

# Lindab **Regula Combi 1.5**

Control equipment



# Control equipment

# Regula Combi 1.5

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# Control equipment

# Regula Combi 1.5

## Overview

### Use

Customized control equipment for water and airborne climate systems with individual regulation.

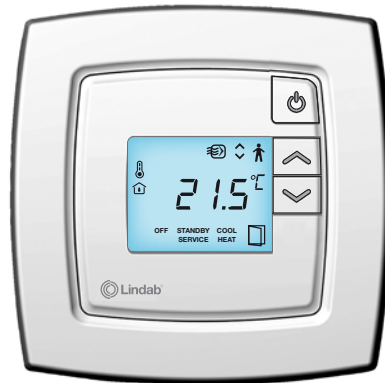
Regula Combi can control heating and cooling in sequence, VAV in combination with heating and cooling, Change-Over systems, as well as communicate with Modbus/EXoline/Bacnet Master systems.

Regula Connect Pascal, Regula Connect Multi, Regula Connect Basic and Regula Control Pascal are connection cards for the flexible connection of air and waterborne systems. For further informations on the Regula connect Pascal, please see the Lindab Pascal documents.

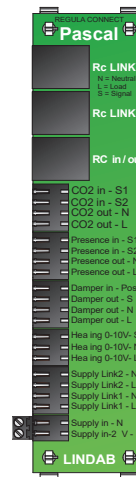
Regula Combi is available for installation on the wall. Regula Combi can be integrated in a chilled beam directly also. The Regula Connect cards are integrated in or on our products.

## Worth noting

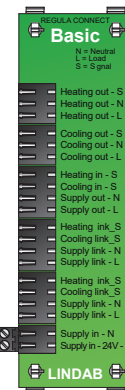
- Regula Combi is a microprocessor-based PI controller with pulsing ON/OFF signal.
- Regula Combi can control with ON/OFF and/or 0 - 10 V signal.
- Regula Combi can control chilled beams in combination with VAV devices.
- Regula Combi has 8 pre-defined operating programs.
- Regula Combi is provided with 4 inputs and 3 outputs.
- Regula Combi communicates via Modbus, EXoline or Bacnet.



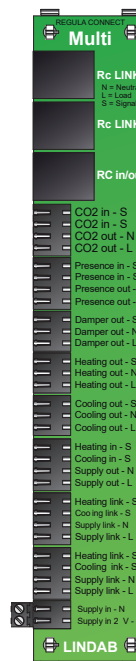
Regula Combi



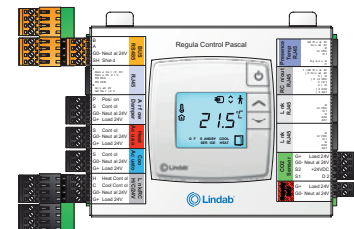
Regula Connect Pascal



Regula Connect Basic



Regula Connect Multi



Regula Control Pascal

## Order code

Product	Regula Combi	Regula Combi Pascal
Regula Combi		
Standard		
Regula Combi Pascal		
Including adaptor for RJ45 patch cable		
Example: Regula Combi Pascal		

