



Lindab **Analog Room Control System ARCS**

Technical information

Analog Room Control System

ARCS

Content

- Introduction 2
- Application examples 3
- System Components 3
 - Base package 3
 - Accessories 3
- Functional description 4
- Electrical installation 5
- Commissioning 6
- Technical data sheet Connection Box ARCB >> 7
- Technical information UltraLink FTCU >> 7
- Mounting instruction UltraLink FTCU >> 7

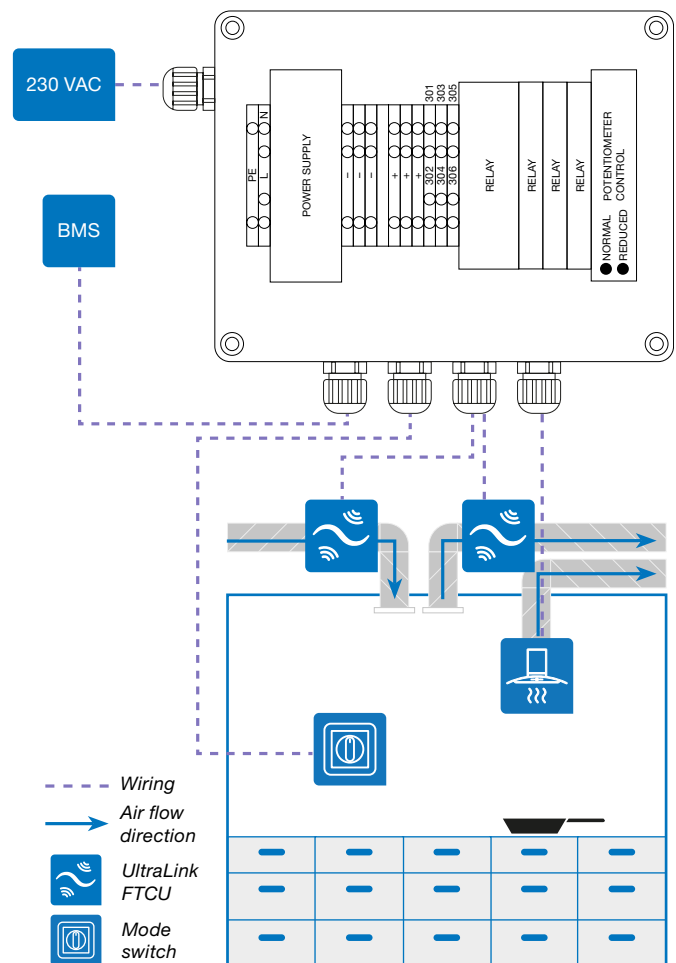
Introduction

ARCS is a complete set of control equipment to be used in new or renovated ventilation systems. It will in an easy and secure way create an energy efficient demand control balanced ventilation system for an apartment, house or smaller building without the need of computers and advanced service or installation. The user can select between three modes (Min, Normal and Max) using a wall mounted analog mode switch. It is adapted to work and balance the pressure in the room even if the kitchen extract or any other additional system is operating in the same space. ARCS need to have input from the additional system by a potential free switch. The system works without any limitations on duct pressure since the flow measurement is based on ultra sound technology.

The dampers automatically makes sure that a correct amount of air gets supplied and extracted by automatically adjusting the damper blade according to the governing set point. The system works both for constant and variable airflow (in three steps). If a variable flow is used the air handling unit needs to be pressure controlled so it can react and change the total airflow based on the needs in the areas that it serves.

ARCS is a base package that comes with two VAV dampers (FTCU), two sliding connectors and a connection box that holds power supply and control logic. The base package is ready with connectors for the potential free switch in the kitchen extract hood and can be complemented with the flow control mode switch as an accessory.

ARCS can be connected to a BMS system for monitoring and change of settings.



Analog Room Control System

ARCS

Application examples

ARCS in combination with relevant accessories is suitable for the following applications:

Retrofit

for energy savings in apartments or other residential buildings.

New built

for energy savings in apartments or other residential buildings.

Better indoor climate

Balanced ventilation where a secondary extract exists.

System Components

Base package

ARCS contains all components that is needed for installing in a complete new, or already existing building.



