



SVA-R rectangular VAV dampers



MADEL®

Rectangular air flow damper for Variable Air Volume (VAV) installations. The **SVA-R** dampers are used to adjust the air flow to a bypass or a room based on a 0-10 V signal provided by a temperature controller. The command signal sent by the controller of the room positions the actuator to control the flow needed in the enclosure.

You can change the Vmin and Vmax flow again afterwards using the remote control.

CLASSIFICATION

- SVA-R** Volume air variable rectangular damper.
 Maximum air flow (V_{max}) and minimum (V_{min})
 Setting calibrated at the factory according to
 Customer specifications.
- ... / **M** / Mode of operation of the damper type Master.
 - ... / **S** / Mode of operation of the damper type Slave.
 - .../ **CON 0-10**/ 0-10 V proportional control.
 - .../ **CON 3P**/ 3 points control.
 - .../ **AIS**/ Thermo-acoustic insulation.

MATERIAL

Galvanized steel housing, cross differential pressure measurement aluminum, connect in ABS and measuring tubes the actuator in red / blue silicone. Damper foam seal from EPDM.

ACCESSORIES

RDG 400 (SIEMENS)

Proportional temperature controller
 Ambiance 0...10 Vcc power supply 24vac with
 backlit digital display, selector comfort / eco / off
 proportional damper actuators and controllers of
 compact VAV boxes.

CR24-A1 (BELIMO)

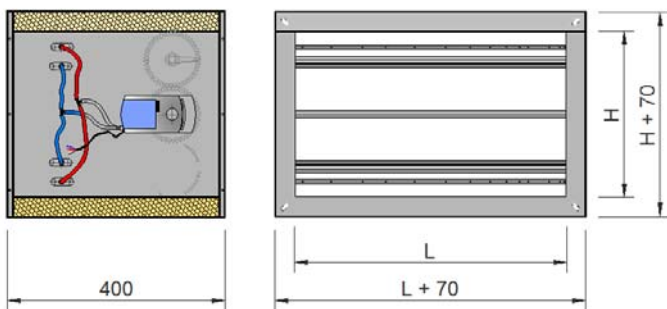
Proportional temperature controller
 Ambiance 0...10 Vcc power supply 24vac

RDG 400KN (SIEMENS)

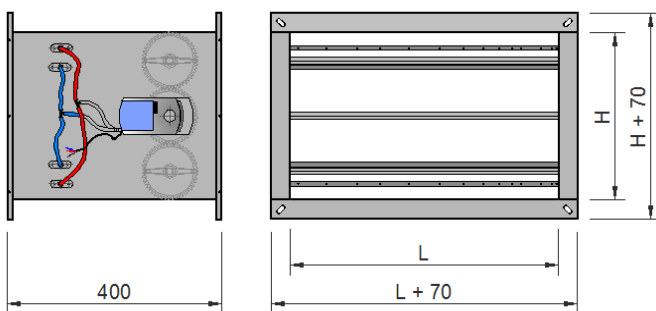
CR24-B1 (BELIMO)

With KNX Communication standard to integrate
 into BMS

SVA-R/AIS/



SVA-R



RDG



CR24

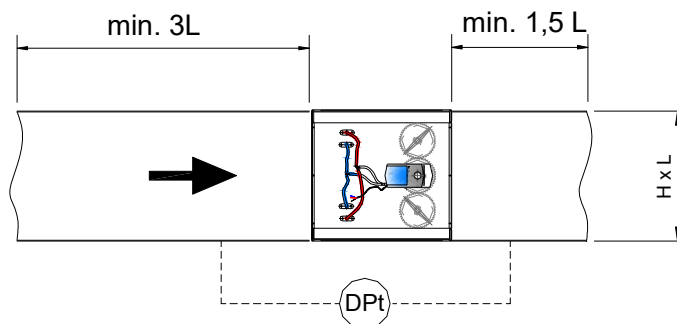


SPECIFICATION TEXT

Supply and mounting of rectangular VAV damper with cross differential pressure measurement for adjusting the air flow, series **SVA-R/M/CON 0-10/ LxH(mm) Vmin Vmax**, mode of operation of the damper type Master **/M/** and 0-10 V proportional control **/CON 0-10/**. Galvanized steel housing, cross differential pressure Measurement aluminum, connect in ABS and measuring tubes the actuator in red / blue silicone. Damper foam seal from EPDM. Manufacturer **MADEL**.

CONNECTION TO AIR DUCTS

- Take precautions to ensure that flow of air to get uniformly to the damper and prevent their installation in the presence of vibrations.
- The inner dimension of the air ducts can not be smaller than inside dimension of the damper.
 - Keep the damper aligned when flanging the ducts.
 - Extend the duct to minimise the noise generated in the damper.



Pressure loss and Free face area: DPt (Pa) , Ak (m²)

HxL	200	300	400	500	600	700	800
100	0,02	0,03	0,04	0,05	0,06	0,07	0,08
150	0,03	0,05	0,06	0,08	0,09	0,11	0,12
200	0,04	0,06	0,08	0,1	0,12	0,14	0,16
250		0,08	0,1	0,13	0,15	0,18	0,2
300		0,09	0,12	0,15	0,18	0,21	0,25
400			0,16	0,2	0,24	0,28	0,32
500				0,25	0,3	0,35	0,4
600					0,36	0,42	0,48

$$Q \text{ (m}^3\text{/h)} = V_k \text{ (m/s)} \times A_k \text{ (m}^2\text{)} \times 3600$$

(*) Damper opened

Vk (m/s)	2	4	6	8
Dpt med (Pa) (*)	20	20	29	30

Technical selection

Sound pressure dB(A).

L [mm]	H [mm]	V [m/s]	Q [m ³ /h]	Lw [dB(A)]			
				100 [Pa]	250 [Pa]	500 [Pa]	1000 [Pa]
200	100	2,5	180	46	54	62	69
		5	360	51	59	67	74
		7,5	540	55	63	71	78
		10	720	58	66	74	81
	150	2,5	270	48	56	64	71
		5	540	53	61	69	76
		7,5	810	56	64	72	79
		10	1080	60	68	75	82
	200	2,5	360	49	57	65	72
		5	720	54	62	70	77
		7,5	1080	57	65	73	80
		10	1440	60	68	76	83
250	100	2,5	225	47	55	63	70
		5	450	52	60	68	75
		7,5	675	56	64	71	78
		10	900	59	67	75	82
	150	2,5	337,5	49	57	65	72
		5	675	54	62	69	76
		7,5	1012,5	57	65	73	79
		10	1350	60	68	76	83
	200	2,5	450	50	58	66	72
		5	900	55	63	70	77
		7,5	1350	58	66	73	80
		10	1800	61	69	76	83
	250	2,5	562,5	51	59	66	73
		5	1125	55	63	71	77
		7,5	1687,5	58	66	74	80
		10	2250	61	69	77	83
300	200	2,5	540	51	59	66	73
		5	1080	55	63	71	77
		7,5	1620	58	66	73	80
		10	2160	61	69	77	83
	250	2,5	675	51	59	67	73
		5	1350	56	63	71	78
		7,5	2025	58	66	74	80
		10	2700	61	69	77	83
	300	2,5	810	52	59	67	74
		5	1620	56	64	71	78
		7,5	2430	59	66	74	80
		10	3240	62	69	77	83

Technical selection

Sound pressure dB(A).

L [mm]	H [mm]	V [m/s]	Q [m ³ /h]	Lw [dB(A)]			
				100 [Pa]	250 [Pa]	500 [Pa]	1000 [Pa]
400	200	2,5	720	51	59	67	73
		5	1440	56	63	71	78
		7,5	2160	58	66	74	80
		10	2880	61	69	77	83
	300	2,5	1080	52	60	67	74
		5	2160	56	64	71	78
		7,5	3240	59	66	74	80
		10	4320	62	69	77	83
	400	2,5	1440	54	62	69	76
		5	2880	58	66	73	80
		7,5	4320	61	68	75	82
		10	5760	63	71	78	85
500	250	2,5	1125	51	59	67	73
		5	2250	56	63	71	78
		7,5	3375	58	66	74	80
		10	4500	61	69	77	83
	300	2,5	1350	52	60	67	74
		5	2700	56	64	71	78
		7,5	4050	59	66	74	80
		10	5400	62	69	77	83
	400	2,5	1800	54	61	69	75
		5	3600	58	65	73	79
		7,5	5400	60	68	75	82
		10	7200	63	70	78	84
	500	2,5	2250	54	61	68	75
		5	4500	57	65	72	78
		7,5	6750	60	67	74	81
		10	9000	62	70	77	83
600	200	2,5	1080	52	60	67	74
		5	2160	56	64	71	78
		7,5	3240	59	66	74	80
		10	4320	62	69	77	83
	250	2,5	1350	52	60	67	74
		5	2700	56	64	71	78
		7,5	4050	59	66	74	80
		10	5400	61	69	76	83
	300	2,5	1620	52	60	67	74
		5	3240	56	64	71	78
		7,5	4860	59	66	74	80
		10	6480	61	69	76	83

Technical selection

Sound pressure dB(A).

L [mm]	H [mm]	V [m/s]	Q [m ³ /h]	Lw [dB(A)]			
				100 [Pa]	250 [Pa]	500 [Pa]	1000 [Pa]
600	400	2,5	2160	54	61	69	75
		5	4320	57	65	72	79
		7,5	6480	60	67	74	81
		10	8640	62	70	77	83
	450	2,5	2430	54	61	68	75
		5	4860	57	65	72	78
		7,5	7290	59	67	74	81
		10	9720	62	69	77	83
	500	2,5	2700	53	60	68	74
		5	5400	57	64	71	78
		7,5	8100	59	67	74	80
		10	10800	62	69	76	83
	550	2,5	2970	53	61	68	74
		5	5940	57	64	71	78
		7,5	8910	59	66	73	80
		10	11880	61	69	76	82
	600	2,5	3240	53	60	68	74
		5	6480	56	64	71	77
		7,5	9720	59	66	73	80
		10	12960	61	68	75	82
700	400	2,5	2520	53	61	68	75
		5	5040	57	64	72	78
		7,5	7560	59	67	74	80
		10	10080	62	69	79	83
	500	2,5	3150	53	60	68	74
		5	6300	56	64	71	77
		7,5	9450	59	66	73	80
		10	12600	61	68	76	82
	600	2,5	3780	53	60	67	73
		5	7560	56	63	70	77
		7,5	11340	58	65	72	79
		10	15120	60	68	75	81
	700	2,5	4410	52	59	67	73
		5	8820	55	63	70	76
		7,5	13230	57	65	72	78
		10	17640	60	67	74	80

Technical selection

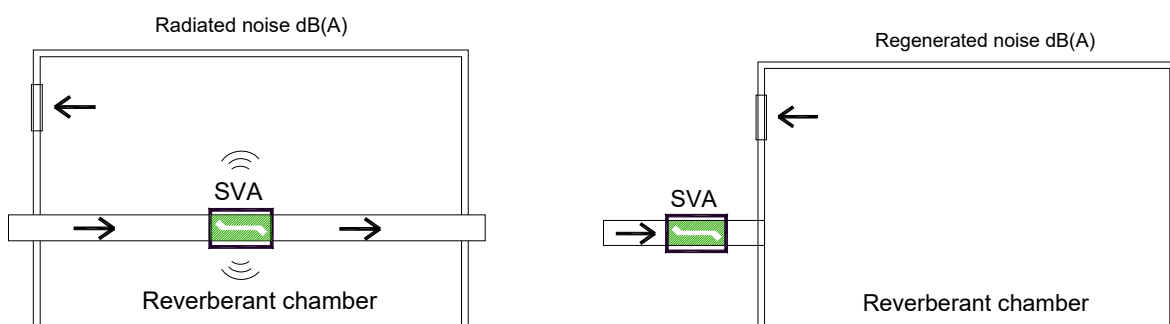
Sound pressure dB(A).

L [mm]	H [mm]	V [m/s]	Q [m ³ /h]	Lw [dB(A)]			
				100 [Pa]	250 [Pa]	500 [Pa]	1000 [Pa]
800	500	2,5	3600	53	60	67	74
		5	7200	56	63	71	77
		7,5	10800	58	66	73	79
		10	14400	60	68	75	81
	600	2,5	4320	52	60	67	73
		5	8640	55	63	70	76
		7,5	12960	57	65	72	78
		10	17280	60	67	74	81
	800	2,5	5760	51	58	65	72
		5	11520	54	61	69	75
		7,5	17280	56	63	71	77
		10	23040	58	66	73	79
1000	600	2,5	5400	51	59	66	72
		5	10800	54	62	69	75
		7,5	16200	56	64	71	77
		10	21600	59	66	73	79
	800	2,5	7200	50	57	64	71
		5	14400	53	60	67	74
		7,5	21600	55	62	69	76
		10	28800	57	64	71	78
	1000	2,5	9000	49	56	63	70
		5	18000	52	59	66	72
		7,5	27000	54	61	68	74
		10	36000	56	63	70	76

Selection tables

Sound attenuation in dB/Oct. (VDI 2081).

