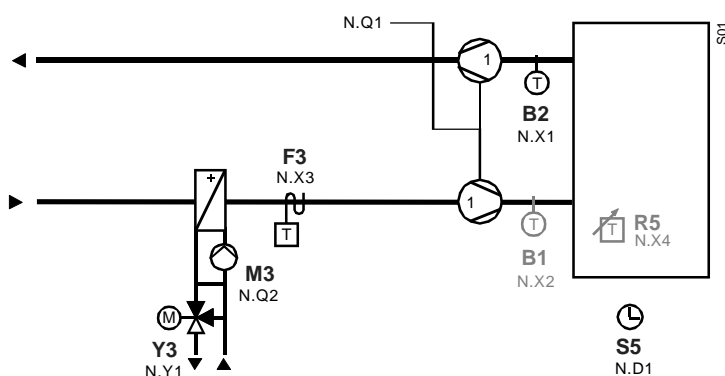
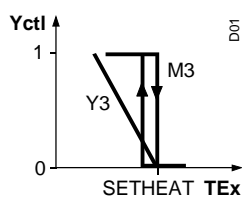
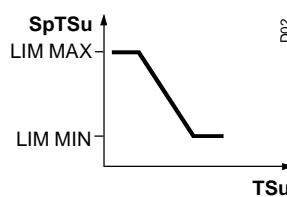



Ventilation plant with 1 hot water heating coil

Ventilation plant for rooms where the extract air (room) temperature shall be kept constant by heating the supply air and where the hot water heating coil shall be protected against freeze-ups.

Options:

- Minimum and maximum limitation of the supply air temperature
- Relative remote setpoint adjuster

Plant diagram

Function diagrams
Extract air temperature control

Minimum and maximum limitation of the supply air temperature

Legend

LIM MAX	Maximum limitation	TEx	Extract air temperature
LIM MIN	Minimum limitation	TSu	Supply air temperature
SETHEAT	Heating setpoint	Yctl	Controller output
SpTSu	Supply air temperature setpoint		

**Description of
functions**
Basic functions

The universal controller (N1) compares the extract air temperature acquired by the extract air temperature sensor (B2), (alternatively: room temperature acquired by the room temperature sensor (B2a)) with the setpoint. If there is a deviation, the controller will readjust the heating valve (Y3) accordingly.

The heating coil pump (M3) is activated depending on the load (5 %) and deactivated when there is no load (0 %). Pump overrun is 1 minute. The values can be adjusted.

The fan is released when there is no frost signal and no fault status message for control mode and when the controller is not in commissioning mode.

When the plant is shut down, the heating valve is closed and the pump deactivated.

Frost protection with frost protection monitor

If connected to the controller, the frost protection monitor (F3) prevents the air temperature downstream from the heating coil from falling below the adjusted frost protection value (typically 5 °C).

If the air temperature at the frost protection monitor falls below the frost protection value, the controller will open the heating valve and, if required, deactivate release of the fan (relay Q1 will drop out).

Operating mode selection Comfort/Protection

An external switch (e.g. time switch) can be used (S5) to switch the controller's operating mode from Comfort to Protection (PRT), or vice versa. If required, the controller can be reconfigured to switch between Comfort and Economy (ECO).

Optional functions
Minimum and maximum limitation of the supply air temperature

To activate this function, a supply air temperature sensor (B1) must be connected to input X2 as a limit sensor.

If the supply air temperature rises above or drops below the limit value (LIM MAX = 35 °C, LIM MIN = 16 °C preset), the normal control function will be overridden by the limit function with PI mode.

Outside temperature-dependent activation of the pump

If an outside sensor (B9) or duct temperature sensor (B9a) is used for acquiring the outside temperature, the pump (M3) can be activated depending on the outside temperature (ON-OUTS) (refer to "Parameter settings"). This prevents freeze-ups. If the outside temperature falls below the adjusted limit value, the controller will activate the pump. It will be deactivated when the outside temperature has exceeded the limit value by 2 K. The function can be deactivated by setting the limit value ON-OUTS to -50 °C (as supplied).

Relative setpoint adaptation

The controller is supplied with absolute setpoint adjustment activated as standard. This setpoint can be readjusted by ±3 K. In that case, a remote setpoint adjuster (R5) is required, which must be connected to input X4. This setpoint adjuster is used to readjust the controller's setpoint from a room.

Function variants
Frost protection with frost protection sensor on the air-side

The standard frost protection function is configured for using a frost protection monitor (DIG), but can be changed for using a frost protection sensor (F3a) on the air-side (DC 0...10 V).