# Control equipment

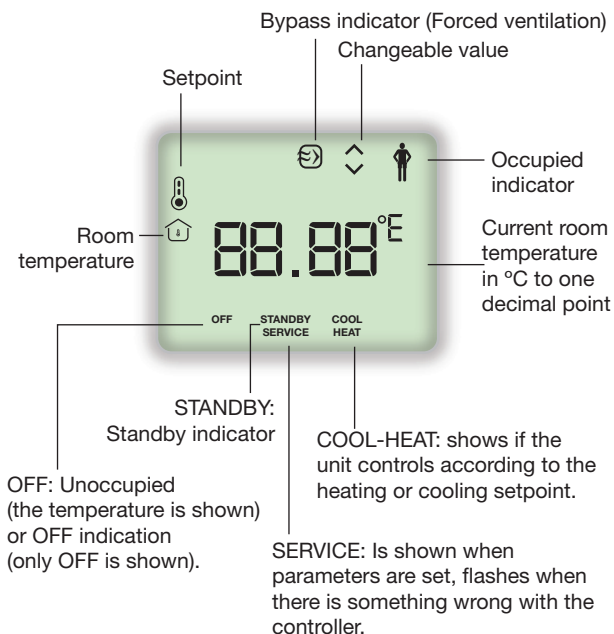
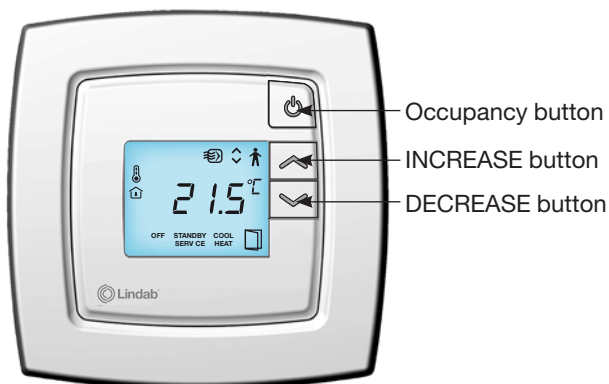
# Regula Combi 1.5

## Display handling and indications

Regula Combi has an Occupancy button, as well as an INCREASE button and a DECREASE button to increase and decrease the set point.

### Example:

The control setpoint is 22°C and the added displacement is +1.5°C. This means that the value 23.5°C will be shown in the display. "HEAT" or "COOL" will flash depending on which of the setpoint values is the control setpoint when you enter the set point menu, i.e. depending on which set point you are changing. The displacement is added to both the heating and cooling set point.



There are numerous possibilities of what to be shown in the display (with parameter 42), also at setpoint adjustment (with parameter 74).

User limitations of the buttons can be set with parameter 43, 44, 108 and 109.

Note: changing parameter 109 will block re-entry of parameter menu via display. Parameter access will then only be possible using Regio Tool.

## Parameter menu

It is possible to set different parameter values in the parameter menu. The parameter menu is accessed by simultaneously holding the INCREASE and DECREASE buttons depressed for about 5 seconds. The Service indication will be displayed. Press the INCREASE bottom twice.

First the display will show the parameter number 0 (which chooses program). Scroll between parameters by using the INCREASE and DECREASE buttons. Press the Occupancy button to select the desired parameter. The parameter number will be replaced by the parameter value. The value can be changed using the INCREASE and DECREASE buttons. If a button is held depressed the value will start scrolling, first slowly and then with increasing speed in 3 – 4 steps with 2 – 3 seconds between steps.

To retrieve the original value, i.e. the value before change, press the INCREASE and DECREASE buttons at the same time. The original value is shown on the display.

To acknowledge and store a set parameter value, press the Occupancy button again, the display then returns to showing the parameter number.

After a certain time, about 1 minute, or when the INCREASE and DECREASE buttons are pressed at the same time while in the menu, the display returns to the normal view. Exit is shown on the display after the last parameter. The parameter menu is exited by pressing the Occupancy button while in Exit. Pressing INCREASE goes to the first parameter and pressing DECREASE goes to the last parameter. In the Parameter list the numbers of selectable parameters will vary depending on which program is activated. The defaults for all programs are shown in the parameter list. Not all parameters are selectable in all programs.

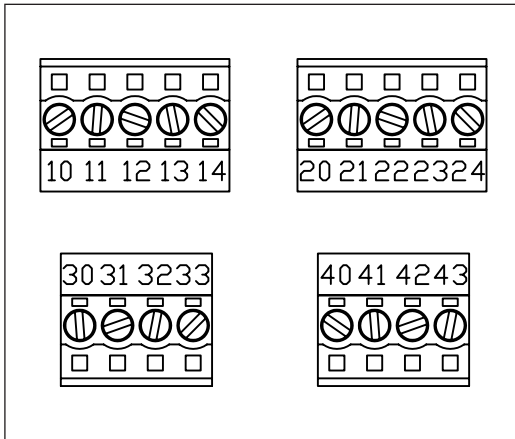
## Connecting actuators

The maximum number of actuators that can be connected to the digital output (ON/OFF) is 10 for cooling and heating, respectively. When more than 4 on/off actuators for cooling or heating are connected, terminal blocks 10 and 20 must be connected with a cable because the Regula Combi print card can not handle the output power for more than 4 on/off actuators.

