



# Lindab **Ultra BT™**

User Manual

# UltraLink®

# Ultra BT™

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## Introduction

This user manual describes the features in the product that is related to wireless sensors and airflow control based on the sensor readings. The setup and configuration of both sensors and regulation is done using the OneLink app. This functionality extends outside of the functions of a regular VAV-damper, and we have given it the name Ultra BT™.

There are three types of sensors that can be connected to the UltraLink in order to control the airflow:

Click on the sensor to view more specific product information.  
Or go to [www.lindab.com](http://www.lindab.com)



Wireless sensor  
SEPTH

- Presence
- Temperature
- Relative Humidity



Wireless sensor  
SECTH

- CO<sub>2</sub>
- Temperature
- Relative humidity



UltraLink®  
Controller FTCU/Monitor FTMU

- Airflow
- Temperature

## Wireless sensors

Up to five wireless sensors can be connected to the UltraLink using the OneLink app. After successful connection of a sensor its readings are available both in the app but also in the registers where they are accessed under the following registers:

| Register | Reading         |         |
|----------|-----------------|---------|
| 3x2012   | Presence        | Sum     |
| 3x2021   | Temperature     | Min     |
| 3x2022   |                 | Max     |
| 3x2023   |                 | Average |
| 3x2034   | Air flow        | Sum     |
| 3x2041   | Humidity        | Min     |
| 3x2042   |                 | Max     |
| 3x2043   |                 | Average |
| 3x2051   | CO <sub>2</sub> | Min     |
| 3x2052   |                 | Max     |
| 3x2053   |                 | Average |

If you connect more than one sensor that reports the same variable type (for example two temperature sensors) then you can choose to read either the max, min or average value according to the table above.

## Room regulation

The regulation will not strive to always reach a given set point. Instead it will try to keep the climate within the allowed deviation that is configured. It can of course only make improvements if the supply air has the possibility to support it. We can for example not get a lower temperature than the temperature in the supply air.

The room regulation works by applying a multiplication factor to the normal flow. The multiplication factor is configured in the app under each different type of variable. As long as the variable is within its deadband the regulation factor is 1.0, but as soon as we move outside the deadband a multiplication factor is applied to the normal flow meaning that the flow will increase. Before applying the factor a check is made to make sure that an increase of the airflow actually improves the conditions. If we for example have a too low temperature in the room and outside the deadband then the factor will not be applied if the supply air is colder than the room temperature.

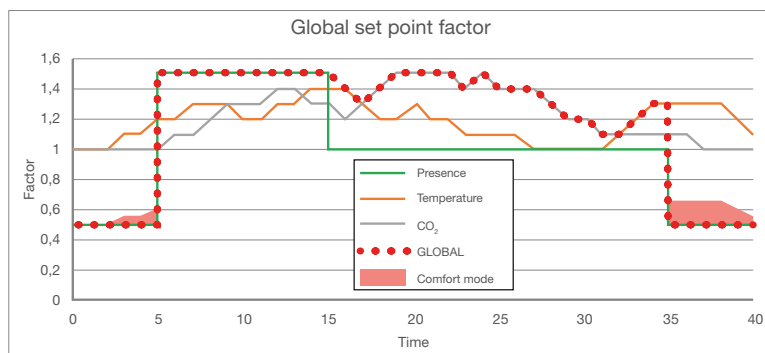
## Temperature, CO<sub>2</sub> and Humidity

Each variable that is used in the regulation will produce its own multiplication factor and the factor used by the product is the one that requests the most amount of air.

### Presence

The multiplication factor from presence is always used when the room is unoccupied and it either overrides the other factors (Economy mode) or it is multiplied with the highest factor from the other regulation types (Comfort mode). When the room is occupied its factor is treated just like the factor from Temperature, CO<sub>2</sub> and Humidity and will only be used if it is the highest among the enabled regulation types.

The graph below shows the global set point factor that will be used in a case where regulation is active for all of the four variables above. Each variable is producing its own multiplication factor and at any given moment the highest of them will be used (if the room is not unoccupied). The red areas shows the effect you get by activating Comfort mode.



