Lindab **Regula Duo**

Room controller

Controller Regula Duo

Overview

Room Controller for waterborne climate systems with individual regulation.
Regula Duo controls heating and cooling in sequence. Regula Connect Basic is a connection card for flexible connection of facade systems and chilled beams. Regula Secura is a condensation guard for installation in façade systems and chilled beams, which prevents condensation forming.

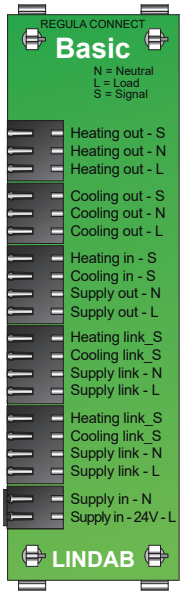
Installation

Regula Duo is available for installation on the wall. Regula Secura and the Regula Connect cards inside or directly on the product.

Functions

Regula Duo

Regula Duo is used for individual room temperature control, where the desired temperature can be adjusted easily within ±4°C using the control knob. The standard setting is 21°C. The set point for the desired value can be adjusted with a potentiometer inside the Regula Duo between 15 and 25°C.
Regula Duo controls cooling and heating. A maximum of 10 actuators can be connected to the same controller.
The actuators are mounted on heating and cooling valves that open and close the heating or cooling circuits, respectively, depending on whether the room needs to be heated or cooled. Regula Duo compares the desired value (the desired temperature) and the actual value (the actual temperature) using built-in or external temperature sensor and transmits the control signal governing this process. The system continuously strives to equalize these temperature values as quickly as possible. The control principle engaged for this is called two-step control. There is an integrated coupling difference to prevent the system from being activated too often by temperature fluctuations of less than 0.3°C between the desired and actual temperatures. The power supply required by Regula comes from a 24 V transformer.



Regula Connect Basic

Regula Connect Basic is a connection card, which provides flexible connection for chilled beams or facade systems. It consists of connectors for main cables, thermostat cables and terminal blocks for actuator cables.

Regula Secura

Regula Secura is a condensation guard for both chilled beams and facade systems, which works together with electronic control systems such as Regula Duo or any other equipment with thermoelectric actuators. If there is condensation on the water inlet pipe, Regula Secura's humidity sensor gives a signal that cuts the power to the cooling.

Controller Regula Duo

Description of control

Regula Duo controls heating and cooling in sequence. It operates with an ON/OFF control process, where the dead zone between heating and cooling is 1°C, and there is a coupling difference of 0.3°C for each output, to make sure temperature fluctuations does not cause actuators to open and close unnecessarily.
See Figure 1 for explanation of control process and Figure 2 for description of a situation where setpoint is alternating between heating and cooling.

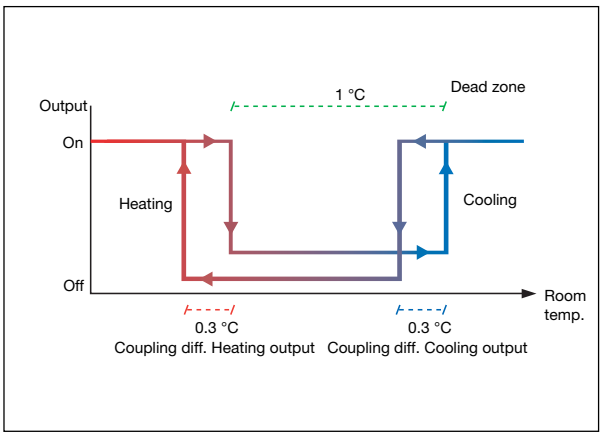


Figure 1. Control process with dead zone and coupling difference.