1 x Connection box ARCB



2 x UltraLink FTCU



2 x Slide-in female couplings SMFU

Accessories

The following list of accessories can be used together with ARCS:



Mode switch
ARCMS



Attenuators




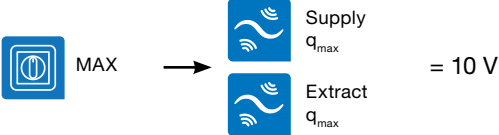
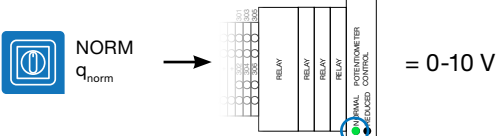
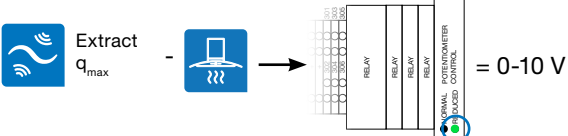
Potential free switch
(not supplied by Lindab,
comes with kitchen extract hood)

Analog Room Control System

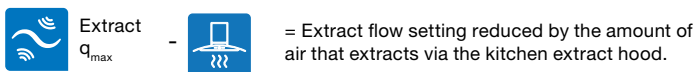
ARCS

Functional description

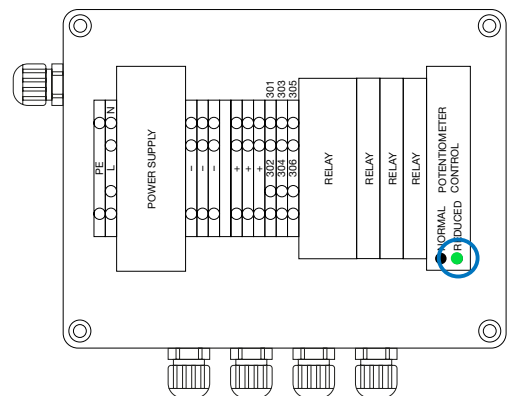
The system needs to be configured with 4 different flow levels.

1	<p>Set the minimum flow (q_{min}) that should be used when the mode switch is set to MIN.</p> <p>q_{min} Set as minimum flow for analog control: 0 V</p> <p>This flow is entered as minimum analog flow for both dampers.</p>	
2	<p>Set the maximum flow (q_{max}) that should be used when the mode switch is set to MAX and the kitchen extract hood is turned on.</p> <p>q_{max} Set as maximum flow for analog control: 10 V</p> <p>This flow is entered as maximum analog flow for both dampers.</p>	
3	<p>Set the normal flow (q_{norm}) that should be used when the mode switch is set to NORM.</p> <p>q_{norm} Set as normal flow with the "normal" potentiometer: 0-10 V</p> <p>This flow can be set to any level between the min and max by using the left potentiometers in the connection box.</p>	
4	<p>Set the flow that should be used for the extract damper when the kitchen hood is turned on.</p> <p>$q_{max} - q_{hood}$ Set the reduced extracted flow (hood on) with the "reduced" potentiometer: 0-10 V</p> <p>This flow can be set to any level between the min and max by using the right potentiometers in the connection box.</p>	

The potentiometer that controls the extract set point when the kitchen extract hood is turned on, should be tuned so it is equal to Max flow setting reduced by the amount of air that gets extracted by the kitchen extract hood.



The table below illustrates all the flows depending on the mode switch setting and if the kitchen extract hood is on or off.



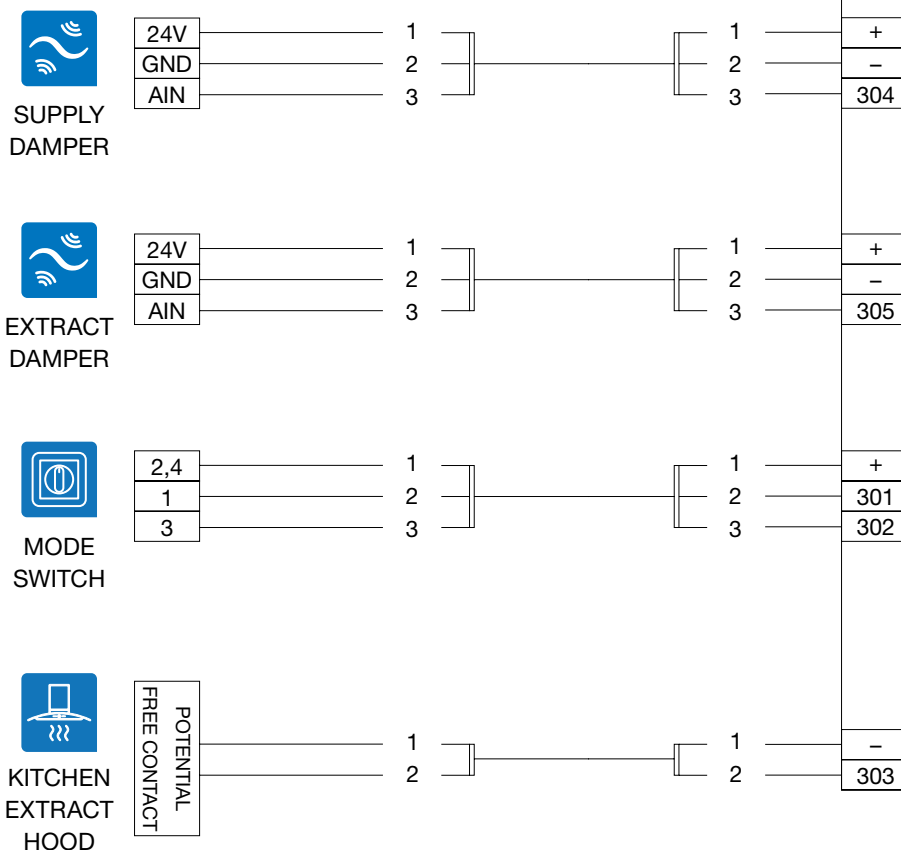
Mode switch	Kitchen extract hood OFF			Kitchen extract hood ON		
	Min	Normal	Max	Min	Normal	Max
Supply flow	q_{min}	q_{norm}	q_{max}	q_{max}	q_{max}	q_{max}
Extract flow	q_{min}	q_{norm}	q_{max}	$q_{max} - q_{hood}$	$q_{max} - q_{hood}$	$q_{max} - q_{hood}$
Kitchen extract hood	0	0	0	q_{hood}	q_{hood}	q_{hood}