### Airflow

When regulation on airflow is used all other regulation types are deactivated. It can only be used alone. In this case the product will act as a slave to one or more other flow sensors of type FTMU or FTCU.

# UltraLink®

# Ultra BT™

## How to connect sensors to UltraLink®

After you have connected your UltraLink to the OneLink app you can connect up to 5 different sensors to your UltraLink by following the steps below.

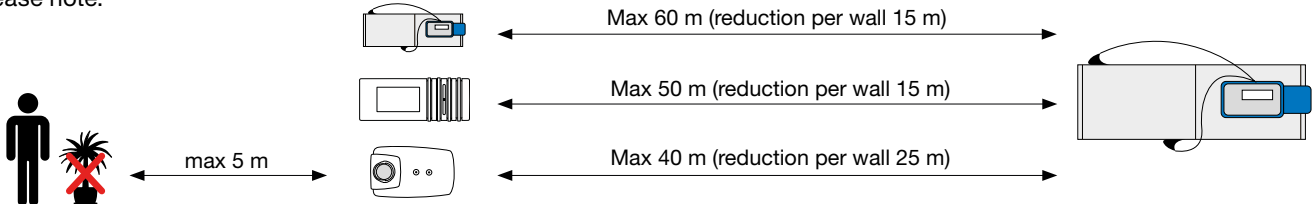


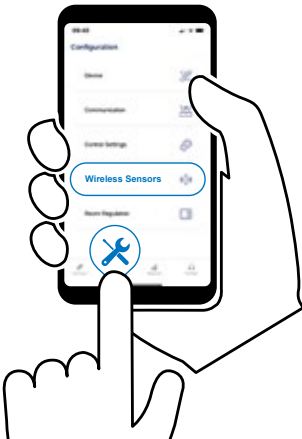


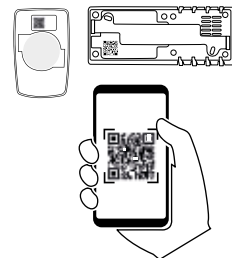
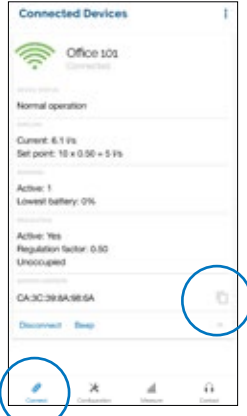
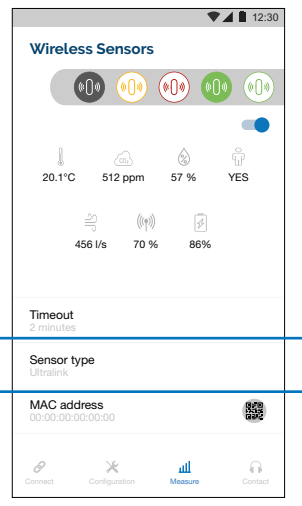
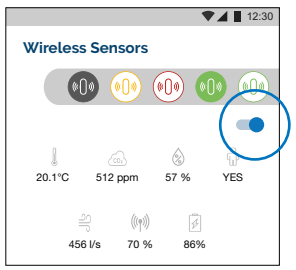

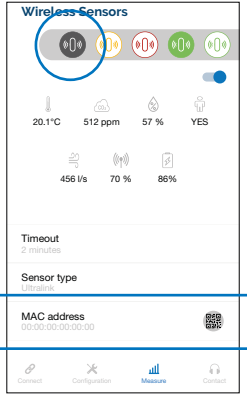
Lindab OneLink™

Download app




Please note:

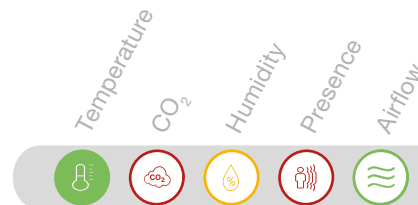











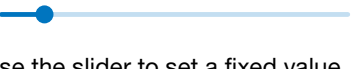





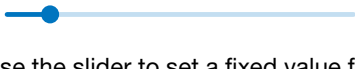

| Step 1   | Step 2  | Step 5   |  |
|--|---|--|--|
| <ul style="list-style-type: none"> <li>Start app and go to "Configuration".</li> <li>Tap the "Wireless Sensor" page.</li> </ul>  | <ul style="list-style-type: none"> <li>Here are 5 available sensor slots. Tap one of the inactive sensor icons.</li> </ul>  <p>If you already have connected sensors, the sensor icons can have different color showing their status:</p> <ul style="list-style-type: none"> <li> OK</li> <li> Error</li> <li> Waiting</li> <li> Inactive</li> </ul> | <p><b>connect sensor</b></p> <ul style="list-style-type: none"> <li>Click on the QR icon on your display menu.</li> </ul> <p>MAC address<br/>00:00:00:00:00:00 </p> <ul style="list-style-type: none"> <li>Scan the QR code placed on the back side of the sensor.</li> </ul>  <ul style="list-style-type: none"> <li>Wait until the sensor icon turns green. This can take a few seconds.</li> </ul>   | <p><b>connect another UltraLink®</b></p> <p>If you wish to use another UltraLinks flow values as reference to the master unit:</p> <ul style="list-style-type: none"> <li>First connect to the reference unit and copy the MAC-address.</li> </ul>  |
| <p><b>Step 3</b></p> <ul style="list-style-type: none"> <li>Choose sensor type.</li> </ul>                                      | <p><b>Step 4</b></p> <ul style="list-style-type: none"> <li>Click on enable sensor.</li> </ul>   | <p><b>In case of red symbol</b></p> <ul style="list-style-type: none"> <li>In case of </li> <li>Check if the battery are full and correctly placed.</li> <li>Check that there's not too long distance between the sensor and UltraLink.</li> </ul> <p>Connect to the device that should act as a flow slave and paste the copied MAC-address into the MAC-address field on the sensor page. Use any sensor position 1-5 that is not already in use (color should be gray).</p>  |  |

## How to enable room regulation

Tap the Room Regulation tab. In this menu you can assign control variables for your system. The top bar represents the different variables which you can use to control your room/zone.


If you need more help there's an information button accessible from the icon in the top right corner. 












| Setting up temperature control  | CO <sub>2</sub> settings  | Humidity settings  |
|---|---|--|
| <ul style="list-style-type: none"> <li>Tap  Enable control by choosing the min, max or average value.</li> <li>Use the slider Baseline to set a target temperature.                             <div style="text-align: right;">Baseline 25 °C</div>  </li> <li>Use the slider Allowed deviation to adjust the deviation from Baseline before the maximum airflow is used.                             <div style="text-align: right;">Allowed deviation 2 °C</div>  </li> <li>Adjust the slider Dead band to adjust how much the control value can deviate from Baseline before regulation starts.                             <div style="text-align: right;">Dead band 60 %</div>  </li> <li>The Scale Factor slider adjusts the maximum factor that can be applied to the normal flow.                             <div style="text-align: right;">Scale factor 200 %</div>  </li> </ul> | <ul style="list-style-type: none"> <li>Tap  Enable control by choosing the min, max or average value.</li> <li>Use the slider Baseline to set a target CO<sub>2</sub> value.                             <div style="text-align: right;">Baseline 600 ppm</div>  </li> <li>Use the slider Allowed deviation to adjust the deviation from Baseline before the maximum airflow is used.                             <div style="text-align: right;">Allowed deviation 250 ppm</div>  </li> <li>Adjust the slider Dead band to adjust how much the control value can deviate from Baseline before regulation starts.                             <div style="text-align: right;">Dead band 50 %</div>  </li> <li>The Scale Factor slider adjusts the maximum factor that can be applied to the normal flow.                             <div style="text-align: right;">Scale factor 150 %</div>  </li> <li>Use the slider to set a fixed value for the CO<sub>2</sub> in the supply air. A good estimation. For outdoor air is around 400ppm. This value can also be set in real-time and updated using Modbus (register 4x2145). Before a factor is applied to increase the flow due to a CO<sub>2</sub> deviation from Baseline a check is made to make sure an increased airflow will improve the CO<sub>2</sub> in the room. If the supply air CO<sub>2</sub> has the wrong properties the flow will not be increased.                             <div style="text-align: right;">CO<sub>2</sub> supplied 400 ppm</div>  </li> </ul> | <ul style="list-style-type: none"> <li>Tap  Enable control by choosing the min, max or average value.</li> <li>Use the slider Baseline to set a target humidity value.                             <div style="text-align: right;">Baseline 40 %</div>  </li> <li>Use the slider Allowed deviation to adjust the deviation from Baseline before the maximum airflow is used.                             <div style="text-align: right;">Allowed deviation 20 %</div>  </li> <li>Adjust the slider Dead band to adjust how much the control value can deviate from Baseline before regulation starts.                             <div style="text-align: right;">Dead band 50 %</div>  </li> <li>The Scale Factor slider adjusts the maximum factor that can be applied to the normal flow.                             <div style="text-align: right;">Scale factor 150 %</div>  </li> <li>Use the slider to set a fixed value for the relative humidity in the supply air. This value can also be set in real-time and updated using Modbus (register 4x2135). Before a factor is applied to increase the flow due to a humidity deviation from Baseline a check is made to make sure an increased airflow will improve the humidity in the room. If the supply air humidity has the wrong properties the flow will not be increased.                             <div style="text-align: right;">Humidity supplied 40 %</div>  </li> </ul> |