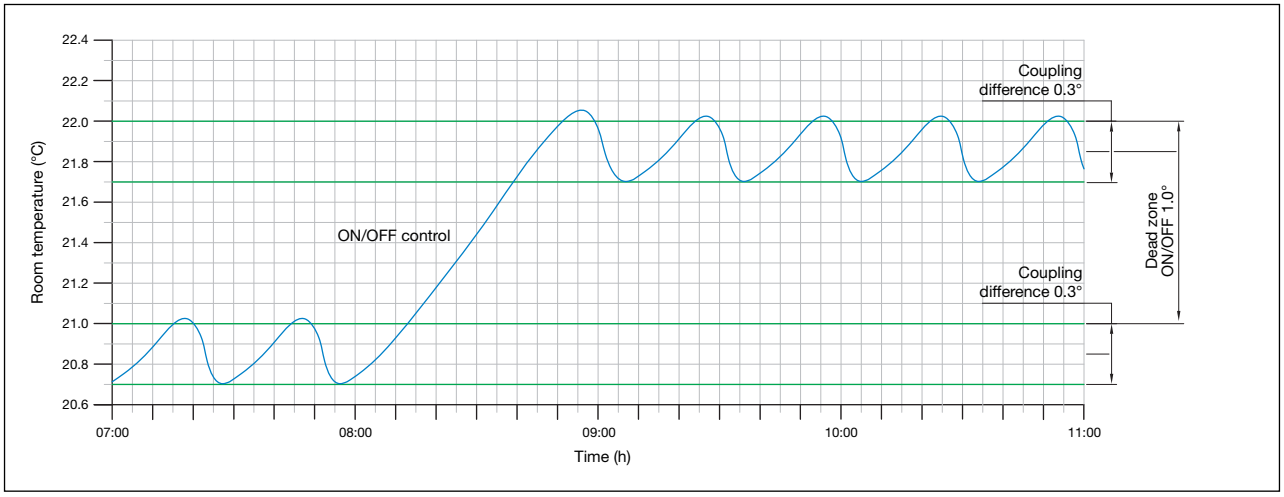


Figure 2. Setpoint alternating between heating and cooling.

Controller Regula Duo

Technical data

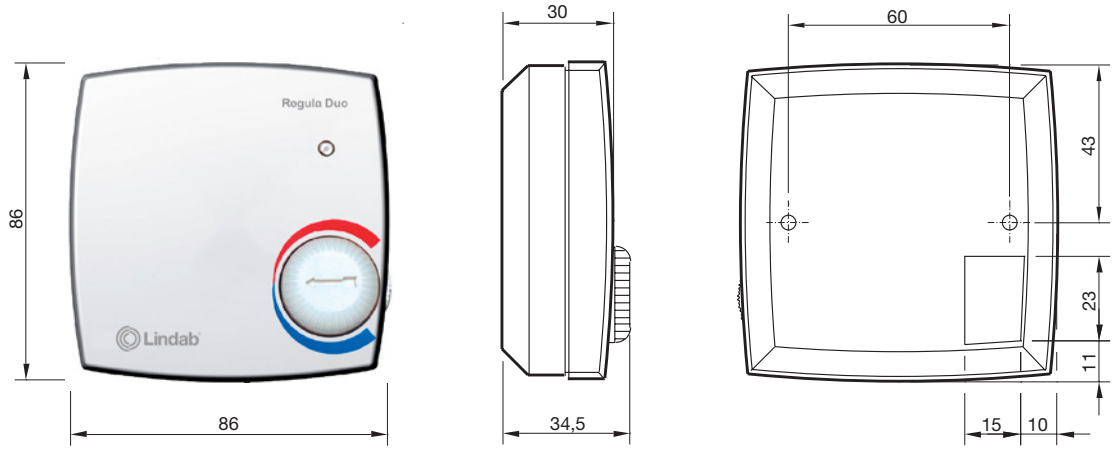
Model	Regula Duo
Supply voltage	24 V AC ± 15%
Communication	N/A
Outputs	2
Inputs	1 temperature sensor
Installation	In equipment box or surface mounted.
Analog Output signal	N/A
Digital Output signal	24 V / 2 A on-off*
Temperature range	11-29ºC
Temperature setpoint	21ºC, (adjustable 15-25°C)
Dead zone	1ºC
Power consumption	1 W
Electrical connection	Screw-in plinth or quick connection
Size, controller	85 × 85 × 35 mm
Casing	ABS, white color
Protection class	IP 20
Certification	CE
Ambient temperature	0…50°C
Storage temperature	-20…70°C
Ambient humidity	Max 90% RH
Actuator exercise	No
Indication, heating	Red LED
Indication, cooling	Blue LED
Adjustment of desired valve	±4°C using the control knob

* Max 10 actuators for heating or cooling stages.