Hz	63	125	250	500	1000	2000	4000	8000
Duct	0	0	1	2	3	3	3	3
Room	5	5	5	5	5	5	5	5
Terminal reflexion	10	5	2	0	0	0	0	0



CRITERIA FOR ESTABLISHING V_{min} and V_{max} .

The **SVA-C** dampers regulated the volume of airflow basically to achieve two objectives:
 Maintaining the consigned temperature and good quality of air inside.

V_{min} , the most common criteria for setting the minimum flow volume is the quality of the air required in the area that will be controlled.

V_{max} the most common criteria for setting the maximum air flow volume will be the maximum thermal power that must be reached, which is generally the cooling one.

DAMPER CONNECTIONS.

There are three basic connection configurations with which to control the machine. Control at supply and exhaust with a parallel connection, control at supply and exhaust with Master-Slave connection and control only at supply. Control over supply and exhaust will permit maintaining the same flow volume of supply and exhaust, or maintain a determined pressure or overpressure in the zone.

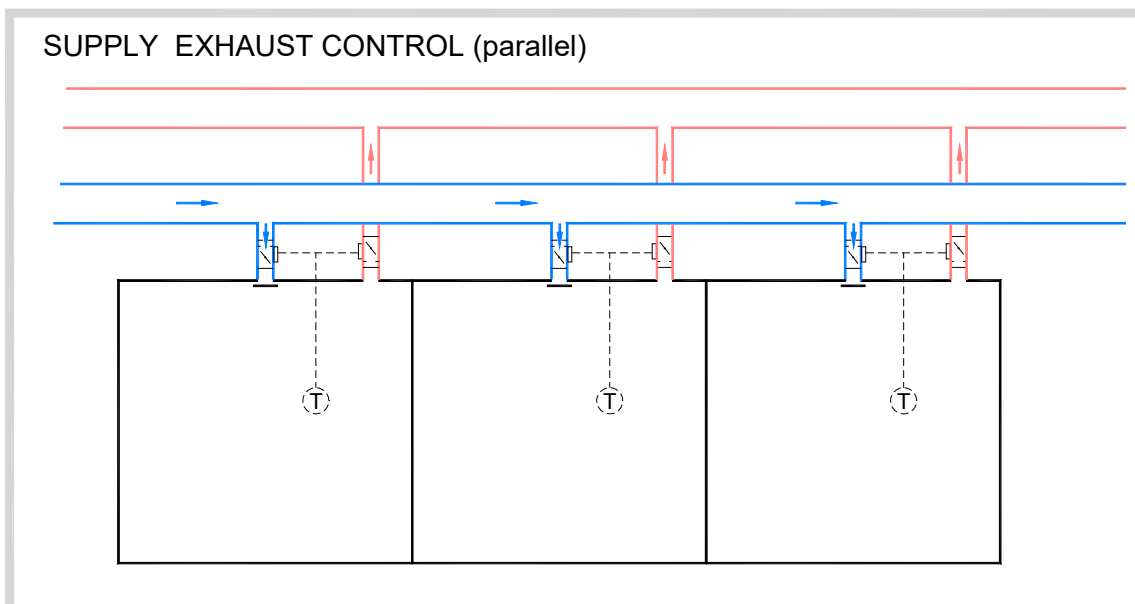
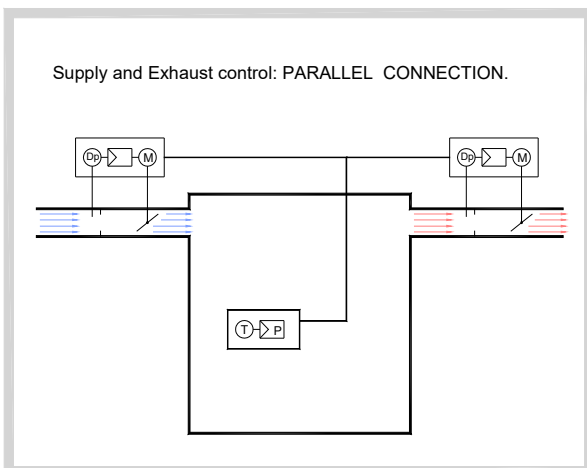
SUPPLY EXHAUST CONNECTION IN PARALLEL.

Under parallel control, both the supply controller and the exhaust controller receive the control signal directly from the regulator.

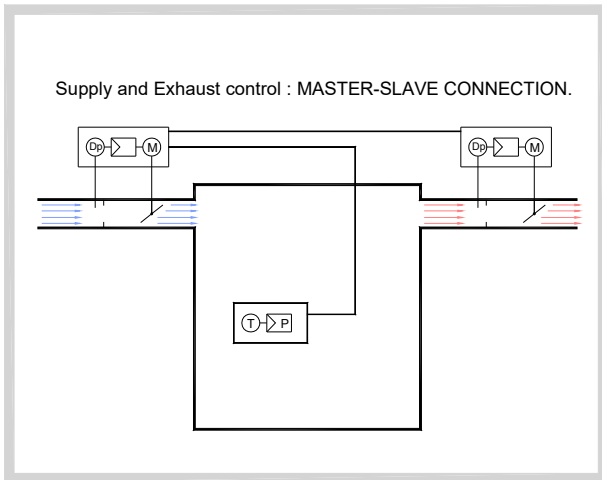
The flow volumes can be set independently between the supply and exhaust.

This connection system should be used:

- In installations in which the supply and exhaust dampers have different dimensions or different minimum and maximum flow volumes between them are required.
- In systems with several supply and exhaust units.
- It is recommended in installations with parallel connections, as design, installation and commissioning is simpler.



MASTER-SLAVE SUPPLY EXHAUST CONNECTION



In a Master-Slave control, the regulator sends the reference signal to the supply damper and this will then send it to the exhaust damper, which acts as the supply's slave.

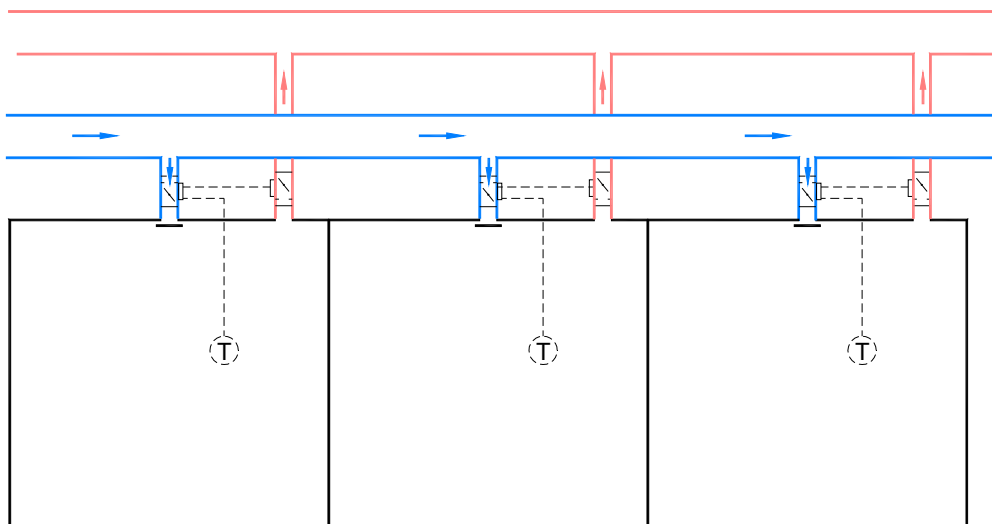
This connection system is used :

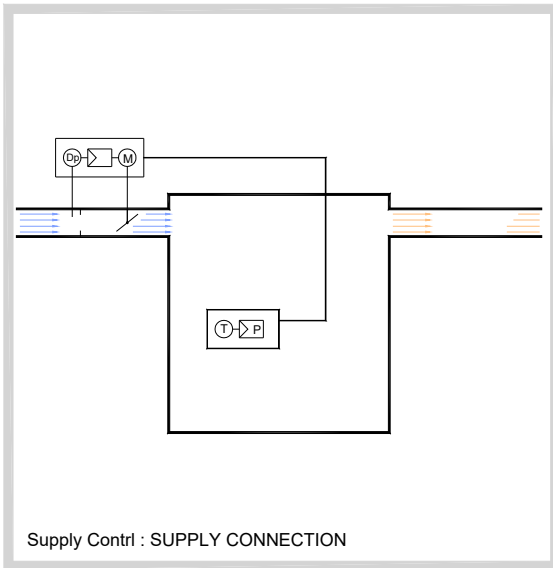
- In installations in which the exhaust damper works sequentially in respect of the supply.
- In areas in which the air supply and exhaust dampers have similar dimensions.

Disadvantages

- Each unit must be clearly labelled as either Master or Slave and must be set up on the right side (if the units are swapped, they must be re-parametrised again).
- The Master-Slave connection must be properly identified throughout the process, from design, order execution, installation and commissioning.

SUPPLY EXHAUST CONTROL (master / slave)





CONTROL ONLY OVER SUPPLY.

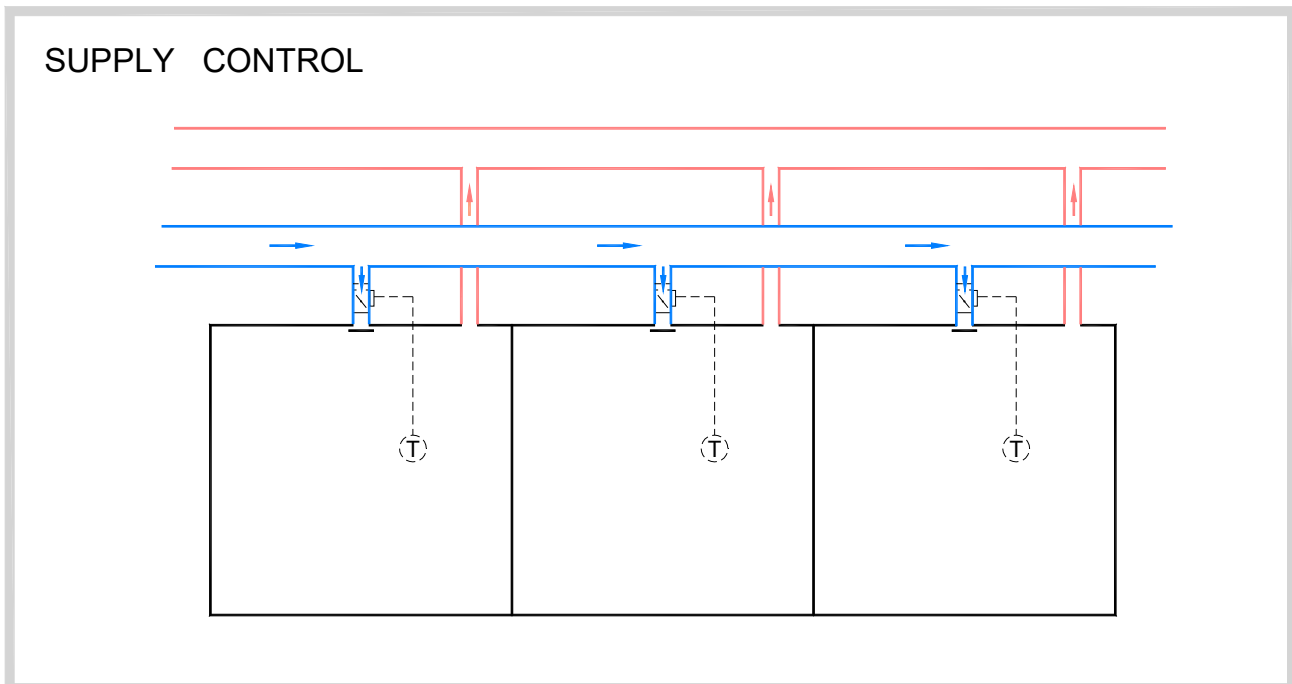
The regulator will only send the signal to the supply controller.

The exhausts are not controlled in this type of installation.

This connection system is used as follows:

It is an economic control as it doesn't require installation of the exhaust damper.

This type of installation does not control the exhaust flow volume by zone; which means that some zones will have overpressure and some underpressure.



ADJUSTMENTS TO AIR FLOW VOLUME AND STANDARD CONNECTION.

The **SVA-C** dampers are supplied with the **Vmin** and **Vmax** flow volumes configured with the factory settings, as defined by the client. These volumes can be easily changed if necessary once the dampers are already installed if the adjustment tools are available.

If the order does not specify the volumes that must be configured in the dampers, they will be configured according to the **functional limits**. If only one flow volume is indicated, this will be interpreted as the Vmax and the Vmin will be the **lower functional limit**.