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## Connection descriptions



	<p><b>10</b> G+ Supply voltage 24 V AC  <b>11</b> G0- Supply voltage 0 V  <b>12-14</b> No function.</p>
	<p><b>20</b> GDO 24 V AC out common for DO. Internally connected to terminal 10, G+.  <b>21</b> G0 0 V common for UO. Internally connected to terminal 11, G0-.  <b>22</b> UO3 Control output forcing (cooling). For a 0-10 V DC actuator, max 5 mA. The actuator's 0-10 V control signal terminal is connected to terminal 22 and its supply terminals to terminals 20 and 21. Make sure that the reference pole G0- is connected to the correct terminal on the actuator. Alternatively for a 24 V AC thermal actuator, max 2.0 A. The thermal actuator is connected between terminals 22 and 20, GDO.  <b>23</b> UO1 Control output heating. For a 0-10 V DC actuator, max 5 mA. The actuator's 0-10 V control signal terminal is connected to terminal 23 and its supply terminals to terminals 20 and 21. Make sure that the reference pole G0 is connected to the correct terminal on the actuator. Alternatively for a 24 V AC thermal actuator, max 2.0 A. The thermal actuator is connected between terminals 23 and 20, GDO.  <b>24</b> UO2 Control output cooling. For a 0-10 V DC actuator, max 5 mA. The actuator's 0-10 V control signal terminal is connected to terminal 24 and its supply terminals to terminals 20 and 21. Make sure that the reference pole G0- is connected to the correct terminal on the actuator. Alternatively for a 24 V AC thermal actuator, max 2.0 A. The thermal actuator is connected between terminals 24 and 20, GDO.</p>
	<p><b>30</b> AI1 For temperature sensor, PT1000. Measuring range 0-50 °C. The sensor is connected between terminals 30 and 41, AGnd.  <b>31</b> AI2 For a 0-10 V CO<sub>2</sub> sensor. Alternatively for a 0-10 V Damper position. The sensor is connected between terminals 31 and 41, AGnd.  <b>32</b> DI1 Presence sensor. A potential-free contact is connected between terminals 32 and 40, +C. Alternatively for a Window contact.  <b>33</b> DI2/CI Condensation detector. The sensor is connected between terminals 33 and 41, AGnd. Alternatively for a Change Over indicator, CO<sub>2</sub> Relay sensor or CO<sub>2</sub> Pulse sensor.</p>
	<p><b>40</b> +C 24 V DC out common for DI  <b>41</b> AGnd Analogue ground, reference for AI1 and AI2  <b>42</b> A RS485-communication A  <b>43</b> B RS485-communication B</p>

### Analogue and digital inputs

If changing the setting for an analogue or digital input (AI1, AI2, DI1 or DI2), it is recommended to take the Regula Combi out of its console, making it powerless for a moment.

## Control equipment

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## Technical data

Model	Regula Combi
Supply voltage	18...30 V AC, 50...60 Hz
Communication	RS485, EXOline / Modbus / Bacnet. 8 data bits, even parity, 1 or 2 stop bit. 9600, 19200, 38400 bps.
Outputs	3 UO (either AO or pulsating DO) heating, cooling and forcing (cooling)
Inputs	2 AI for Temperature and CO <sub>2</sub> / Damper position. 2 DI for Presence / Window-contact and Condensation / Change-Over / CO <sub>2</sub> -relay / CO <sub>2</sub> -pulse / RH -Pulse %
Installation	In equipment box or surface mounted.
Analog Output signal	0-10 V, max 5 mA *
Digital Output signal	24 V, max. 2.0 A (time proportional pulse output signal) **
Temperature range	5-40°C
Temperature setpoint	Heating 21, Cooling 22 ± 3°C ***
Dead zone	1°C (set by h/c setpoints)
Power consumption	2.5 VA
Electrical connection	Screw-in plinth
Size, controller	95 × 95 × 31 mm
Casing	Polycarbonate, RAL 9003
Protection class	IP 20
Certification	CE
Ambient temperature	0...50°C
Storage temperature	-2...70°C
Ambient Relative Humidity	Max. 90%RH
Actuator exercise	Yes. 5 min. once every 23 hours
Indication, heating	"Heat" in display
Indication, cooling	"Cool" in display
Adjustment of desired valve	±3°C (adjustable)

