CLIMALINE Measurement and Control Technology

Measuring, controlling, operating

Product Advantages

Simple handling and assembly
All-purpose for all Climaline ceiling systems
Available in almost all switch programs
Integrated dew point monitoring
Heating and cooling control for 2- and 4-pipe systems

Areas of Application

Residential and commercial spaces
Hotels
Public spaces
Canteens
Training and seminar rooms

Delivery Programme Overview

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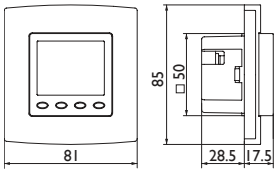
Room Controller Comfort for CLIMALINE Ceiling Systems – Flush-Mounted



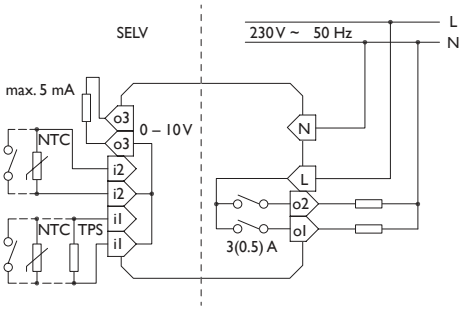
The watch can be used as master for other controllers or for ECO-shift. With an external contact the power save function (ECO) or the antifreeze protection (OFF) can be activated.

As an alternative the inputs of the controller can be configured for an external temperature sensor or dew point sensor (TPS). Via a 0 – 10 V interface a fan can be speed-controlled.

Electronic room controller with watch, flush-mounted controller for time-independent cooling and heating, for 2- and 4-pipe systems in hotels, residential and business buildings. The adjustment is carried out in the menu.

Up to five valve actuators (currentless open or closed) can be controlled per outlet. In 2-pipe mode the operating mode can be switched via an external contact (change-over) or a temperature sensor.

Connection

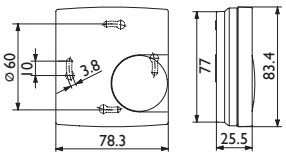


Technical Data

Operating voltage	230 V ~, 50 Hz
Sensor	internal NTC 47 kΩ, external NTC 47 kΩ, TPS
Switching capacity	per 3 (0.5) A / 230 V ~
Switch contact	2 relays/closing contacts
Setting range	5 to 30 °C heating, 18 to 40 °C cooling
Switching differential	< 1 K
Display	illuminated, graphic display
Protection type	IP 30
Protection class	II, after appropriate mounting
Power reserve watch	approx. 3 days
Admissible humidity	max. 95 % r.H., non-condensing
Storage temperature	– 20 to + 70 °C
Safety and EMC	according to DIN EN 60730
Ambient temperature	0 to 35 °C

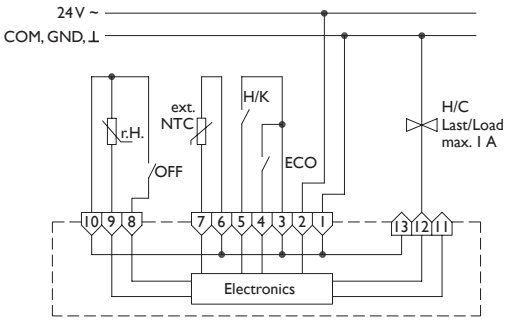
Colour case	pure white, sim. to RAL 9010
Material case	PC, PMMA, ABS
Mounting/Fixing	flush-mounted socket, available in nearly all switch programs
Electric connections	screw-clips
Inlet 1	ext. sensor NTC 47 kΩ, ECO/OFF/TPS
Inlet 2	CO-contact/ CO-sensor in 2-pipe, ECO/OFF in 4-pipe
Outlet 1	heating (4-pipe), heating/cooling in 2-pipe
Outlet 2	cooling (4-pipe)/watch
Outlet 3	fan control 0 to 10 V =, max. 5 mA
Art. no.	231163