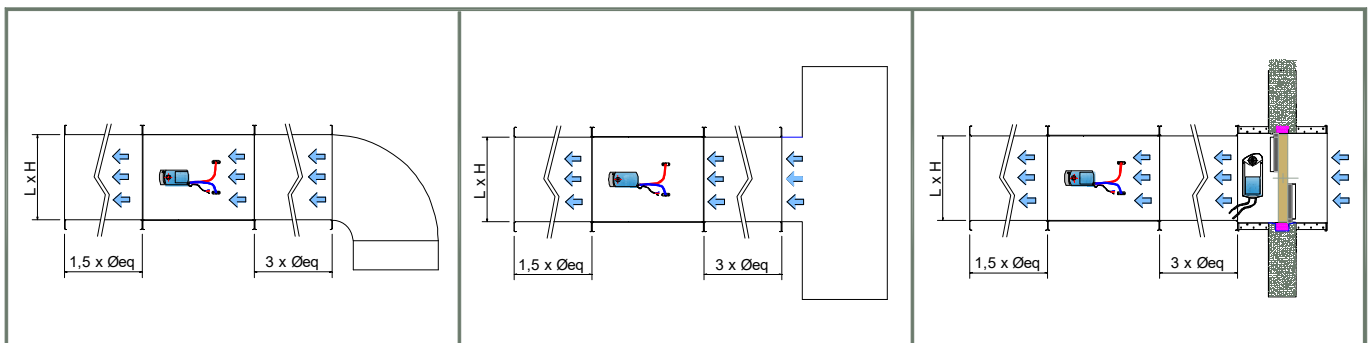
The SVA-C dampers will be configured for a connection in parallel; if the client wants them with a Master-Slave configuration, they must specify this in the order.

PRECAUTIONS.

To avoid contamination of the measuring cross, the air must be clean; in installations with dirty air, it is advisable to have a filtering system (the SVA-C dampers are especially designed for air conditioning installations).

Any obstruction between the measuring cross and the servomotor must be prevented. One of these obstructions could be caused by the appearance of condensation inside these hoses when the gradient of the supply air and the air in contact with the hose, is high; this condensation can even damage the servo, so the hoses should be insulated to avoid this condensation forming.

SET UP INSTRUCTIONS.



$$\varnothing \text{ eq} = \frac{2 \times H \times L}{H + L}$$

PARTICULARITIES

In VAV installations, it is necessary to guarantee the supply of the flow volumes for which the installations have been designed. If the minimum flow volumes are not guaranteed, the dampers will never actually regulate the flow volume and will be 100% open at all times.

FORCED OR IMPERATIVE CONTACTS

Servomotors have forced contacts that permit leaving the dampers completely closed or completely open, independently of the regulator's 0-10 v signal.

These contacts also allow leaving the dampers completely closed if there is nothing present or completely open, so that the set point is reached faster or maximum ventilation is forced.

VAV variable airflow - Room Temperature control with manual changeover. Air supply control.

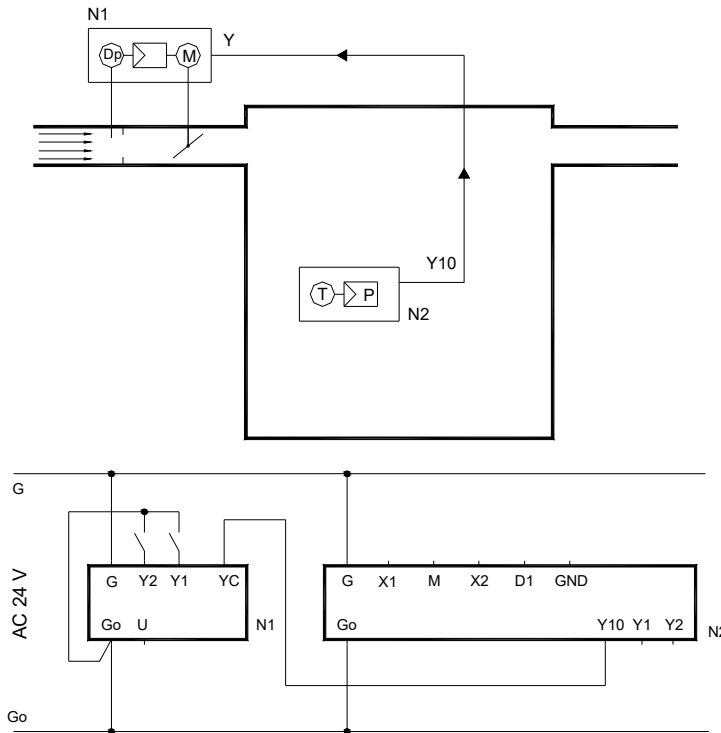
Wiring diagram SIEMENS



SVA-R / GDB181.1E/3



RDG 400



N1 SVA -C / GDB181.1E/3

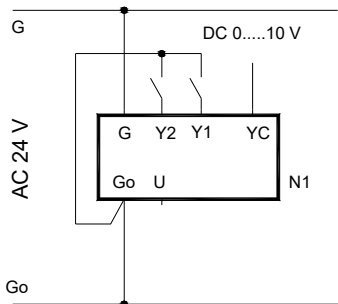
- G Red (RD) Live AC 24 V
- G0 Black (BK) System neutral AC 24 V
- Y1 Violet (VT) Position Signal (factory setting)
- Y2 Orange (OG) Position signal (factory setting)
- YC Grey (GY) Air volume position signal DC 0.....10v
- U Pink (PK) Air volume measuring signal DC 0....10v

N2 RDG 400

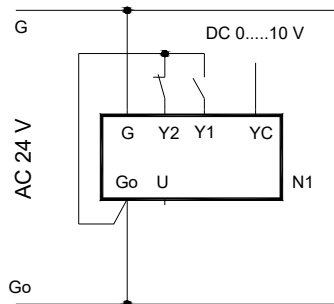
- G, G0 Operating voltage AC 24 V
- Y10/G0 Control output for DC 0 ... 0 V actuator
- Y1 /G, Y2/G Control output.
- X1, X2 Multifunctional input for temperature sensor
 - X1 external room temperature sensor.
 - X2 Switch for automatic heating/cooling changeover
- M Measuring neutral for sensor and switch
- D1, GND Multifunctional input for potential-free switch.

GDB181.1E/3 OVERRIDE CONTROL.

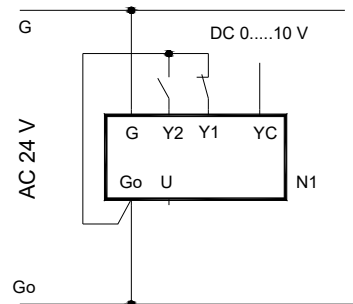
Modular control Vmin and Vmax



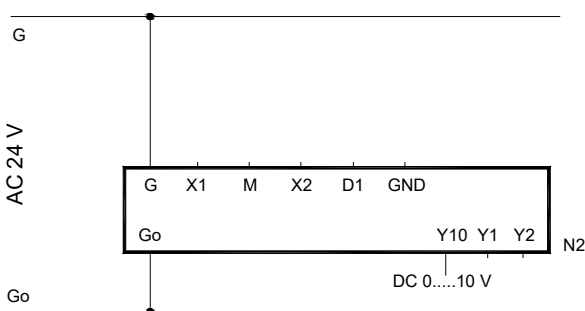
Fully closed



Fully open

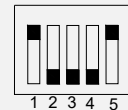


RDG 400



N2 RDG 400 Room temperature controller

Comissioning DIP Switches



Parameters

- P010 = only heating
- 1 = only Cooling (Default)
- 2 = Manual changeover
- P02-P14Default values

VAV variable airflow - Room temperature control with remote changeover. Air supply control.

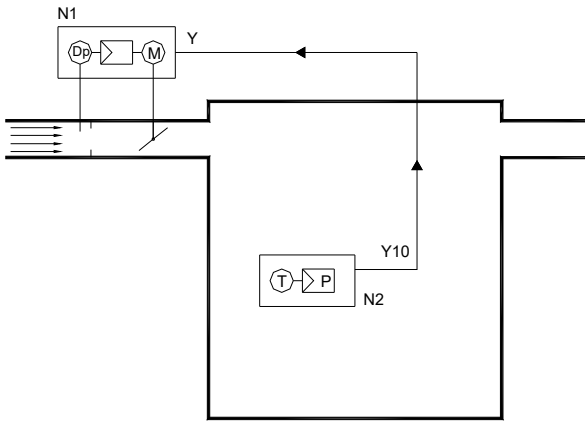
Wiring diagram **SIEMENS**



SVA-R / GDB181.1E/3/



RDG 400

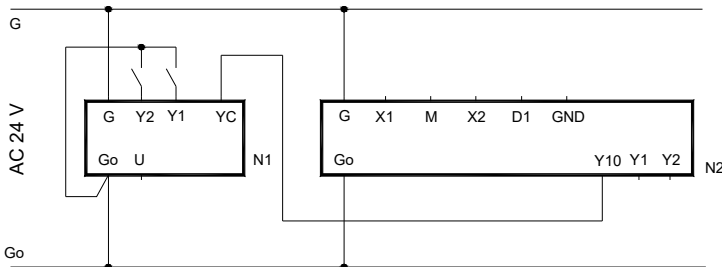


N1 SVA -C / GDB181.1E/3

- G Red (RD) Live AC 24 V
- G0 Black (BK) System neutral AC 24 V
- Y1 Violet (VT) Position Signal (factory setting)
- Y2 Orange (OG) Position signal (factory setting)
- YC Grey (GY) Air volume position signal DC 0.....10v
- U Pink (PK) Air volume measuring signal DC 0....10v

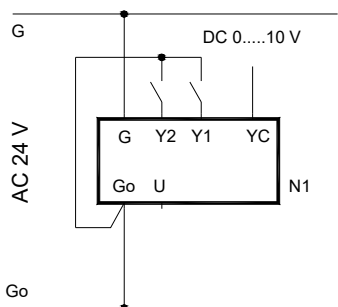
N2 RDG 400

- G, G0 Operating voltage AC 24 V
- Y10/G0 Control output for DC 0 ... 0 V actuator
- Y1 /G, Y2/G Control output.
- X1, X2 Multifunctional input for temperature sensor
 - X1 external room temperature sensor.
 - X2 Switch for automatic heating/cooling changeover
- M Measuring neutral for sensor and switch
- D1, GND Multifunctional input for potential-free switch.

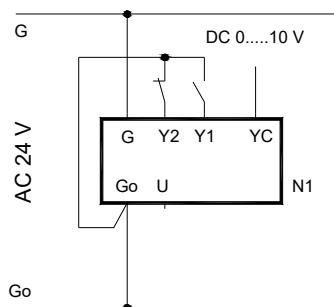


GDB181.1E/3 OVERRIDE CONTROL.

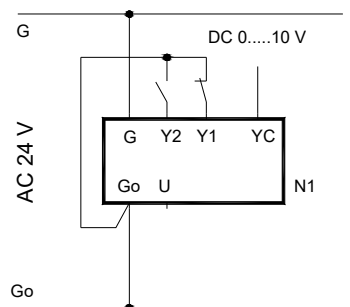
Modular control Vmin and Vmax



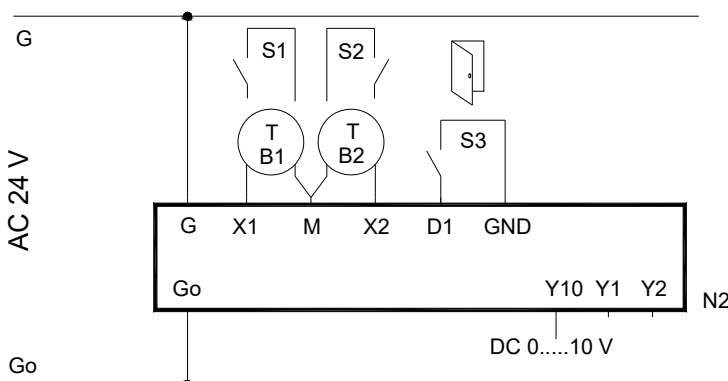
Fully closed



Fully open

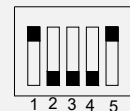


RDG 400



N2 RDG 400 Room Temperature controller

Commissioning
DIP Switches



Parameters
P01..... 3= automatic heating / cooling changeover
P02-P14.....Default values.

TB2 - Automatic heating / cooling changeover.

Optional - Switch or Sensor **QAH11.1**
QAH1.1 install in the supply air.

S3 - Optional Switch (key card, window contact, etc.)

VAV variable airflow - Room temperature control with remote changeover. Air supply and exhaust control with parallel connection.