\* Max 10 actuators for heating or cooling stages.

\*\* Max 10 actuators for heating or cooling stages. When more than 4 on/off actuators for cooling or heating are connected, terminal blocks 10 and 20 must be connected with a cable.

\*\*\* Basic heating setpoint 5-40°C, Basic cooling setpoint 5-50°C, Setpoint displacement +/-0-10°C.

**NOTE !** If using the integrated PT1000 temperature sensor in CO<sub>2</sub>/RH% units, then a temperature compensation of the analogue input (P56) is needed. For CTRTA(-D)-LB set to -1.8°C and for HTRT10A(-D) -1.5°C. This applies to normal room temperature range (20-28°C) and normal room air velocities (0.1-0.25 m/s).

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## Regula Control Pascal

### Reconnecting control cables

When moving, building new, or removing existing partitions, the control system can be reconnected (see picture below). This to allow the control centre to control the products in the room where it is installed.

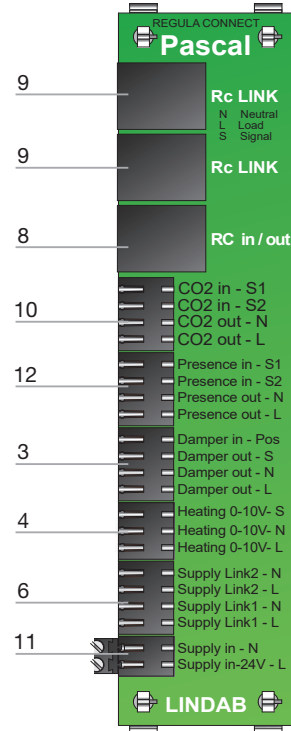
The unit's cable consists of four conductors, two for the supply voltage and two for the control signal to the heating and cooling actuators.

The figures refer to the picture below.

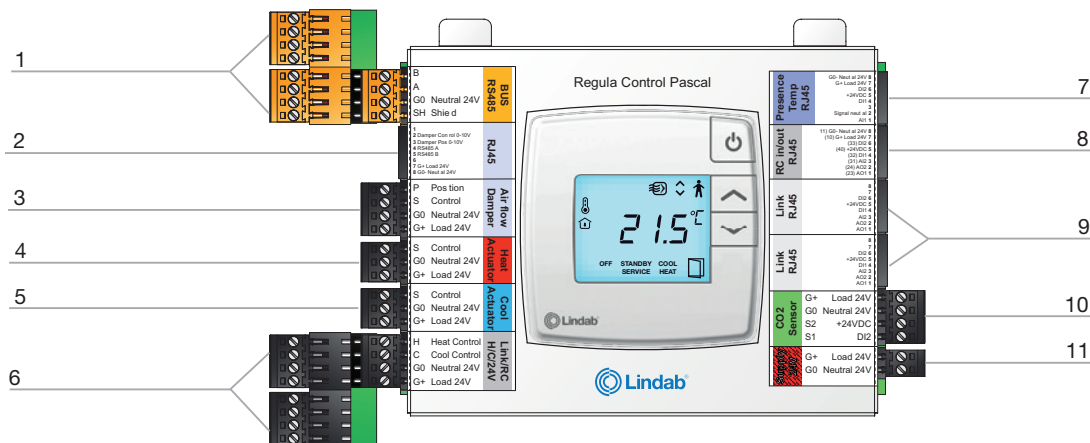
- 1 Exoline bus connection
- 2 Not used
- 3 Connector for damper output.
- 4 Connectors for heating output devices, such as heating circuit actuators.
- 5 Connectors for cooling output devices, such as cooling circuit actuators.
- 6 Connector for power and communication link between one or more beams.
- 7 Connector for integrated presence/temp. sensor.
- 8 RC in/out.
- 9 RC link.
- 10 Connector for CO<sub>2</sub> sensor input.
- 11 Connector for direct power via external transformer.
- 12 Connector for Presence sensor input.