Room Controller Object for CLIMALINE Ceiling Systems – Surface-Mounted

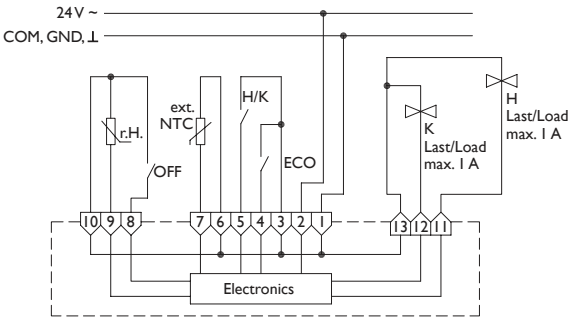


This controller has been developed especially for heating/cooling regulation on 2- and 4-pipe systems in hotels, commercial and residential buildings. It is able to control up to 5 valve actuators (24 V ~, currentless closed or open) per outlet. The controller includes the dew point control function for the cooling ceiling.

Connection in the 2-pipe system



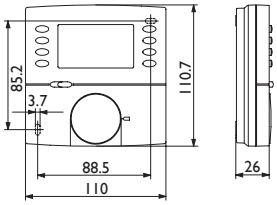
Connection in the 4-pipe system



Technical Data

Operating voltage	24 V ~, 50/60 Hz, safety extra-low voltage
Sensor	NTC 47 kΩ internal and/or external, external supply flow sensor NTC 47 kΩ (change-over-sensor), external TPS
Switching current	1 A / 24 V ~ (max. 5 electro-thermic valves each outlet)
Switch contact	2 relays/closing contacts
Setting range	21 °C ± 8 K (mark red/blue)
Switching differential	heating/cooling: < 1 K
Neutral zone	approx. 2 K fixed
ECO-zone	± 3 K set
Displays (LED)	
– yellow:	heating
– blue:	cooling
– yellow in setting OFF:	antifreeze protection on
– green:	interruption of cooling because of condensate
– flashing red:	error of external sensor, controlling now via internal sensor
Protection type	IP 30, after appropriate mounting
Protection class	III
Admissible humidity	max. 95 % r.H., non-condensing
Storage temperature	– 20 to + 70 °C
Safety and EMC	according to DIN EN 60730
Ambient temperature	0 to 40 °C
Colour case	pure white, sim. to RAL 9010
Material case	plastic ABS
Mounting/fixing	surface-mounted
Art. no.	231164

Room Controller Comfort Radio for CLIMALINE Ceiling Systems – Surface-Mounted



Radio-room temperature sensor with temperature measurement for residential, office and hotel spaces with usual degree of pollution. When used together with CLIMALINE radio receivers, a single room temperature control is realised.

Application mostly in renovation projects or extensions of existing buildings. Costly brick- and plasterwork for buried wiring can be avoided.

Particularly suitable for office floors where the flexibility of the floor plan is paramount.

Temperature sensor (transmitter) for temperature measuring and radio transmission to the controller (receiver), incl. watch.

Simple handling because of directly accessible push-buttons for ON/OFF, holiday setting, party setting, operating mode and information retrieval for displaying all settings. Either heating, cooling or heating and cooling mode can be selected. Separate watch setting for cooling mode, temperature setting button with °C-scale.

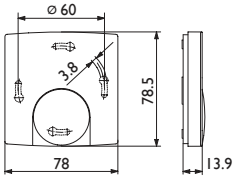
Display of temperature and time, automatic adjustment of summer and winter time, child-proof lock, valve protection (factory setting: OFF) and self-learning mode (can be activated for heating), case "Berlin 3000", master for master-slave-mode, background lighting (third separate battery only for background lighting, advantage: control function is ensured even in case of empty lighting battery), preset week program (Mon – Fri 05.00 a.m. – 09.00 a.m., 04.00 p.m. – 10.00 p.m. / Sat, Sun 06.00 a.m. – 10.00 p.m., Comfort mode)

Technical Data

Operating voltage	3 pieces battery Micro AAA, 1.5 V / 1100 mAh
Sensor	NTC internal
Setting range	5 to 30 °C
Lowering	adjustable
Transmitting frequency	868.3 MHz
Transmitting interval	approx. 3 min and after nominal value change
Range	150 m line-of-sight, up to 30 m in buildings (depending on construction)
LED	learning mode, battery empty status display
Protection type	IP 30
Protection class	III