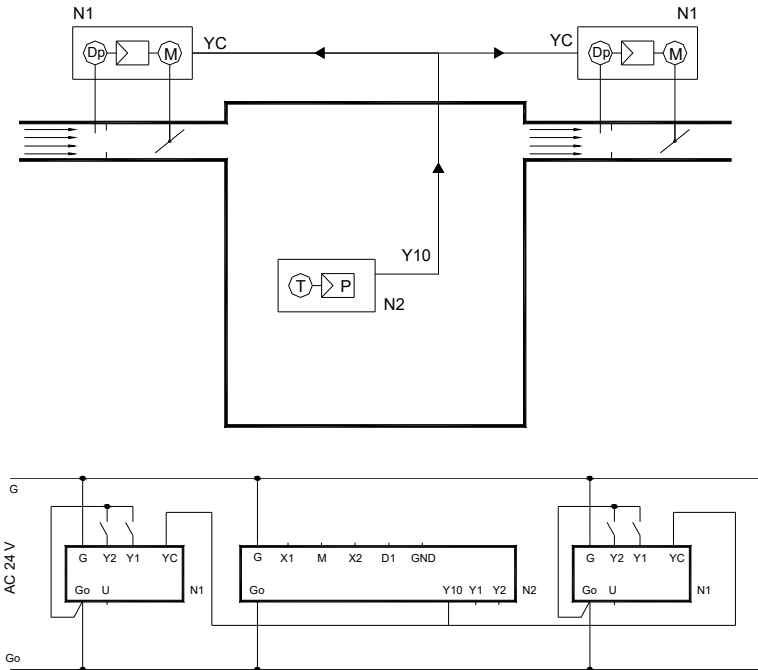
Siringa diagrama **SIEMENS**



SVA-R/GDB181.1E/3/



RDG 400



N1 SVA -C / GDB181.1E/3

- G Red (RD) Live AC 24 V
- G0 Black (BK) System neutral AC 24 V
- Y1 Violet (VT) Position Signal (factory setting)
- Y2 Orange (OG) Position signal (factory setting)
- YC Grey (GY) Air volume position signal DC 0.....10v
- U Pink (PK) Air volume measuring signal DC 0.....10v

N2 RDG 400

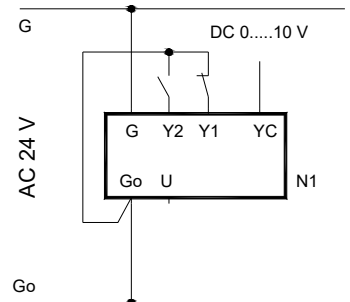
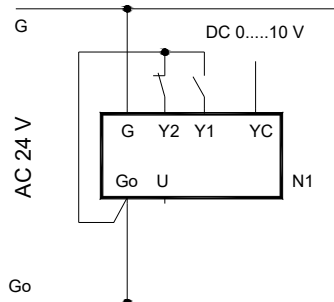
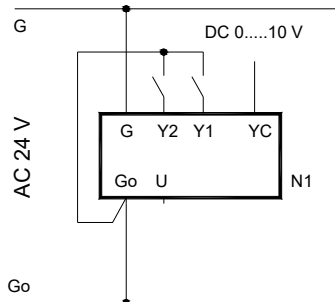
- G, G0 Operating voltage AC 24 V
- Y10/G0 Control output for DC 0 ... 0 V actuator
- Y1 /G, Y2/G Control output.
- X1, X2 Multifunctional input for temperature sensor
 - X1 external room temperature sensor.
 - X2 Switch for automatic heating/cooling changeover
- M Measuring neutral for sensor and switch
- D1, GND Multifunctional input for potential-free switch.

GDB181.1E/3 OVERRIDE CONTROL (must be wired to both actuators).

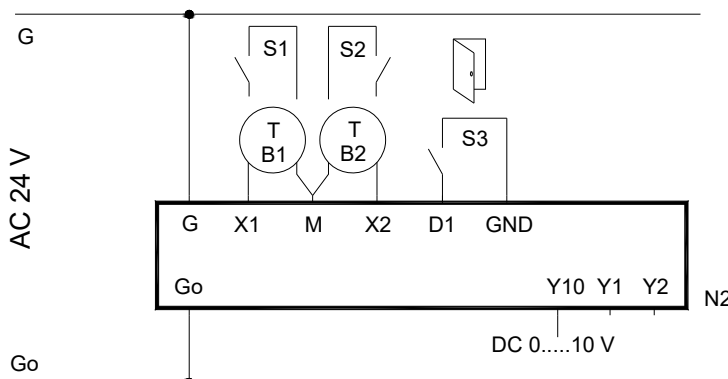
Modular control V_{min} and V_{max}

Fully closed

Fully open

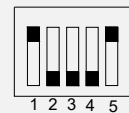


RDG 400



N2 RDG 400 Room temperature controller.

Comissioning
DIP Switches



Parameters

- P01..... 3= automatic heating / cooling changeover
- P02-P14.....Default values.

TB2 - Automatic heating / cooling changeover.

Optional - Switch or Sensor **QAH1.1**
QAH1.1 install in the supply air.

S3 - Optional Switch (key card, window contact, etc.)

VAV variable airflow - Room Temperature control with remote changeover. Air supply and exhaust control with Master-Slave connection.

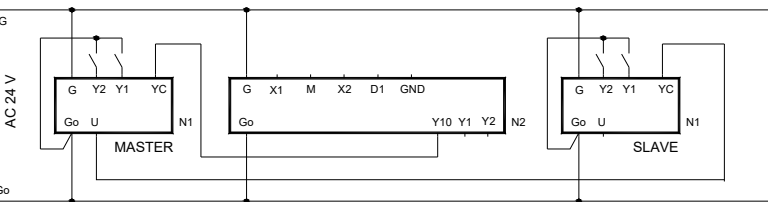
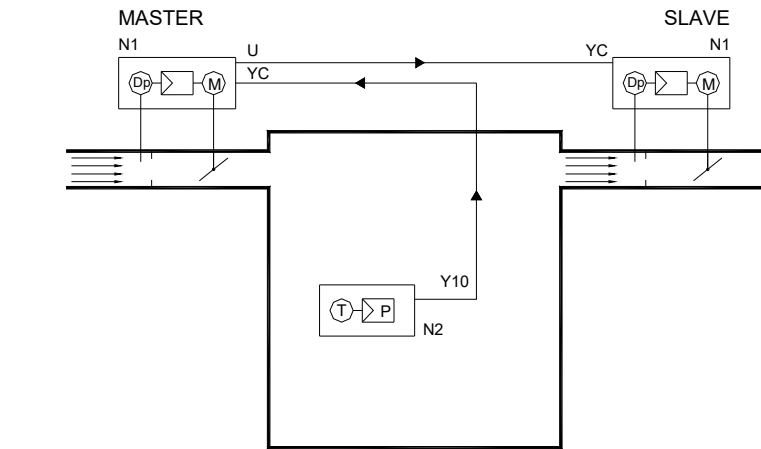
Wiring diagram **SIEMENS**



SVA-R / GDB181.1E/3



RDG 400



N1 SVA -C / GDB181.1E/3

- G Red (RD) Live AC 24 V
- G0 Black (BK) System neutral AC 24 V
- Y1 Violet (VT) Position Signal (factory setting)
- Y2 Orange (OG) Position signal (factory setting)
- YC Grey (GY) Air volume position signal DC 0.....10v
- U Pink (PK) Air volume measuring signal DC 0.....10v

N2 RDG 400

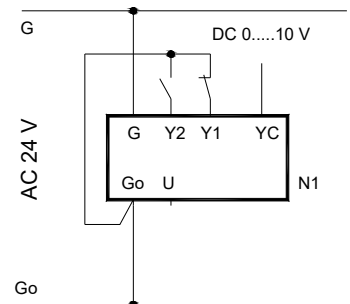
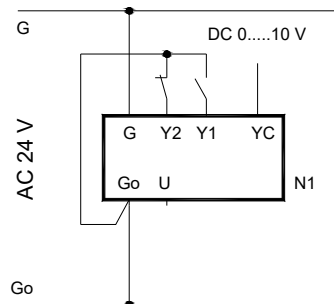
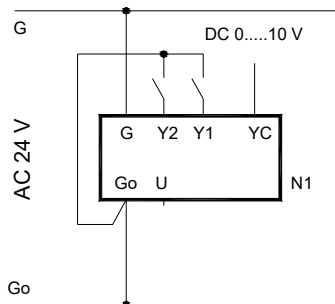
- G, G0 Operating voltage AC 24 V
- Y10/G0 Control output for DC 0 ... 0 V actuator
- Y1 /G, Y2/G Control output.
- X1, X2 Multifunctional input for temperature sensor
 - X1 external room temperature sensor.
 - X2 Switch for automatic heating/cooling changeover
- M Measuring neutral for sensor and switch
- D1, GND Multifunctional input for potential-free switch.

GDB181.1E/3 OVERRIDE CONTROL (must be only wired to the MASTER).

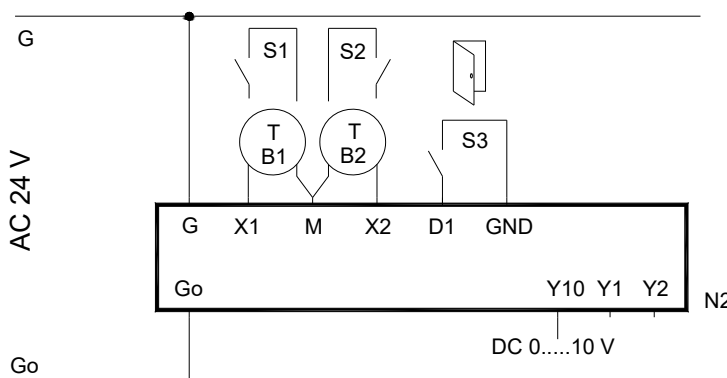
Modular control V_{min} and V_{max}

Fully closed

Fully open



RDG 400



N2 RDG 400 Room Temperature controller

Commissioning

DIP Switches



Parameters

P01..... 3= automatic heating / cooling changeover

P02-P14.....Default values.

TB2 - Automatic heating / cooling changeover.

Optional - Switch or Sensor **QAH11.1**

QAH11.1 install in the supply air.

S3 - Optional Switch (key card, window contact, etc..)

VAV variable airflow - Room temperature control centralized , remote changeover.

Air supply control .

Wiring diagram **SIEMENS**



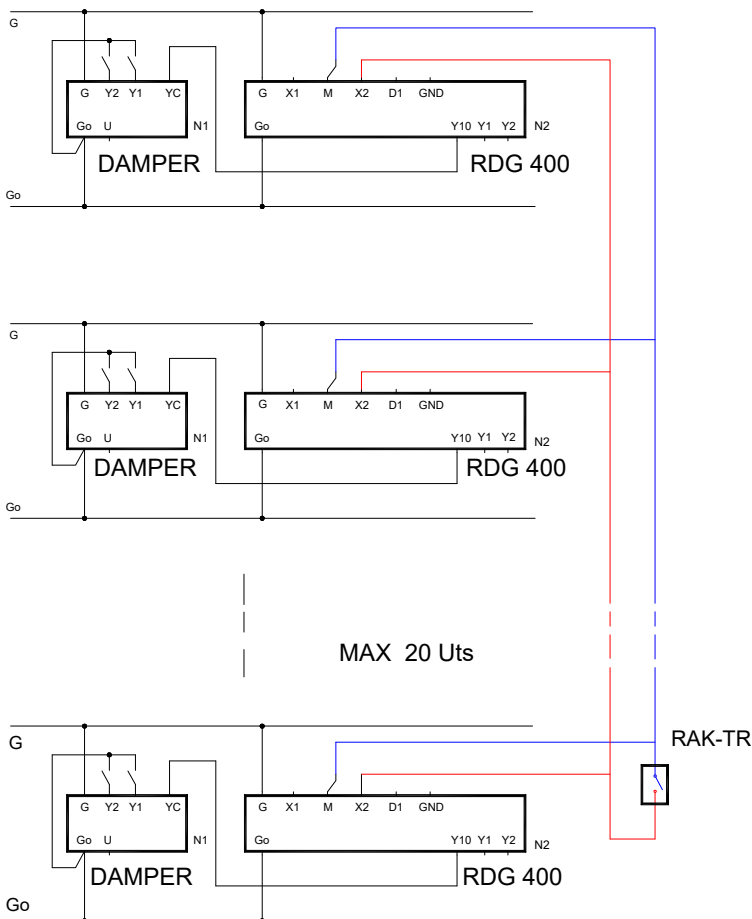
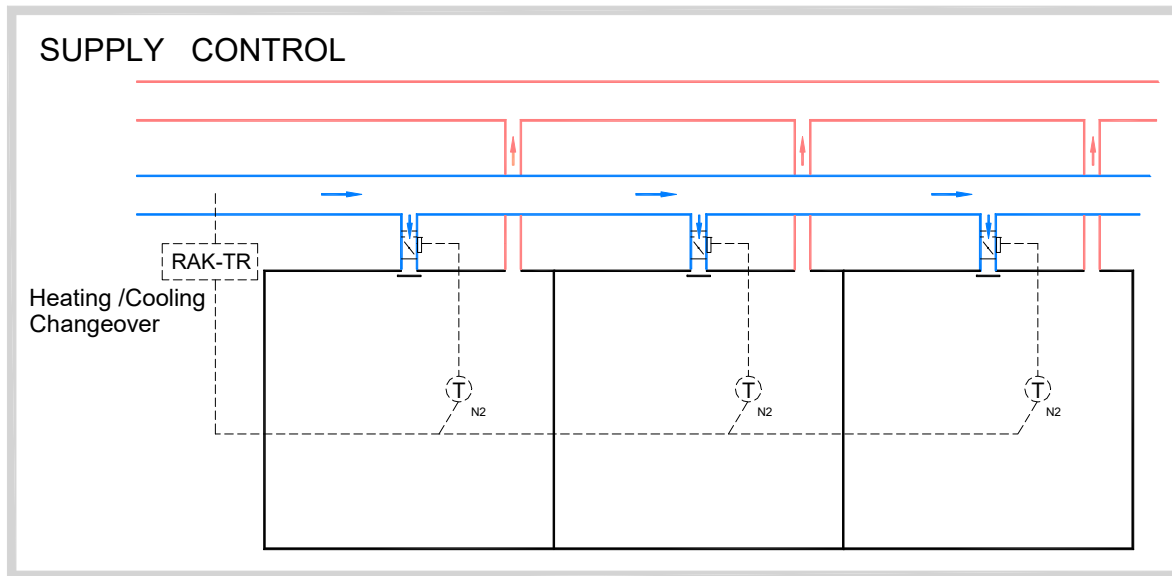
SVA-R /GDB181.1E/3/



RDG 400



RAK-TR

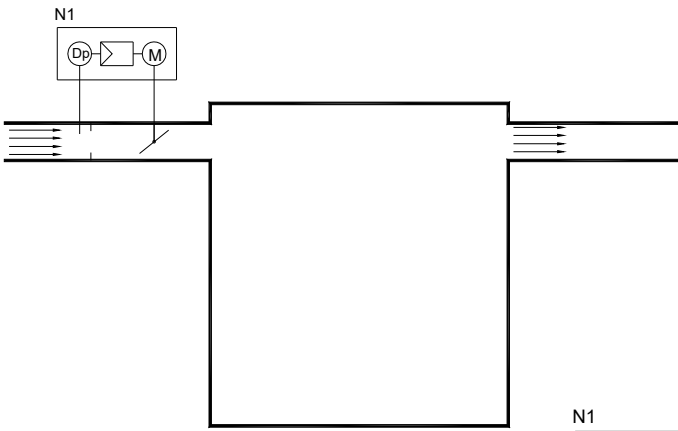


RAK-TR Mechanical Thermostat
 Mechanical immersion thermostat, scale 0° to 40° C, 2nd differential, heating / cooling.
 200x100 mm Sleeve, 1/2" thread
 (Select 27°C on the thermostat.)