## How to enable room regulation

Tap the Room Regulation tab. In this menu you can assign control variables for your system. The top bar represents the different variables which you can use to control your room/zone.

If you need more help there's an information button accessible from the icon in the top right corner. 



| Presence settings   | Airflow settings   |
|---|--|
| <ul style="list-style-type: none"> <li>Tap  Enable control.</li> <li>Use Trigger time slider to adjust the time an increased airflow is active as someone enters the room. The same amount of time is used to determine how long a presence trigger is valid and should indicate presence.                     <p>Trigger time <span>15 min</span></p>  </li> <li>Use the Factor forced slider to select the scale of increased airflow as the trigger time is active. 200 % means that the normal flow is doubled during the time the trigger is active.                     <p>Factor forced <span>150 %</span></p>  </li> <li>The Factor no presence slider is to adjust the impact on the normal flow when the sensor does not detect occupancy. 50 % means airflow is halved compared to normal flow.                     <p>Factor no presence <span>50 %</span></p>  </li> <li>When this feature is enabled we allow a reduced regulation based on temperature, CO<sub>2</sub> and humidity even when the room is unoccupied. When it is disabled the flow factor for unoccupied is determined only by the setting under "Factor no presence", but when it is enabled the flow factor is calculated as "Factor no presence" multiplied with what the multiplication factor would be if the room was occupied.                     <p>Comfort mode </p> </li> </ul> | <ul style="list-style-type: none"> <li>Tap  Enable control. Other control variables will automatically be disabled.</li> <li>Use the top slider to adjust the flow tolerance, this is the how much the flow can deviate before the UltraLink updates its setpoint.                     <p>Flow tolerance <span>10 %</span></p>  </li> <li>The Scale factor slider controls the setpoint of the UltraLink relative to the control flow.                     <p>Scale factor <span>100 %</span></p>  </li> <li>This feature determines how the set point for the product will be derived.                     <ul style="list-style-type: none"> <li>Use summed flow as set point<br/>With this selection enabled the set point for the product will be calculated as the sum of the flows that are received as sensor data multiplied by the "Scale factor" and with "Flow offset" added.<br/><math display="block">\text{New setpoint} = (\text{UltraLink sensor 1} + \text{UltraLink sensor 2} + \dots) \times \text{Scale factor} + \text{Flow offset}</math></li> <li>Reduce products set point with summed flow<br/>With this selection enabled the set point that will be used corresponds to the products own set point reduced by the summed flows that are received as sensor data multiplied by the "Scale factor" and with "Flow offset" added.<br/><math display="block">\text{New setpoint} = (\text{Setpoint} - (\text{UltraLink sensor 1} + \text{UltraLink sensor 2} + \dots)) \times \text{Scale factor} + \text{Flow offset}</math></li> <li>Add summed flow to products set point<br/>With this selection enabled the set point that will be used corresponds to the products own set point added with the summed flows that are received as sensor data multiplied by the "Scale factor" and with "Flow offset" added.<br/><math display="block">\text{New setpoint} = (\text{Setpoint} + (\text{UltraLink sensor 1} + \text{UltraLink sensor 2} + \dots)) \times \text{Scale factor} + \text{Flow offset}</math></li> </ul> </li> </ul> <h3>Set point calculation</h3> <p>Use summed flow</p> <ul style="list-style-type: none"> <li>This feature adds an offset to the summed flow that are received as sensor data. It gives possibility add a fixed offset in relation to the received sensor data.                     <p>Flow offset <span>25 l/s</span></p>  </li> </ul> |

