Type ID	402														
Map Version	69														

Calibration options CO₂

4	5
Meter	CO ₂ 429ppm
Measurement	Temperature 23.1°C
Outputs	Humidity 21%RH
Misc «	«













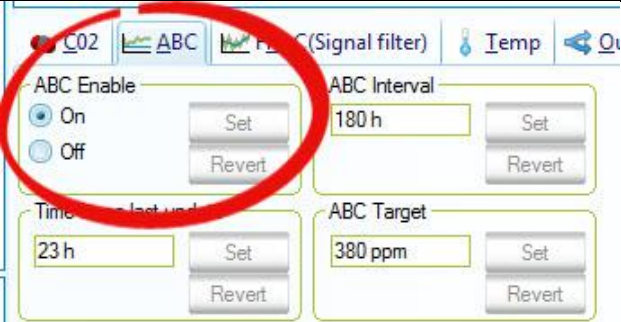
Zero cal/Background/Target cal

6	7	8	9
Zero ABC Background Altitude Target cal Restore cal «	Start zero calibration cycle? No Zero calibration use 0ppm CO ₂ calibration target, calibration cycle takes ~20s «	Zero calibration active 	Verifying
10	11	UIP: If reference meter shows e.g. CO ₂ -value 500ppm set Target to 500	
Zero calibration succeeded	Zero cal ABC Background Altitude Target cal Restore cal 		




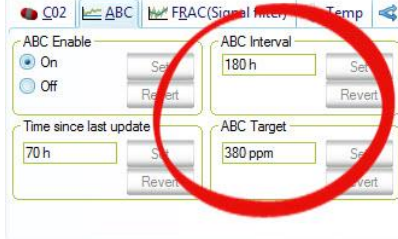
Background calibration button

1 Press 15s, until...	2 Green LED blinks twice











ABC
Enable/Disable

<p>1</p> <p>CO₂ 429ppm Temperature 23.1°C Humidity 21%RH </p> <p></p>	<p>2</p> <p>CO₂ Screen Temperature Settings Humidity «</p> <p></p>	<p>3</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>7</td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>		2	3		5	6	7	8	9	Del	0	«	<p>4</p> <p>Meter Measurement Outputs Misc «</p> <p></p>
	2	3													
	5	6													
7	8	9													
Del	0	«													
<p>5</p> <p>CO₂ 429ppm Temperature 23.1°C Humidity 21%RH «</p> <p></p>	<p>6</p> <p>Zero cal ABC Background Altitude Target cal Restore cal «</p> <p></p>	<p>7</p> <p>ABC Inactive ABC period 180hours ABC target 380ppm «</p> <p></p>	<p>8 Activate ABC</p> <p>ABC Active Enable Disable Save new ABC state? Yes No «</p> <p></p>												
<p>9 Save</p> <p>ABC Active Enable Disable Save new ABC state? Yes No «</p> <p></p>	<p>UIP5</p> 														

ABC period (ABC target / Altitude / Restore cal)

<p>5</p> <p>CO2 429ppm Temperature 23.1°C Humidity 21%RH «</p>	<p>6</p> <p>Zero cal ABC Background Altitude Target cal Restore cal «</p>	<p>7</p> <p>ABC Active ABC period 180hours ABC target 380ppm «</p>	<p>8</p> <p>ABC period 180 hours - + Save new ABC period? Yes No «</p>
<p>9</p> <p>ABC period 240 hours - + Save new ABC period? Yes No «</p>	<p>10 180, 181, 240hours</p> <p>ABC period 240 hours - + Save new ABC period? Yes No «</p>	<p>11 Save</p> <p>Saving ABC period</p> 	<p>12</p> <p>Verifying</p> 
<p>13</p> <p>ABC period set to 240 hours</p>	<p>14</p> <p>Zero cal ABC Background Altitude Target cal Restore cal </p>	<p>UIP5</p> 	



Offset Temperature/Humidity

<p>1</p> <p>CO₂ 429ppm Temperature 23.1°C Humidity 21%RH</p> <p></p> <p></p>	<p>2</p> <p>CO₂ Screen Temperature Settings Humidity</p> <p></p> <p>«</p>	<p>3</p> <p>Enter PIN 2001</p> <table border="1"> <tr><td></td><td>2</td><td>3</td></tr> <tr><td>5</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td></tr> <tr><td>Del</td><td>0</td><td>«</td></tr> </table>		2	3	5	5	6	7	8	9	Del	0	«	<p>4</p> <p>Meter Measurements Outputs Misc</p> <p></p> <p>«</p>
	2	3													
5	5	6													
7	8	9													
Del	0	«													
<p>5</p> <p>CO₂ 429ppm Temperature 23.1°C Humidity 21%RH</p> <p></p> <p>«</p>	<p>6 0.0..-0.1...-0.2°C</p> <p>Temperature offset -2.5°C</p> <p></p> <p>+</p> <p>«</p>	<p>7</p> <p>Temperature offset -2.5°C</p> <p>-</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 software UIP (version 5 or higher) and in the display at "Meter status"

<p>4</p> <p>Meter Measurements Outputs Misc</p> <p></p> <p>«</p>	<p>5</p> <p>Meter info RS-485 PIN1 PIN2 Reset</p> <p></p> <p>«</p>	<p>6</p> <p>Meter information</p> <table border="1"> <tr><td>Meter status</td><td>0x0</td></tr> <tr><td>Version</td><td>1.03</td></tr> <tr><td>Serial Number</td><td>0x30DA676</td></tr> <tr><td>Type ID</td><td>402</td></tr> <tr><td>Map Version</td><td>69</td></tr> </table> <p>«</p>	Meter status	0x0	Version	1.03	Serial Number	0x30DA676	Type ID	402	Map Version	69
Meter status	0x0											
Version	1.03											
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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 ₂ sensor Com. error	No ability to communicate with CO ₂ sensor module.	Try to restart sensor by power OFF/ON. Contact local distributor.
1	CO ₂ sensor CO ₂ measure error	CO ₂ measurement error.	Try Background calibration (see fig. 4 and 5). Contact local distributor. <i>See Note 1!</i>
2	T sensor T measure error	Temp measurement error.	Try to restart sensor by power OFF/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 ₂ 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 later. Contact local distributor.

Table 2: Error codes and action plans.

NOTE!

Occurs if probe is out of range, at very high CO₂ values. Error code resets automatically when measured values returns to normal. May also indicate need of zero point calibration. If CO₂ 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).

PIN codes

1	2	3	4

Create PIN code for access to display settings (PIN1)

5 PIN1	6 PIN1 Code Off...	7 PIN(1) Code On	8 Create PIN(1) Code
9 Save	10		

Create PIN code for access to meter settings (PIN2)

5 PIN2	6 Create PIN2 Code	7 Save	8

Maintenance

tSENSE is maintenance free. Internal self-adjusting calibration function takes care of normal long term drift. To secure highest accuracy, a time interval of five years is recommended between CO₂ calibrations, unless some special situations have occurred.

Software can be downloaded free at 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 2004/108/EC, 92/31/EEG, RoHS 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



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