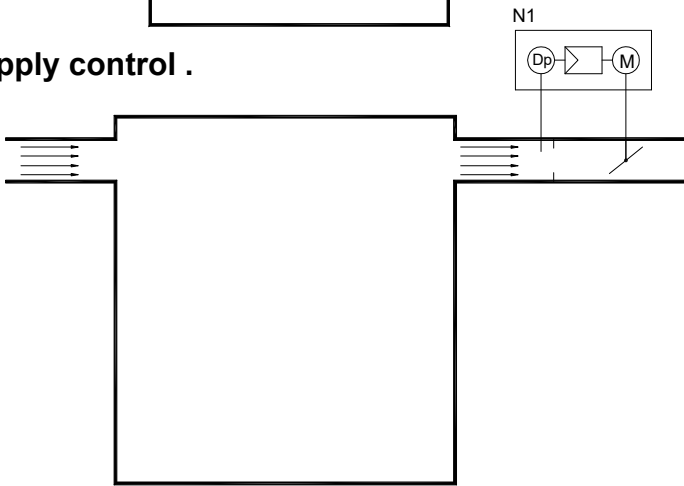
CAV Constant air flow.
Air supply or exhaust control.
 Wiring diagram **SIEMENS**



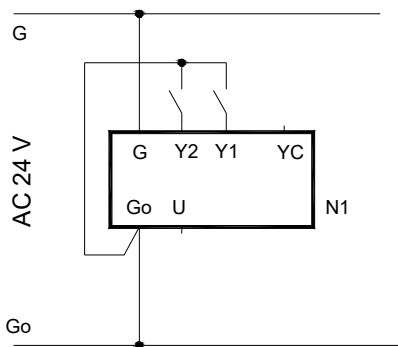
SVA-R /GDB181.1E/3/



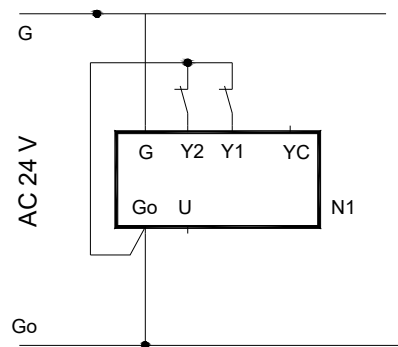
Air supply control .



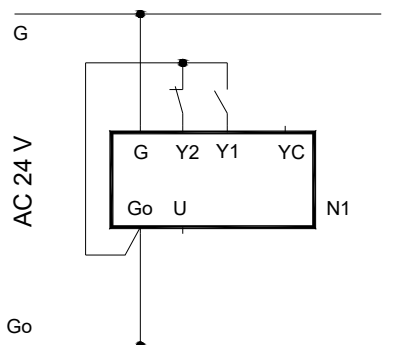
V min valué



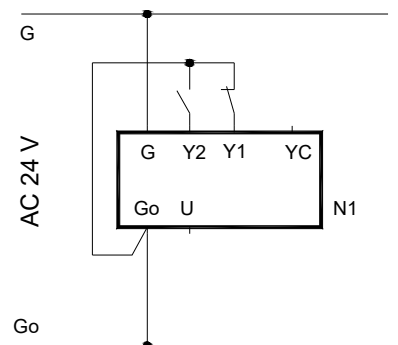
V Max valué



Fully closed

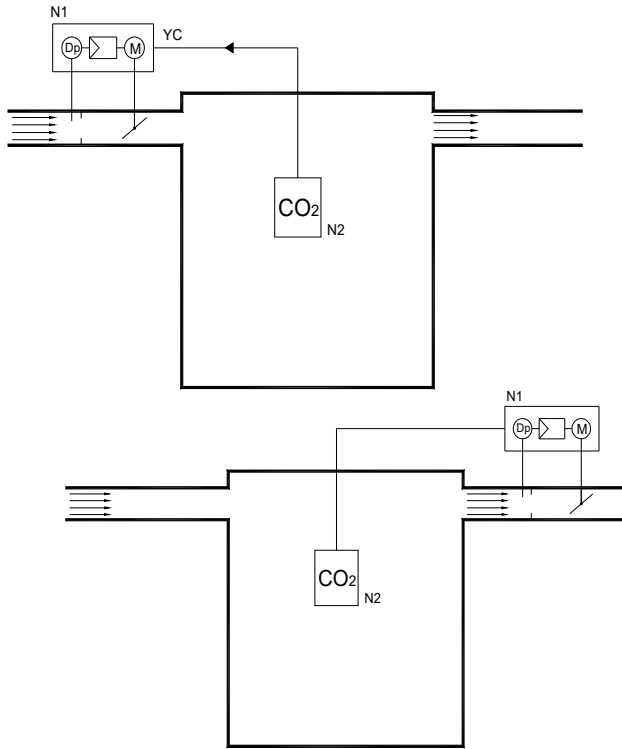


Fully open



VAV variable airflow - Room CO₂ control. Supply, exhaust, supply and exhaust control.

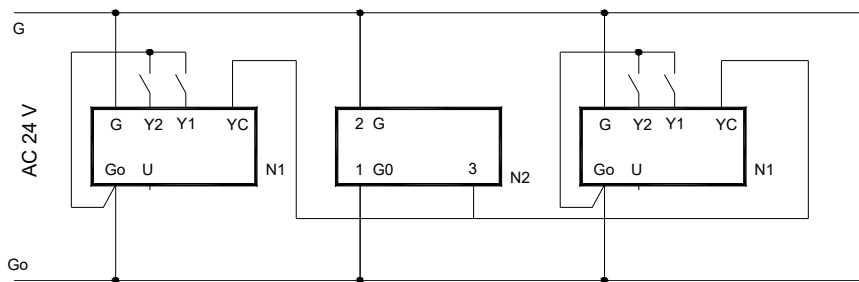
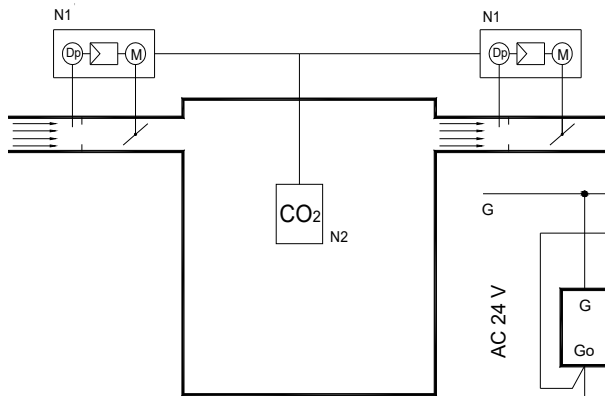
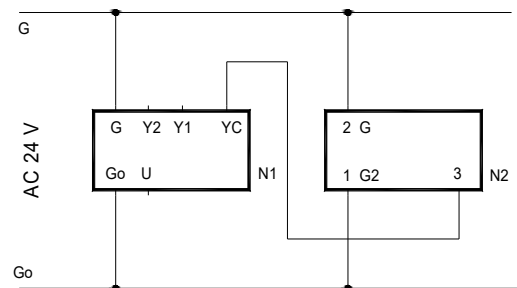
Wiring diagram SIEMENS



SVA-R/GDB181.1E/3/



CO2-WP



	CO ₂ -Concentration (ppm)	
	Grade	Default value
IDA 1 High quality	≤ 400	350
IDA 2 Average quality	400....600	500
IDA 3 Moderate quality	600....1.000	800
IDA 4 Low quality	> 1.000	1.200

350 ppm :Average concentration in external air.

500 to 800 ppm: Proper welfare conditions in buildings.

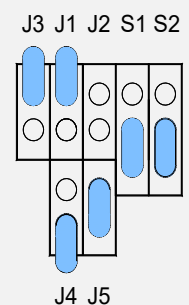
1.500 ppm :Limit of proper welfare conditions in buildings.

Comissioning. Jumper Position.

	J1	J2
0-10 VDC(default)	disconnected	disconnected
2-10 VDC	connected	disconnected

	J3
PID out put (default)	disconnected
Linear output	connected

	J4	J5
350 ppm	disconnected	disconnected
500 ppm	connected	disconnected
800 ppm (default)	disconnected	connected
1200 ppm	connected	connected



Communicative VAV Air control.

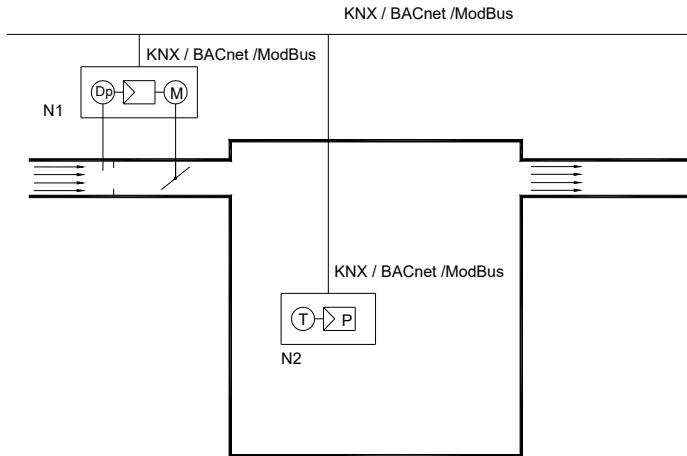
Wiring diagram **SIEMENS**

Air supply control.



N1 VAV compact air flow controller with Actuator and pressure sensor

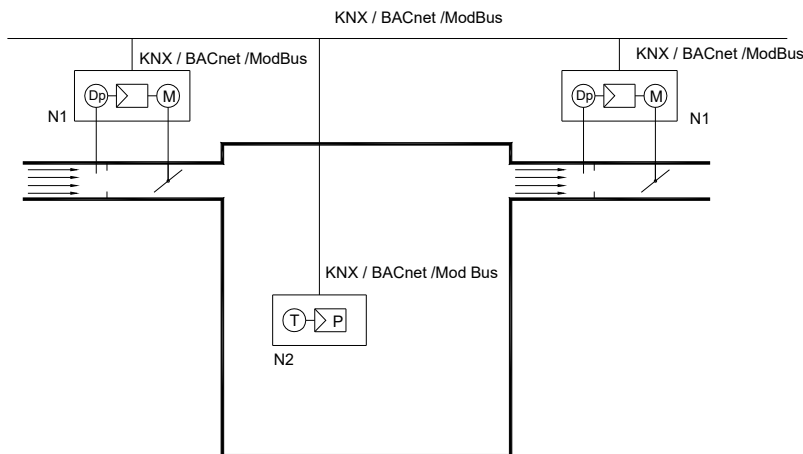
N2 Room temperature controller with sensor



N1 SVA -C / GDB181.1E/ KN /

- | | | |
|---|-------------|------------------------|
| 1 | red (RD) | System voltage AC 24 V |
| 2 | black (BK) | System neutral AC 24 V |
| 6 | Violet (VT) | Reference |
| 8 | Grey (GY) | Bus (KNX RTU) |
| 9 | Pink (PK) | Bus (KNX RTU) |