# UltraLink®

# Ultra BT™

## End-user app OneSet™

Ultra BT comes with an optional end-user app where it is possible to monitor the room and make some personal settings, for example room temperature. To be able to access the specific room control settings from this end-user app, you can easily scan the QR-code associated with the room you want to control.

As soon as a QR-code is scanned, access- duration- and validity rights to the specific room is stored locally in the app. As long as you have right to access the room control settings, all stored rooms will appear in a list view in the OneSet end-user app. Access to these rooms can now be made without need of scanning the code again until the duration rights has exceeded. As soon as the duration is exceeded the room will be removed from the list view and you need to scan the code again to get new access.



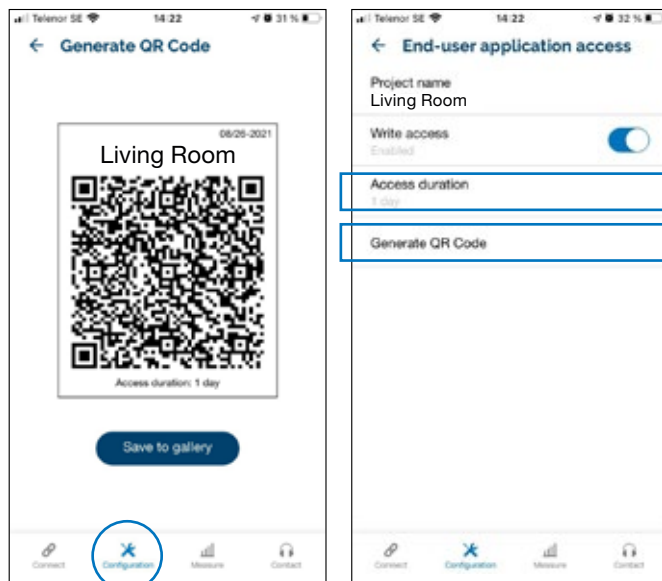
## Generate QR-codes associated to different rooms in the commissioning app OneLink™

The QR codes are generated in the commissioning app OneLink.

Go to Configuration > Device > "Generate QR code"

The QR-code can be generated with different access rights (read only or read and write) and different duration of validity. This feature allows for flexibility and you can, for example, generate 24h codes for hotel rooms, but in a residential application you can generate codes that gives eternal access.

When everything is set up for use, download the end-user app for easy control of the temperature in the room. The OneSet app can replace a traditional wall mounted room controller.



## Download:



Lindab OneSet™



Lindab OneLink™

Download app





Most of us spend the majority of our time indoors. Indoor climate is crucial to how we feel, how productive we are and if we stay healthy.

We at Lindab have therefore made it our most important objective to contribute to an indoor climate that improves people's lives. We do this by developing energy-efficient ventilation solutions and durable building products. We also aim to contribute to a better climate for our planet by working in a way that is sustainable for both people and the environment.

[Lindab | For a better climate](#)