Equipment	mechanical range restriction
Admissible humidity	max. 95 % r.H., non-condensing
Storage temperature	– 10 to + 50 °C
Safety and EMC	according to DIN EN 60950-1 and DIN EN 300220
Ambient temperature	– 10 to + 50 °C
Colour case	pure white, sim. to RAL 9010
Material case	plastic ABS
Mounting/fixing	direct surface or wall mounted for instance with screws or adhesive strip
Art. no.	231059

Room Controller Object Radio for CLIMALINE Ceiling Systems – Surface-Mounted



Radio-room controller with temperature sensor for hotels, residential and commercial buildings with usual degree of pollution.

In combination with CLIMALINE radio receivers, a single room temperature control is realised.

Application mostly in renovation projects or extensions of existing heating systems. Costly brick- and plasterwork for buried wiring can be avoided. Especially suitable for office floors where the flexibility of the floor plan is paramount.

Temperature sensor (transmitter) for temperature measuring and radio transmission to the controller (receiver).

Including setpoint value adjuster.

Technical Data

Operating voltage	2 pieces battery Micro AAA, 1.5 V / 1100 mAh
Sensor	NTC internal
Setting range	5 to 30 °C
Lowering	in combination with watch transmitter (pilot function) adjustable to the reduced temperature set on the watch transmitter
Transmitting frequency	868.3 MHz
Transmitting interval	approx. 3 min and after nominal value change
Range	150 m line-of-sight, up to 30 m in buildings (depending on construction)
LED	learning mode, battery empty status display

Protection type	IP 30
Protection class	III
Equipment	mechanical range restriction
Admissible humidity	max. 95 % r.H., non-condensing
Storage temperature	– 10 to + 50 °C
Safety and EMC	according to DIN EN 60950-1 and DIN EN 300220
Ambient temperature	– 10 to + 50 °C
Colour case	pure white, sim. to RAL 9010
Material case	plastic ABS
Mounting/fixing	direct surface or wall mounted for instance with screws or adhesive strip
Art. no.	319620

Room Controller Receiver 4-/8-channel for CLIMALINE Ceiling Systems – Surface-Mounted

Radio receiver, which in combination with the CLIMALINE radio transmitter realizes a single room climate control.

Functions: heating, cooling with adjustable neutral zone; heating/cooling switch at the device or via external contact; ON/OFF-switching via contact with anti-freeze function; single channels can be ruled out of the cooling. Interruption of cooling in case of condensation by dew point sensor or contact; cooling limit temperature 18 °C; energy-safe-function either centrally via external clock timer or locally via master-slave-mode (max. 4/8 time zones possible, i.e. up to 4/8 transmitters can be connected, with watch); status display of radio connection for each channel, automatic emergency mode in case of connection loss;

Control types: average value generation, (up to 8 transmitters programmable per channel + 1 transmitter for master-slave-mode) or central control (single channels can be switched to an external setpoint generator, authority function/central control). The upper part can be removed to program the radio transmitters in the individual rooms.

The power supply during this time is guaranteed by a customary 9V battery. Thanks to the channel selection and a programming button, the transmitters can be programmed very simply.

Mounting: 4 screws for wall assembly are included in the standard scope of delivery.

4-channel radio-controller (receiver) for mounting in the distributor; application: heating, cooling or heating and cooling; 4 relay contacts/closings 5 (1) A, max. 4 actuators per heating circuit can be connected directly (max. 16 actuators in total); including pump module (max. 180 VA)

8-channel radio-controller (receiver) for mounting in the distributor; application: heating, cooling or heating and cooling; 8 relay contacts/closings 5 (1) A, max. 4 actuators per heating circuit can be connected directly (max. 32 actuators in total); including pump module (max. 180 VA)