Air supply and exhaust control



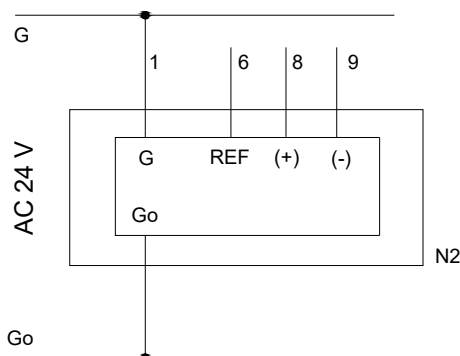
N1 SVA -C / GDB181.1E/ BA /

- | | | |
|---|-------------|------------------------|
| 1 | red (RD) | System voltage AC 24 V |
| 2 | black (BK) | System neutral AC 24 V |
| 6 | Violet (VT) | Reference |
| 8 | Grey (GY) | Bus (BACnet RTU) |
| 9 | Pink (PK) | Bus (BACnaet RTU) |



N1 SVA -C / GDB181.1E/ MO /

- | | | |
|---|-------------|------------------------|
| 1 | red (RD) | System voltage AC 24 V |
| 2 | black (BK) | System neutral AC 24 V |
| 6 | Violet (VT) | Reference |
| 8 | Grey (GY) | Bus (Modbus RTU) |
| 9 | Pink (PK) | Bus (Modbus RTU) |



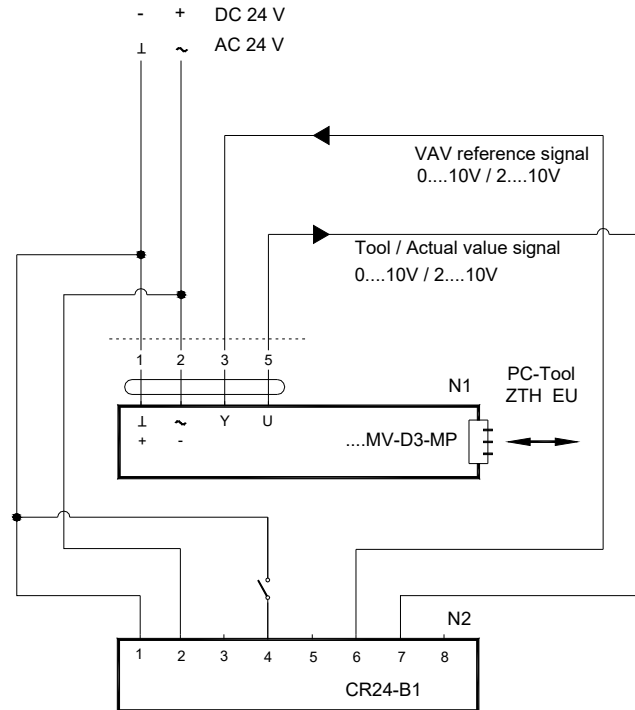
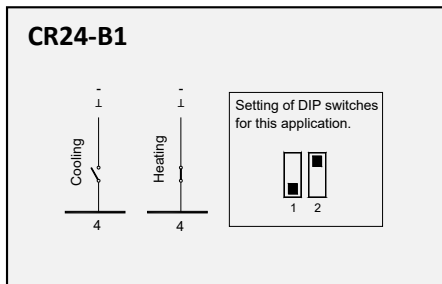
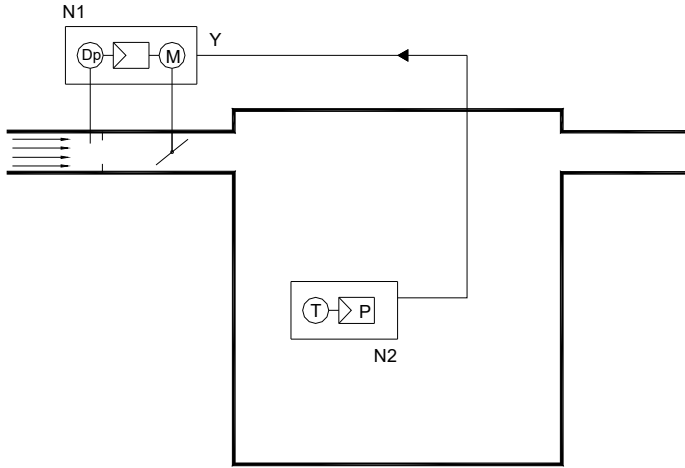
VAV variable airflow - Room Temperature control with remote changeover. Air supply Control.

Siringa diagrama **BELIMO**

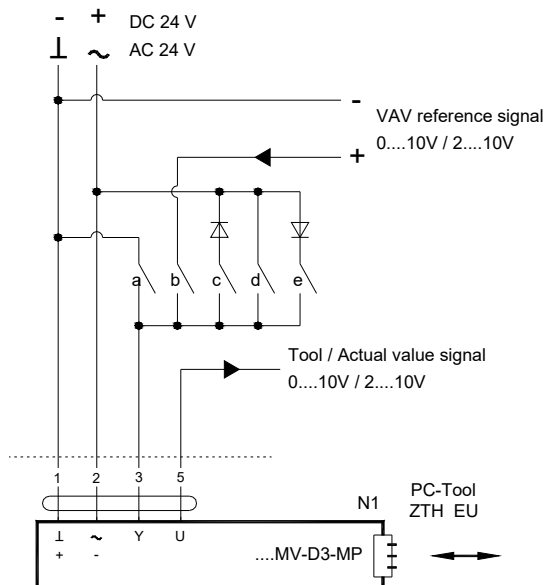


SVA-R/LMV-D3-MP/

CR24-B1



VERRIDE CONTROL



	a	b	c	d	e
Mode setting	-	0...10 V	0...10 V	0...10 V	0...10 V
	2...10 V	2...10 V	2...10 V	2...10 V	2...10 V
Signal	$\frac{1}{-}$	0...10 V 2...10 V	\sim	\sim +	\sim
Function	\odot 3	\odot 3	\triangle \odot 3	\odot 3	∇ \odot 3
Damper CLOSED	CLOSED		CLOSED		
\dot{V} min... \dot{V} max		VAV			
CAV... \dot{V} min	ALL open - \dot{V} min active				
Damper OPEN					OPEN
CAV... \dot{V} max				\dot{V} max	

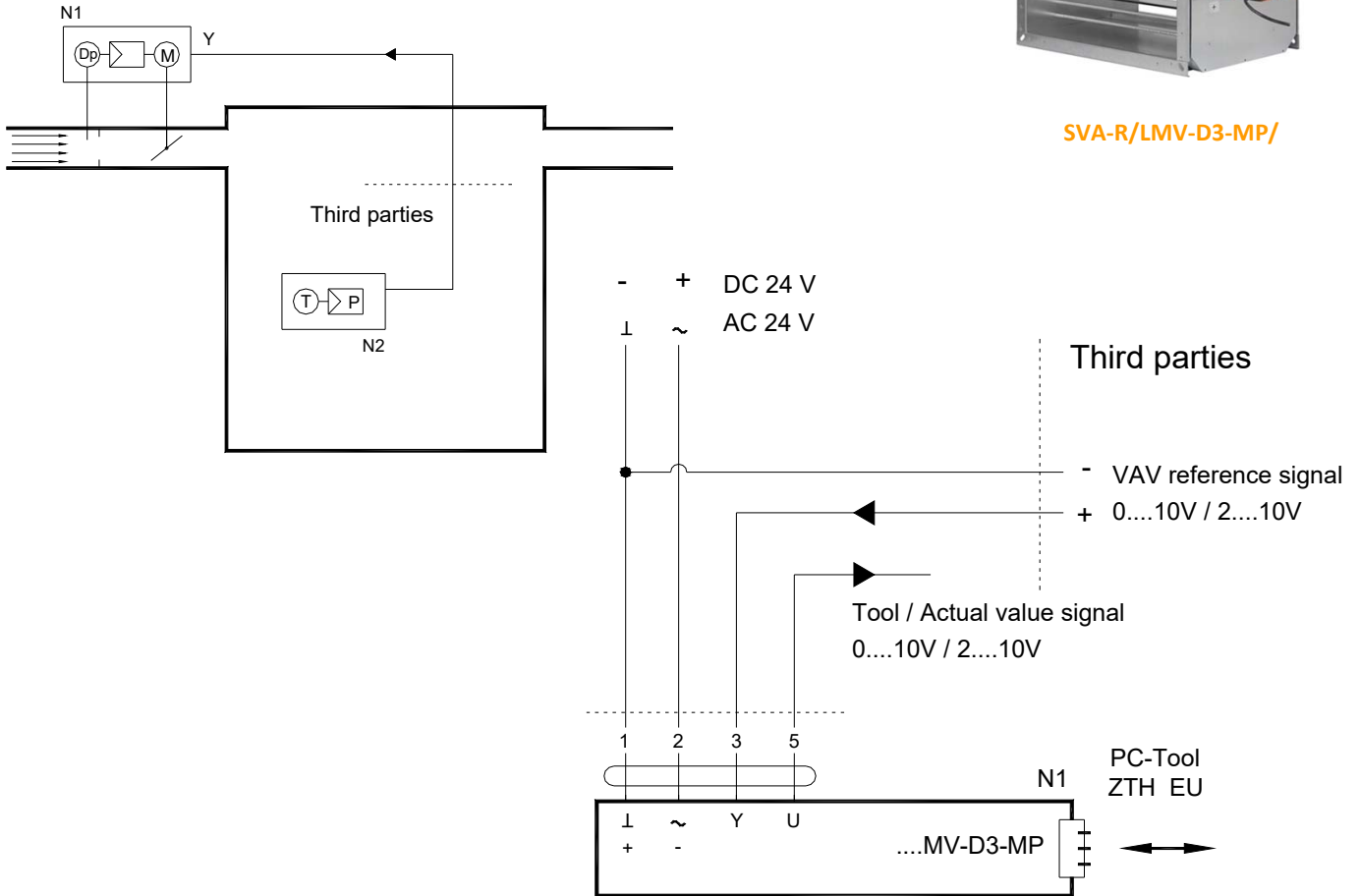
Note. Only one contact closed at same time.

Signals 'c' and 'e' only available with AC 24 V supply.

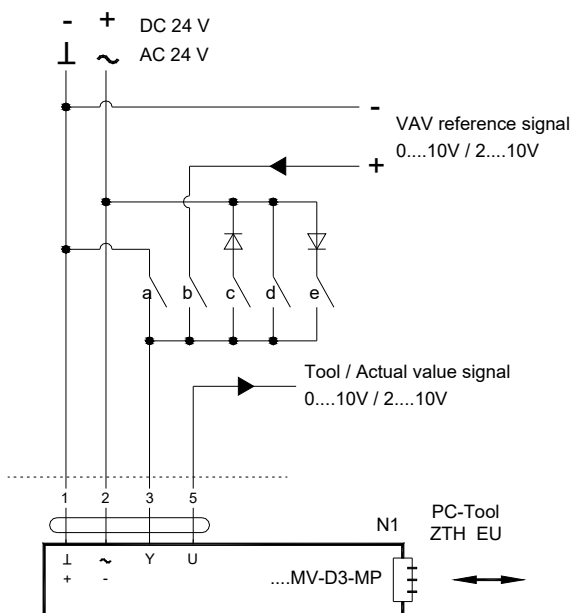
VAV variable airflow - Room Temperature control.
Air supply air.
 Siringa diagrama **BELIMO**



SVA-R/LMV-D3-MP/



VERRIDE CONTROL



	a	b	c	d	e
Mode setting	-	0...10 V	0...10 V	0...10 V	0...10 V
	2...10 V	2...10 V	2...10 V	2...10 V	2...10 V
Signal	\perp -	0...10 V 2...10 V	\sim	\sim +	\sim
Function					
Damper CLOSED	CLOSED		CLOSED		
\check{v} min... \check{v} max		VAV			
CAV... \check{v} min	ALL open - \check{v} min active				
Damper OPEN					OPEN
CAV... \check{v} max				\check{v} max	