## Regula Connect Pascal

For further information about Regula Connect Pascal please see the Pascal documents.



Regula Connect Pascal



Regula Control Pascal

# Control equipment

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## Regula Connect Basic

Regula Connect Basic is a connection card that provides flexible connection for chilled beams or facade systems. Regula Connect Basic consists of a connection card with connectors for mains cables, thermostat cables and terminal blocks for actuator cables. The card has alternatives for the mains cable outputs, so the control signal can be transmitted to the next chilled beam or facade system in both directions or terminated at any point. A transformer is also connected to a free port.

## Regula Connect Multi

In addition to the connectors available in Regula connect Basic, the Regula Connect Multi also offers connectors for CO<sub>2</sub> and Presence sensors. Further more it is also possible to connect a damper on the Regula Connect Multi, for air flow control. The damper option is used to for forced ventilation and for the Lindab eHybrid system.

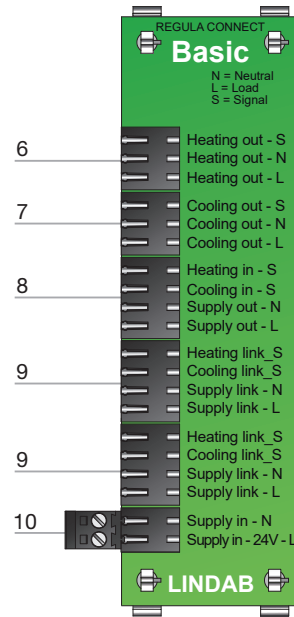
### Reconnecting control cables

When moving, building new, or removing existing partitions, the control system can be reconnected (see picture below). This to allow the control centre to control the products in the room where it is installed.

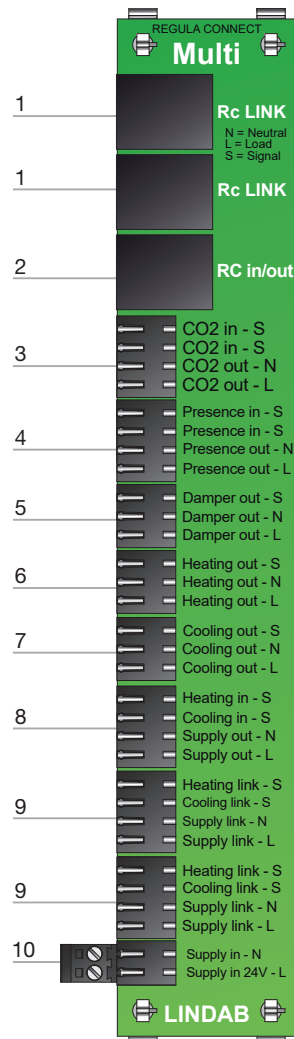
The unit's cable consists of four conductors, two for the supply voltage and two for the control signal to the heating and cooling actuators.

The figures refer to the picture below.

- 1 RC link.
- 2 RC in/out.
- 3 Connector for CO<sub>2</sub> sensor input.
- 4 Connector for Presence sensor input.
- 5 Connector for damper output.
- 6 Connectors for heating output devices, such as heating circuit actuators.
- 7 Connectors for cooling output devices, such as cooling circuit actuators.
- 8 Connector for linking Heating/Cooling signal and power
- 9 Connector for power and communication link between one or more beams.
- 10 Connector for direct power via external transformer.