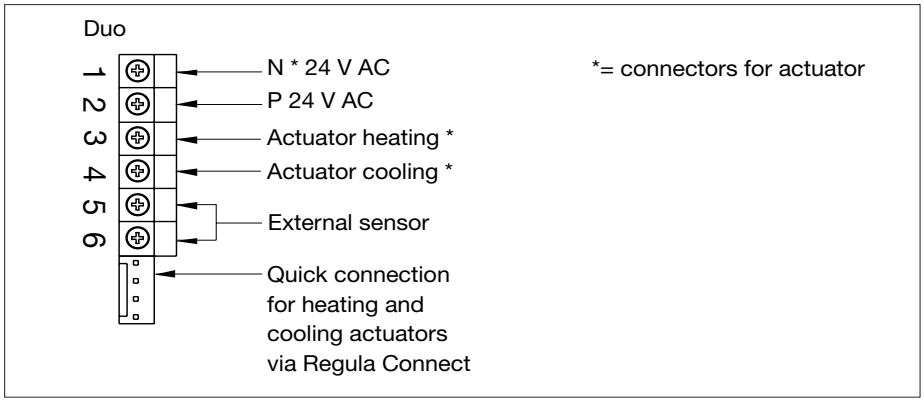
External temperature sensor (NTC sensor)
Room: TG-R530
Duct: TG-K330

Controller Regula Duo

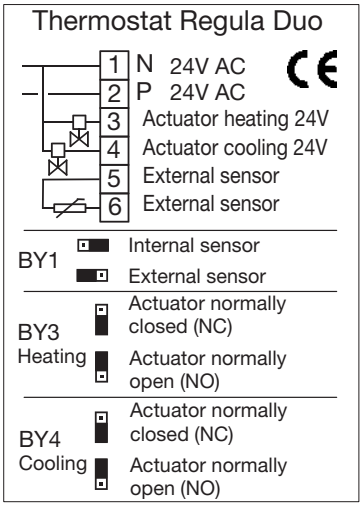
Dimensions, mm



Electrical wiring diagram



Jumpers



Controller Regula Duo

Regula Secura

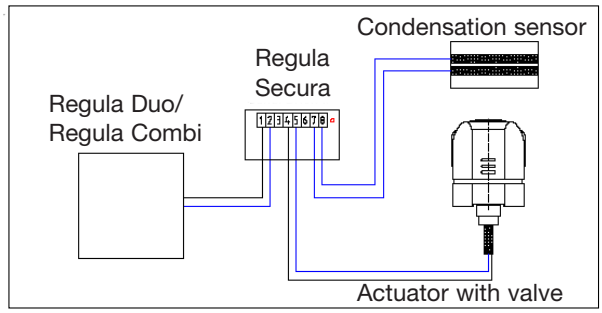
Security against condensation
Lindab has a condensation guard for both chilled beams and facade systems. The condensation guard is called Regula Secura. Since the control exercised by Regula Secura is based on actual condensation, a greater effect is obtained than with conventional humidity control. Conventional humidity control usually measures the mean humidity and sets aside a safety margin for the water temperature, to avoid condensation. With Regula Secura, no margins are required for either the sensor settings or the thermal resistance in the piping.

When condensation is formed on the supply pipes, the cooling valve temporarily shuts down the water flow through the affected product. The protection provided by Regula Secura is separate for each individual chilled beam or facade system. This prevents damp damage caused by condensation. The condensation guard continues to regulate the effect even below the dew point, so the performance of the chilled beam or the façade system is kept to the optimum. An example of a control sequence is shown in the diagram below.