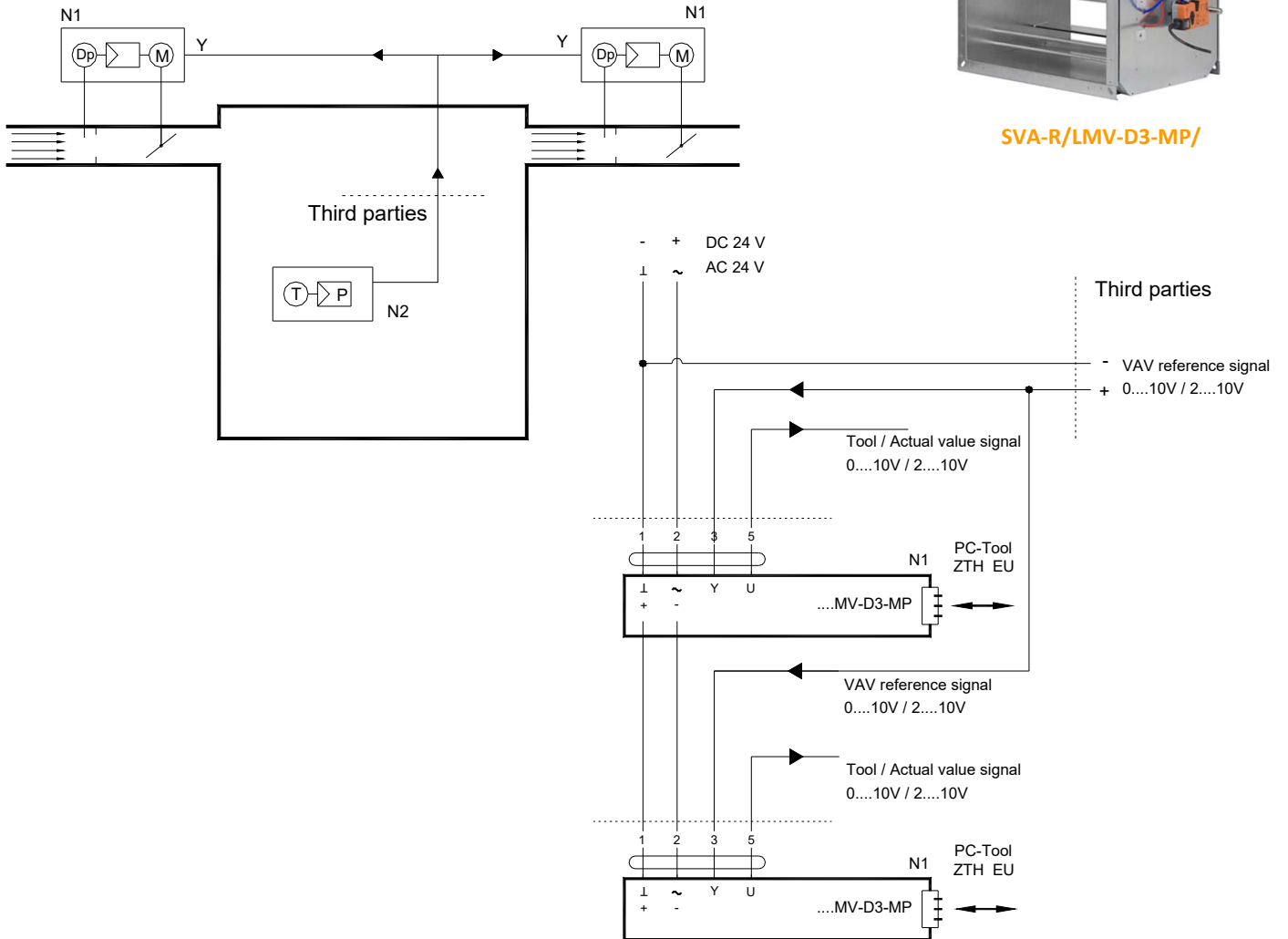
Note. Only one contact closed at same time.
 Signals 'c' and 'e' only available with AC 24 V supply.

VAV variable airflow - Room temperature control. Air supply and exhaust control with Parallel connection.

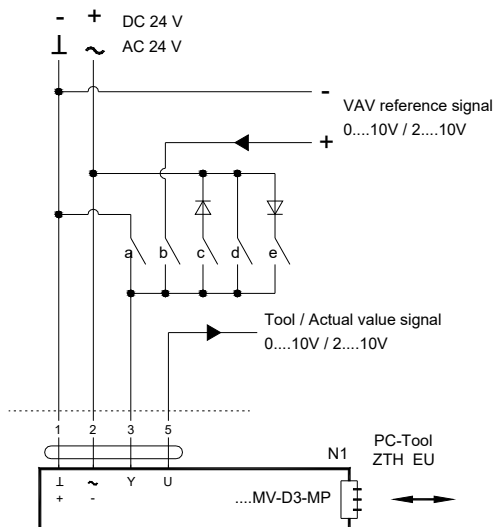
Siringa diagrama **BELIMO**



SVA-R/LMV-D3-MP/



VERRIDE CONTROL (must be wired to both actuators)



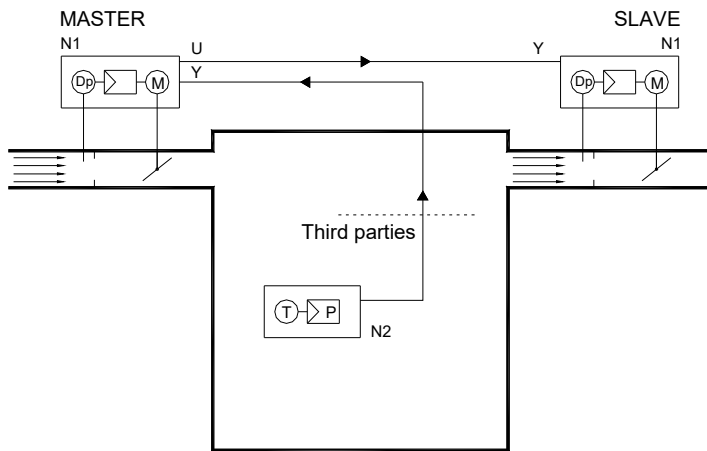
	a	b	c	d	e
Mode setting	-	0...10 V	0...10 V	0...10 V	0...10 V
	2...10 V	2...10 V	2...10 V	2...10 V	2...10 V
Signal	⊥ -	0...10 V 2...10 V	~	~ +	~
Function	⊙ 3	⊙ 3	⊙ 3	⊙ 3	⊙ 3
Damper CLOSED	CLOSED		CLOSED		
\checkmark min... \checkmark max		VAV			
CAV... \checkmark min	ALL open - \checkmark min active				
Damper OPEN					OPEN
CAV... \checkmark max				\checkmark max	

Note. Only one contact closed at same time.

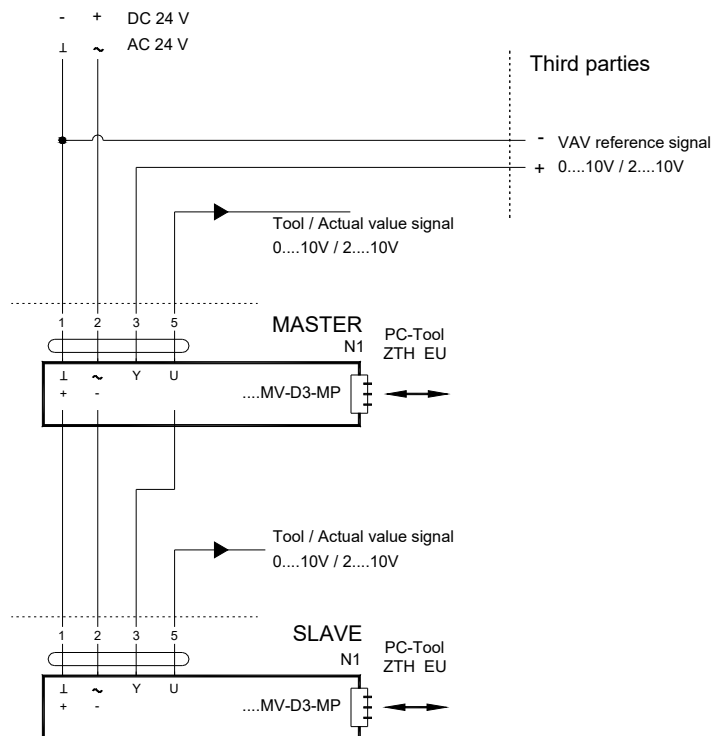
Signals 'c' and 'e' only available with AC 24 V supply.

VAV variable airflow – Room temperature control. Air supply and exhaust control with Master-Slave connection.

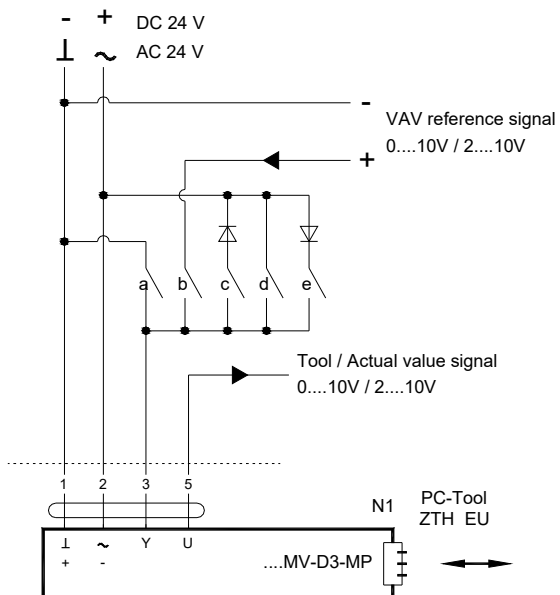
Siringa diagrama **BELIMO**



SVA-R/LMV-D3-MP/



VERRIDE CONTROL (must be only wired to the MASTER)



	a	b	c	d	e
Mode setting	-	0...10 V	0...10 V	0...10 V	0...10 V
	2...10 V	2...10 V	2...10 V	2...10 V	2...10 V
Signal	$\frac{\perp}{-}$	$\frac{0...10\text{ V}}{2...10\text{ V}}$	\sim	$\frac{\sim}{+}$	\sim
Function	\odot 3	\odot 3	\triangle \odot 3	\odot 3	∇ \odot 3
Damper CLOSED	CLOSED		CLOSED		
\dot{V} min... \dot{V} max		VAV			
CAV... \dot{V} min	ALL open - \dot{V} min active				
Damper OPEN					OPEN
CAV... \dot{V} max				\dot{V} max	

Note. Only one contact closed at same time.

Signals 'c' and 'e' only available with AC 24 V supply.

VAV variable airflow - Room temperature control with centralised, remote changeover Air supply control.