Analog Room Control System

ARCS

Electrical installation

1	Connect "24V", "GND" and AIN from the supply damper to terminals "+", "-" and "304".
2	Connect "24V", "GND" and AIN from the extract damper to terminals "+", "-" and "305".
3	If a mode switch is used, connect it to terminals "+" "301" and "302".
4	If a potential free switch in the kitchen extract hood is used connect it to terminals "GND" and "303".
5	Connect mains power.



Analog Room Control System

ARCS

Commissioning

When the dampers, connection box and selected accessories are mounted and the system is powered up it is time to do the commissioning.

This is done using the OneLink app. Please follow the steps below after the system is powered. It is not necessary to have any airflow and the kitchen extract hood does not have to be installed.



Lindab OneLink™



1 Preparations	Decide what the four different flow levels q_{min} , q_{norm} , q_{max} and q_{hood} should be.
2 Supply damper parameters	<p>2.1 Connect to the supply FTCU and set the “Controlled by” to Analog.</p> <p>2.2 Go to “Setting of control by analog input” and make the following settings:</p> <p>Maximum flow rate set point: q_{max} Minimum flow rate set point: q_{min} Voltage range: 0-10 V</p>
3 Check supply Max/Min flow	Go to “Flow rate setpoint” and verify that q_{min} and q_{max} are correct by setting the control switch to Low and Max and read the setpoint in the app for the two modes.
4 Adjust Normal flow	Now put the switch in Normal mode and read the setpoint in the app. Change the airflow to q_{norm} by adjusting the potentiometer in the connection box marked “Normal”.
5 Check kitchen extract hood function	Now either turn on the kitchen extract hood or short 303 to ground in the connection box to simulate a closed switch. The setpoint in Supply should in this case correspond to q_{max} . Turn off the kitchen extract hood or remove the temporary short between 303 and ground.

6 Extract dampers parameters	<p>6.1 Connect to the extract FTCU and set the “Controlled by” to Analog.</p> <p>6.2 Go to “Setting of control by analog input” and make the following settings:</p> <p>Maximum flow rate set point : q_{max} Minimum flow rate set point : q_{min} Voltage range : 0-10 V</p>
7 Check extract Max/Min and Normal flow	Go to “Flow rate setpoint” and verify that q_{min} , q_{norm} and q_{max} are correct by setting the control switch to Min, Normal and Max and read the setpoint in the app for the three modes. Now either turn on the kitchen extract hood or short 303 to ground in the connection box to simulate a closed switch.
8 Adjust reduced extract flow	<p>8.1 Go to “Flow rate setpoint” and adjust the value using the potentiometer marked “Reduced Extract” until the setpoint is equal to $q_{max} - q_{hood}$.</p> <p>8.2 Remove the short 303 to ground terminals.</p>
9 Commissioning completed	The system is now commissioned with the wanted flows and is fully operational.

Table of air flow values to input									
Room nr.									
q_{min}									
q_{max}									
q_{norm}									
$q_{max} - q_{hood}$									

Analog Room Control System

ARCS

Technical data sheet Connection Box ARCB >>

This link will open another document.

Technical information UltraLink FTCU >>

This link will open another document.

Mounting instruction UltraLink FTCU >>

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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](#)