Frost protection with frost protection sensor on the water-side

The standard frost protection function is configured for using a frost protection monitor (DIG), but can be changed for using a frost protection sensor (F3b) on the water-side (LG-Ni 1000).

Device list

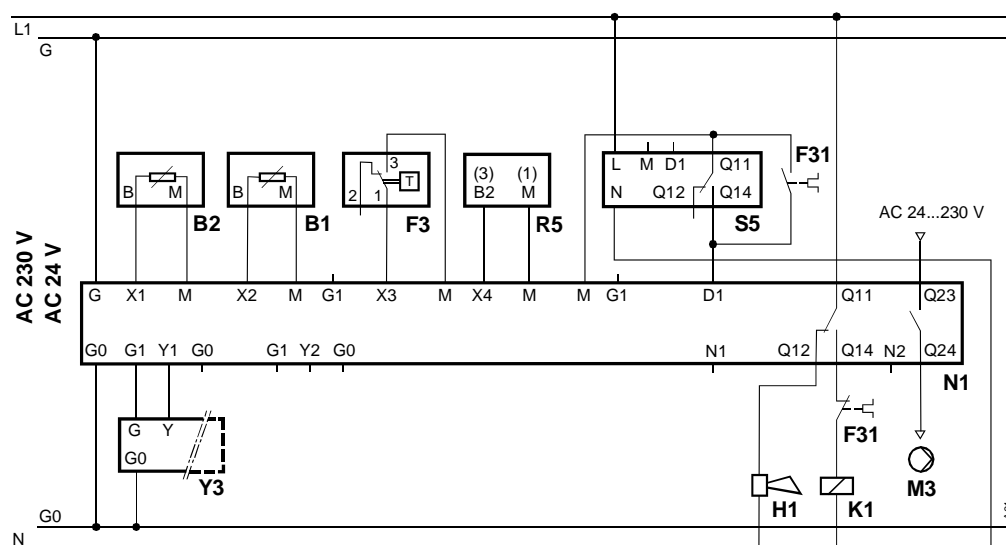
Standard	Legend	Device name	Data Sheet	Type reference	Quantity
	N1	Synco™ 200 universal controller, 1 control loop	N3101	RLU222	1
	B2	Duct temperature sensor	N1761	QAM2120.040	1
	Y3	3-port valve	+	VX...	1
		Modulating valve actuators, AC 24 V, DC 0...10 V	+	S...6...	1
	F3	Frost protection monitor with capillary	N1284	QAF81...	1
	S5	Digital time switch, 1 channel	N5243	SEH62.1	1

Optional	Legend	Device name	Data Sheet	Type reference	Quantity
	B1	Duct temperature sensor	N1761	QAM2120.040	1
	R5	Setpoint adjuster, passive (–3...+3 K)	N1991	BSG21.5	1

Variants	Legend	Device name	Data Sheet	Type reference	Quantity
	B2a	Room temperature sensor	N1721	QAA24	1
	F3a	Frost protection sensor, modulating	N1821	QAF63...	1
	F3b	Immersion temperature sensor	N1790	QAE26.9	1

+ For selection of the actuators and valves, refer to the Product Catalog

Connection diagram



Legend	F31	Overcurrent release contact "Fan"
	H1	Alarm device for fan fault status message
	K1	Motor contactor "Fan release"
	M3	Heating coil pump

Parameter settings

Path: ... > COMMIS > APPL ID

Parameter	Setting	Function	Remarks
Basic type	A05	Select application	ADA005 LU2 HQ

Path: ... > COMMIS > PARA > MODE

Parameter	Setting	Function	Remarks
OPMODE	ECO	Assign ECO	If Comfort / Economy changeover via S5 is required

Path: ... > COMMIS > PARA > FROST

Parameter	Setting	Function	Remarks
TYPE	NI	Assign LG-Ni 1000	If, in place of the frost protection monitor, a frost protection sensor LG-Ni 1000 is required
TYPE	0--10	Assign DC 0...10 V	If, in place of the frost protection monitor, a frost protection sensor DC 0...10 V is required

Path: ... > COMMIS > PARA > PUMP 1

Parameter	Setting	Function	Remarks
ON-OUTS	5.0 °C	Adjust value	If outside temperature-dependent activation of the pump is required

Engineering

- A number of settings are plant-specific and may need adjusting after the initial commissioning of the controller
- The connection diagram does not show all plant interlocks but only those directly connected to the controller or the associated equipment

Configuration diagram
RLU222 Basic type A 05 (ADA005LU2HQ)