SVA-R/LMV-D3-MP/

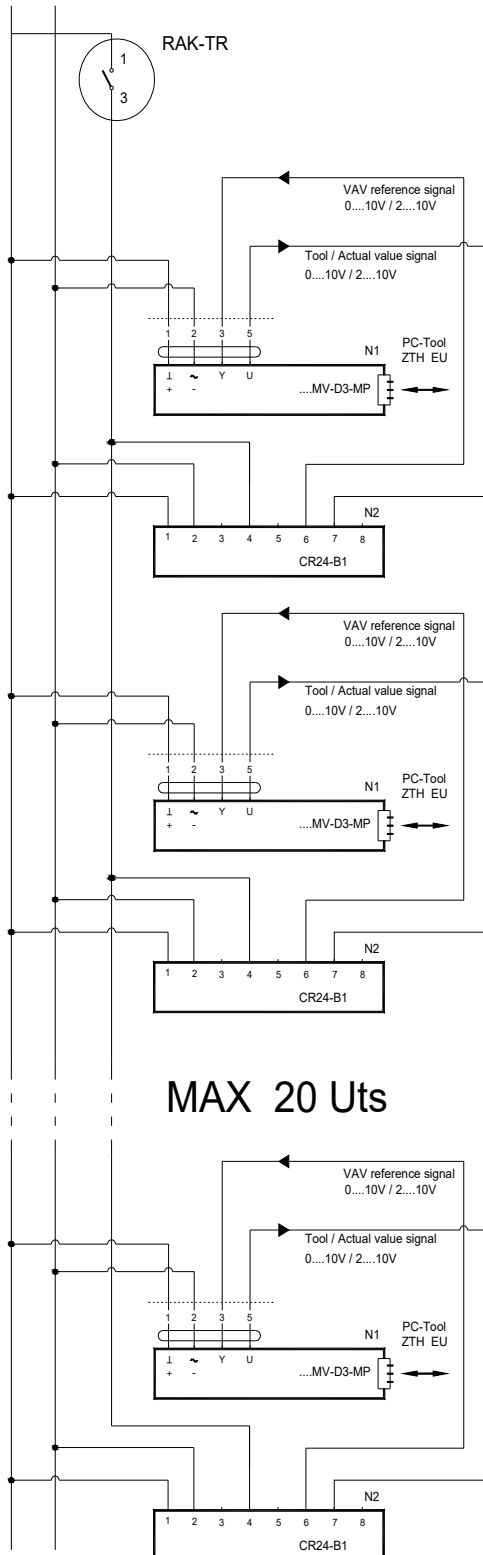


CR24-B1

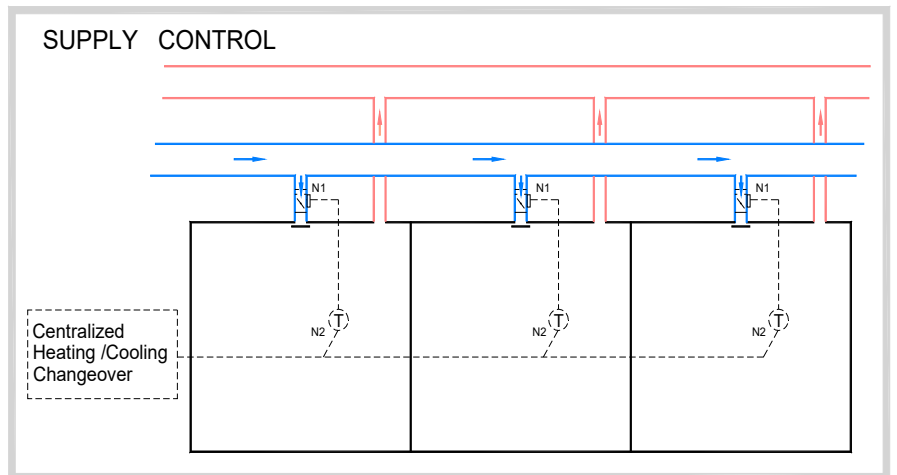


RAK-TR

- + DC 24 V
L ~ AC 24 V



MAX 20 Uts



RAK-TR

Cooling		Heating	
1		1	
3		3	

Temperatura de setpoint de RAK-TR

Timpulsión verano = Tsc
Timpulsión invierno = Tsc

$$T_{setpoint} = \frac{T_{sh} + T_{sc}}{2} + 3$$

La temperatura entre Tsh-Tsc < 6° C

CR24-B1

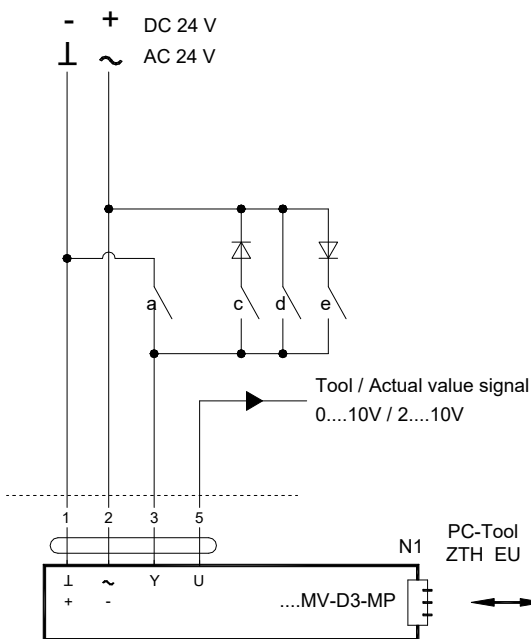
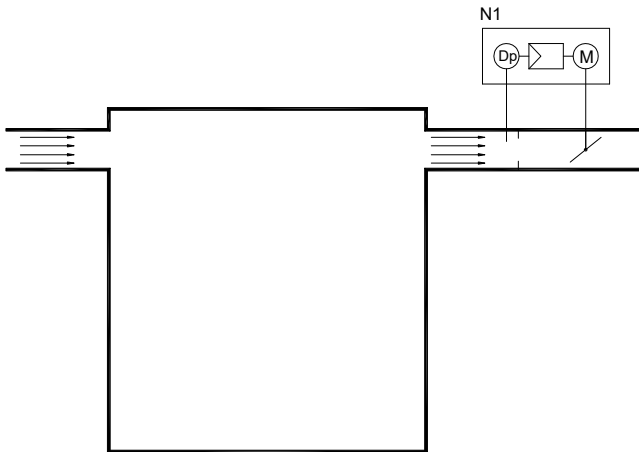
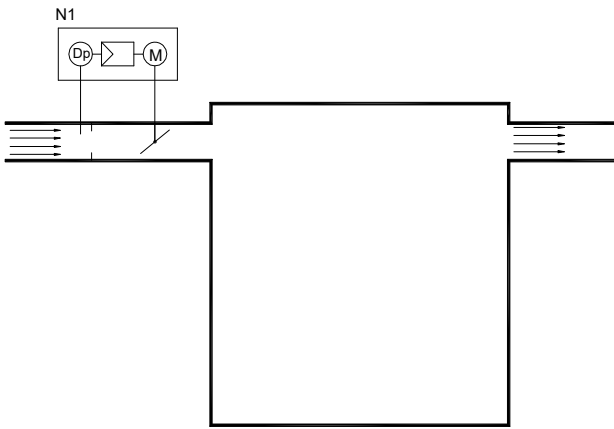
Setting of DIP switches for this application.

CAV Constant air flow. Air supply or exhaust Control.

Siringa diagrama BELIMO



SVA-R/LMV-D3-MP/



	a	c	d	e
Mode setting	-	0.....10 V	0.....10 V	0.....10 V
	2.....10 V	2.....10 V	2.....10 V	2.....10 V
Signal	$\frac{1}{-}$	\sim	$\frac{\sim}{+}$	$\frac{\sim}{\nabla}$
Function	\odot 3	∇ \odot 3	\odot 3	∇ \odot 3
Damper CLOSED	CLOSED	CLOSED		
Damper OPEN				OPEN
CAV... \dot{V} max			\dot{V} max	

Note. Only one contact closed at same time.

Signals 'c' and 'e' only available with AC 24 V supply.

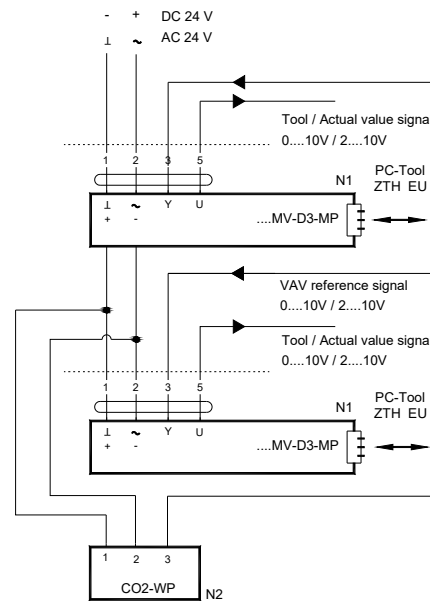
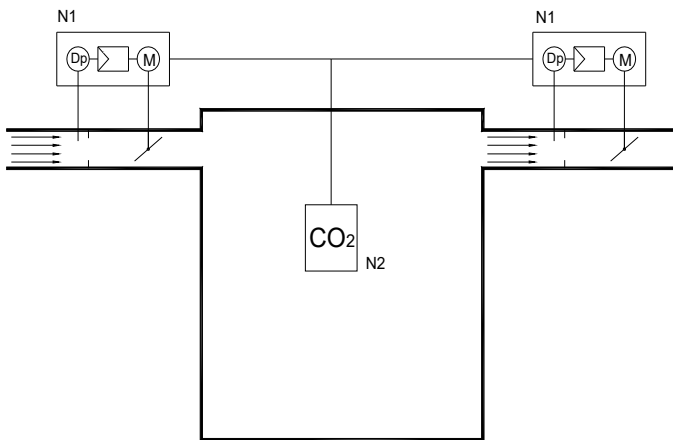
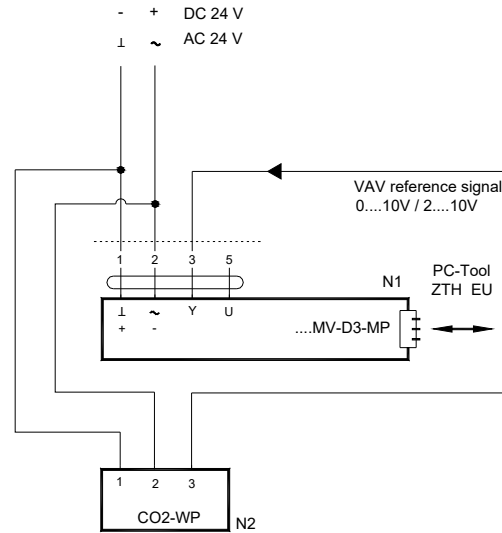
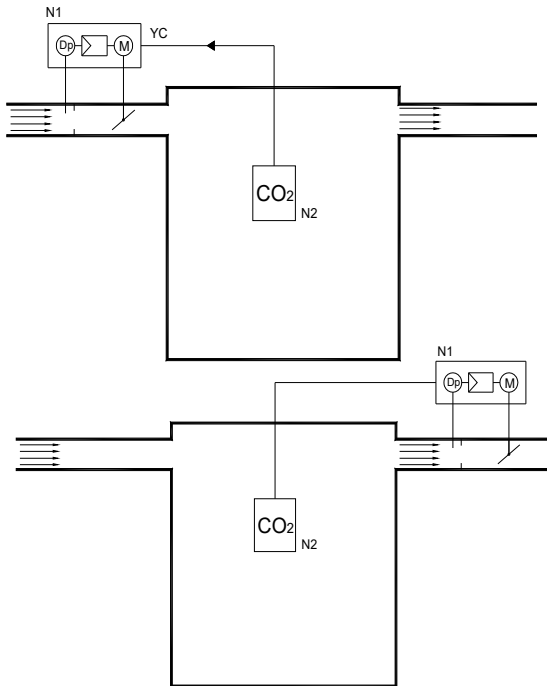
VAV variable airflow - Room CO₂ control. Supply, exhaust, supply and exhaust control.

Siringa diagrama **BELIMO**



SVA-R/LMV-D3-MP/

CO2-WP



	CO ₂ -Concentration (ppm)	
	Grade	Default value
IDA 1 High quality	≤ 400	350
IDA 2 Average quality	400...600	500
IDA 3 Moderate quality	600...1.000	800
IDA 4 Low quality	> 1.000	1.200

350 ppm :Average concentration in exterior air.

500 to 800 ppm :Proper welfare conditions in buildings.

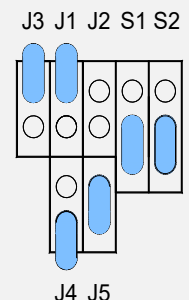
1.500 ppm :Limit of proper welfare conditions in buildings.

Commissioning. Jumper Position.

	J1	J2
0-10 VDC(default)	disconnected	disconnected
2-10 VDC	connected	disconnected

	J3
PID out put (default)	disconnected
Linear output	connected

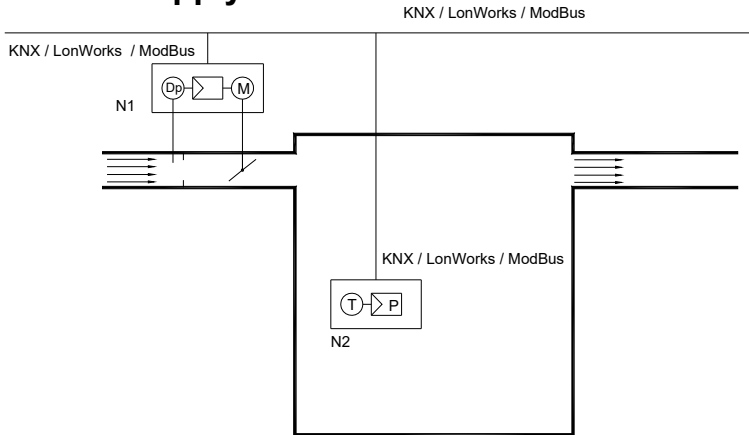
	J4	J5
350 ppm	disconnected	disconnected
500 ppm	connected	disconnected
800 ppm (default)	disconnected	connected
1200 ppm	connected	connected



Communicative VAV Air control.

Siringa diagrama **BELIMO**

Air supply control.



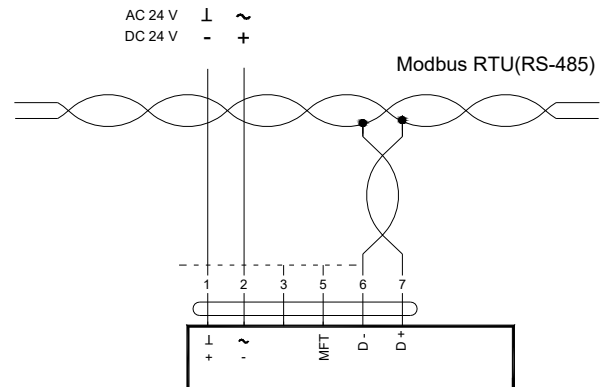
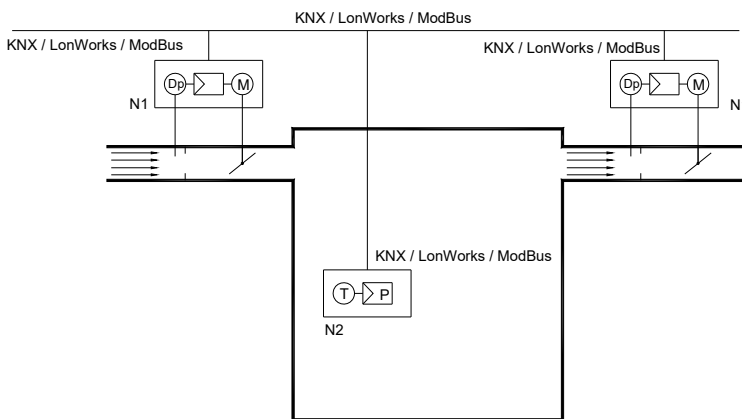
N1 -VAV compact air flow controller with actuator and pressure sensor

N2 Room temperature controller with sensor

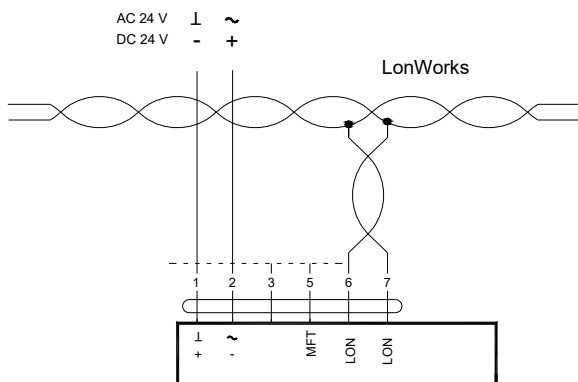


N2SVA-C /LMV-D3-MOD/

Air supply and exhaust control.



N2SVA-C/LMV-D3LON/



N2SVA-C/LMV-D3-KNX/