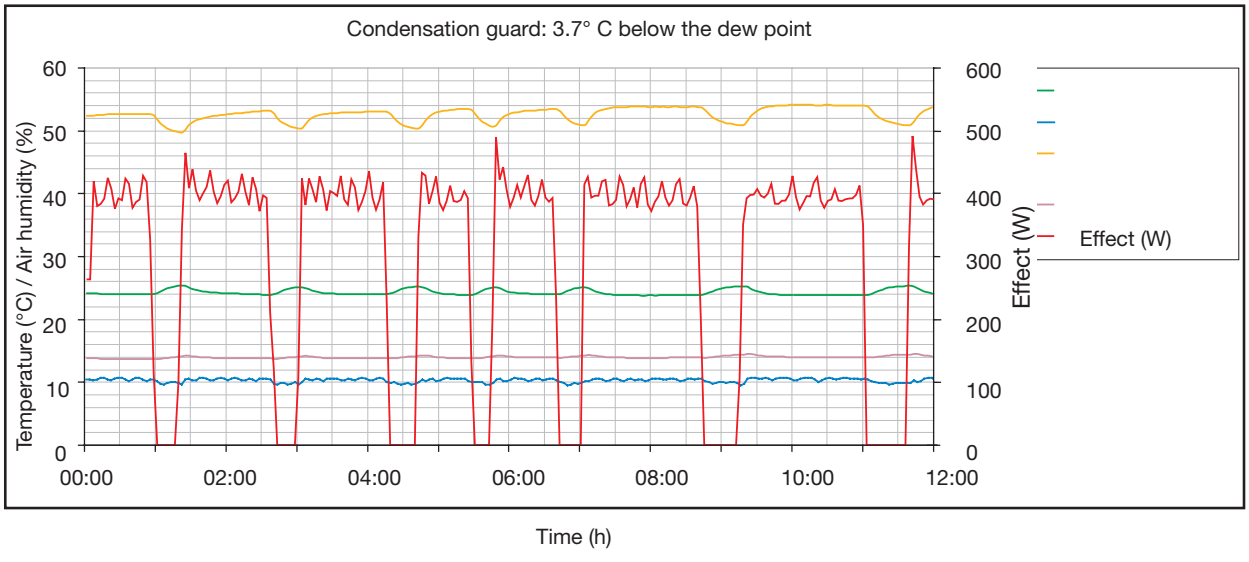
The use of Regula Secura on all beams and facade systems increases the protection against condensation for each individual product. This means that only units where condensation forms will be shut down until the condensation dries out, while all other units will continue working. This is particularly beneficial for room environments with variable climatic conditions, or where there is a risk of external moisture entering the room, for example through open windows.

Function
Regula Secura exercises control through the output signal to the actuator and is only active when there is a signal to the actuator to open the valve. When the control signal does not ask for cooling, there is no need to activate Regula Secura. Regula Secura has a sensor mounted on the supply pipe of the beam or the façade system. When the sensor indicates that condensation has formed on the supply pipe, Regula Secura closes the valve until the condensation has dried out.

Regula Secura is compatible with electronic control devices such as Regula Combi or any other equipment with thermoelectric actuators. It is important to note that the valve and the actuator need to be closed in the event of a power cut.



Schematic showing how to connect Regula Secura.



The diagram shows a control sequence where the water temperature is 3.7°C below the dew point. Throughout the whole process, the control centre asks for cooling. It can be seen how Regula Secura controls using the ON/OFF feature.

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Regula Connect Basic

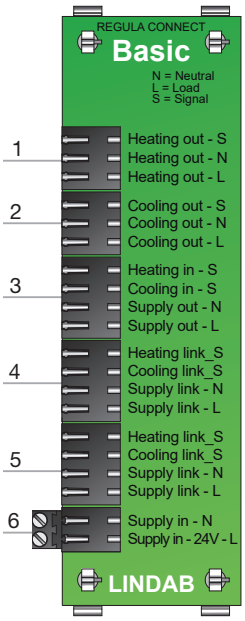
Regula Connect Basic is a connection card that provides flexible connection for chilled beams or facade systems. Regula Connect Basic consists of a connection card with connectors for mains cables, thermostat cables and terminal blocks for actuator cables. The card has alternatives for the mains cable 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.

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.