Regula Connect Basic

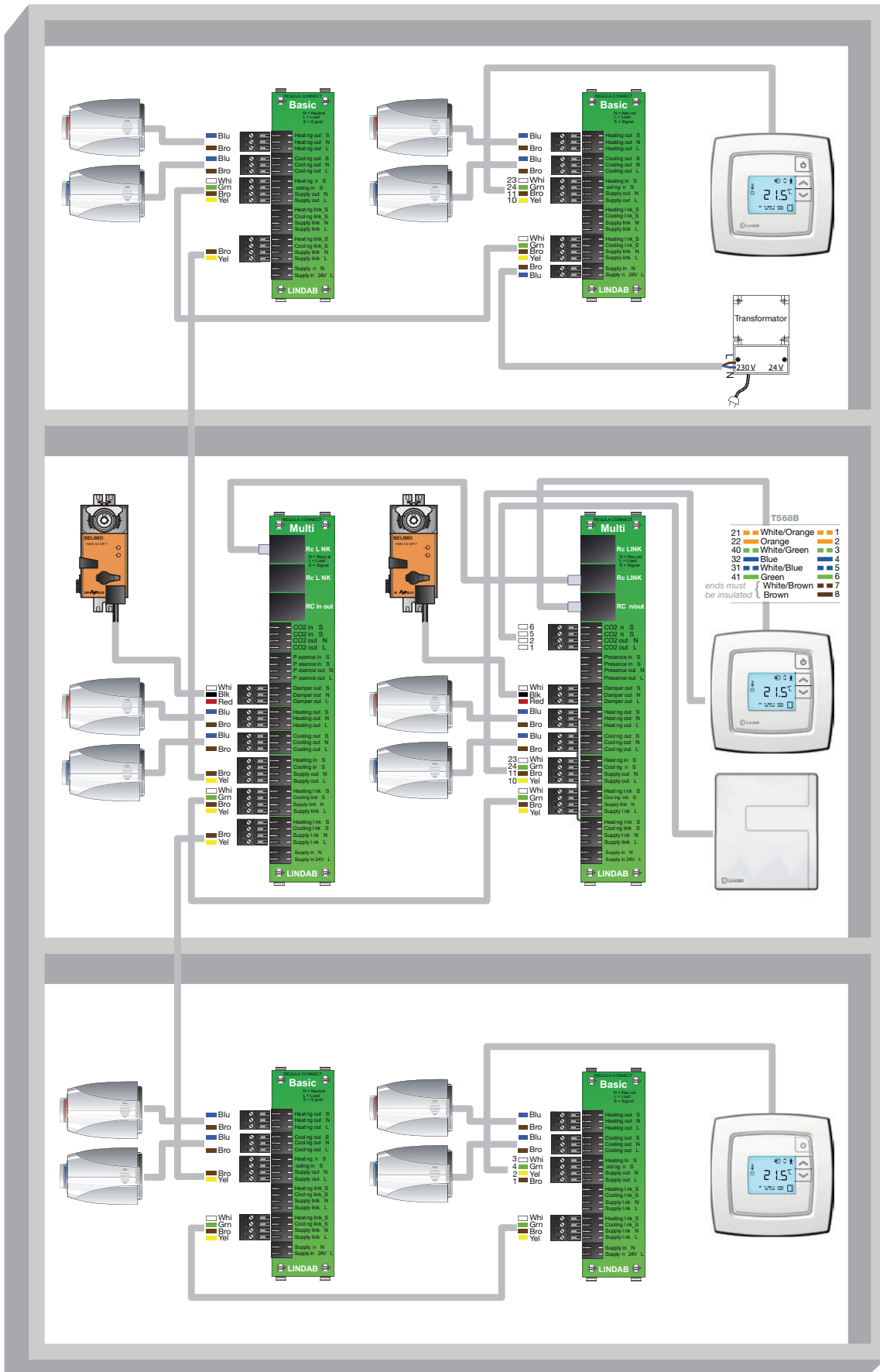


Regula Connect Multi



# Control equipment

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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