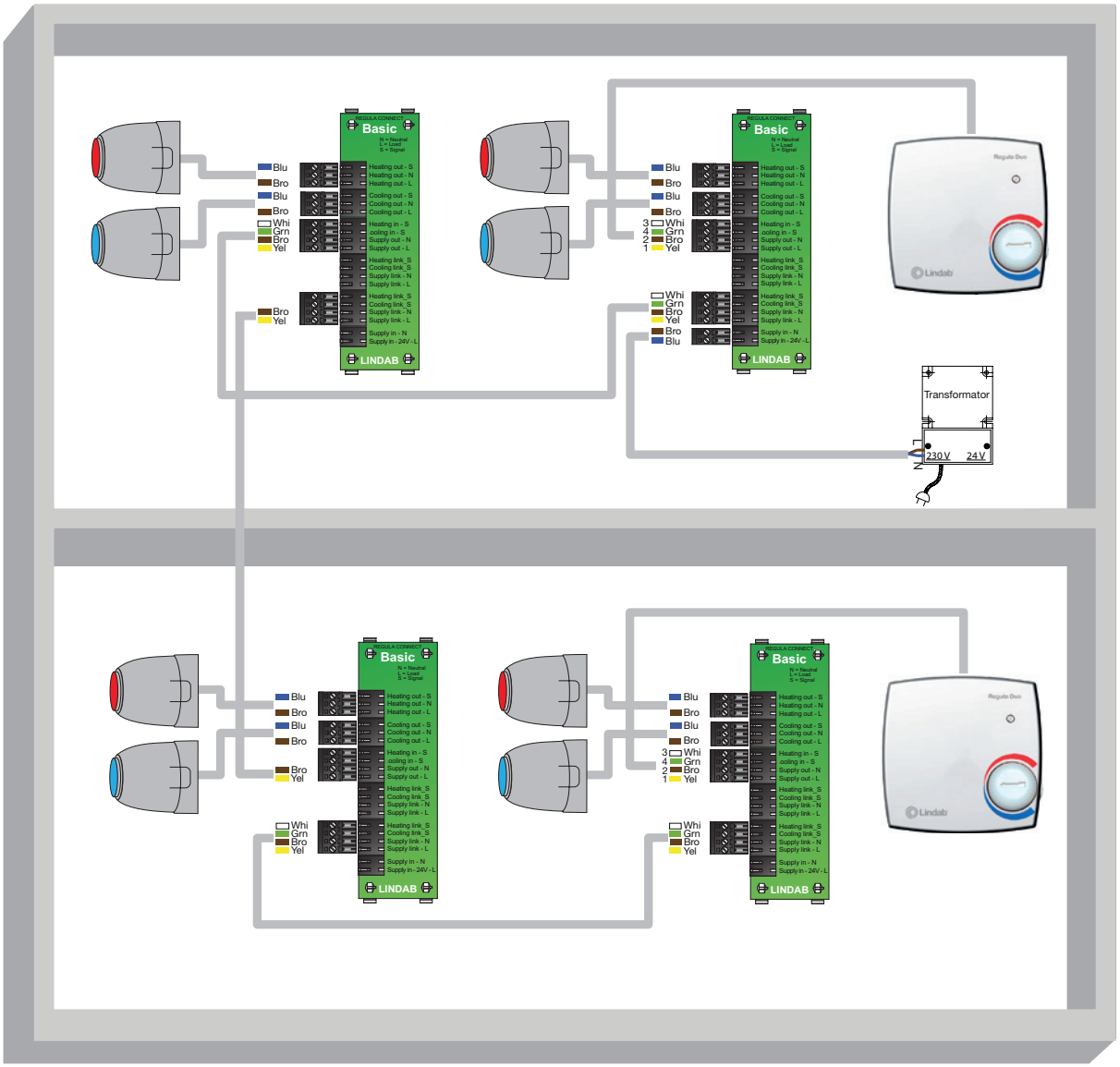
The unit's cable consists of four conductors, two for the supply voltage and two for the control signal to the heating and cooling actuators.

The figures refer to the picture to the right.

1 Connectors for heating output devices, such as heating circuit actuators.
2 Connectors for cooling output devices, such as cooling circuit actuators.
3 Connector for power and communication input from Regula Combi.
4-5 Connector for power and communication link between one or more beams.
6 Connector for direct power via external transformer.



Regula Connect Basic



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