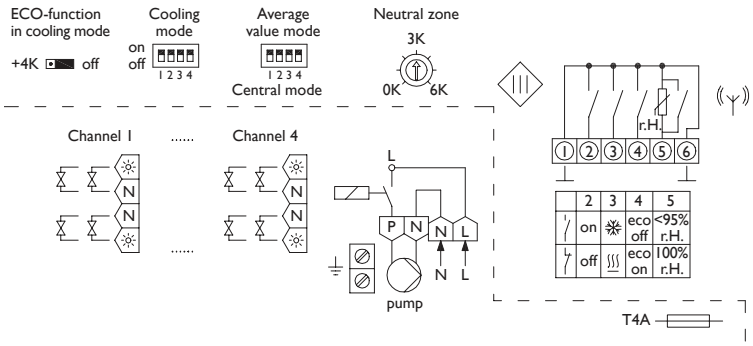
Technical Data

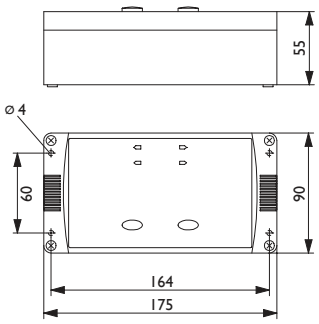
Operating voltage	230 V ~, 50 Hz
Switching differential	approx. 0.5 K (room temp.)
Receiving frequency	868.3 MHz
Aerial	(4-/8-channel) integrated, if necessary additional aerial JZ-25 + cable JZ 26
Display	3-colour-LED, one LED each channel

Display mode: display of programming, correct radio connection, passing below the dew point, loss of connection, display of the status heating or cooling by pressing the channel button.

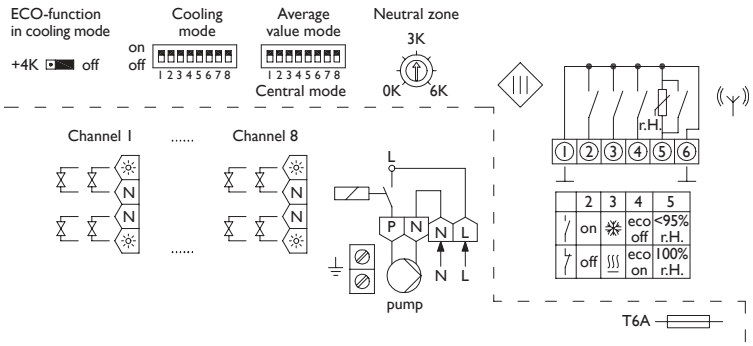
Protection type	IP 20 (KTFRL), IP 65 (KTFRD)	Material case	industry case, plastic
Protection class	II for user of protection class I and II	Mounting/fixing	with 4 supplied screws
		Electric connections	clips 0.5 – 1.5 mm²
Safety and EMC	acc. to DIN EN 60950-1 and DIN EN 300220	Emergency operation	If the radio connection is lost, after one hour all receivers run in emergency mode (ED 30 %)
Admissible humidity	max. 95 % r.H., non-condensing		
Storage temperature	– 20 to + 70 °C		
Ambient temperature	– 10 to + 50 °C	Art. no.	231057 (4-channel model)
Colour case	light grey, sim. to RAL 7035		231058 (8-channel model)

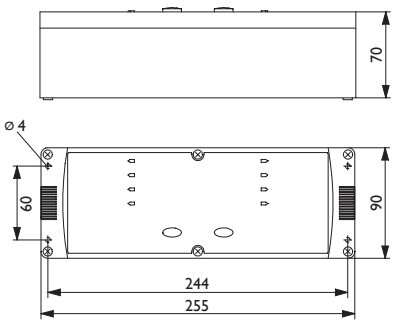
4-channel radio climate controller



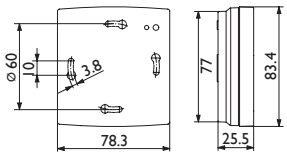


8-channel radio climate control-





Room Controller Receiver 1-channel for CLIMALINE Ceiling Systems – Surface-Mounted



This radio climate controller receives the target and actual values from the programmed transmitters and switches on the cooling if the target value + neutral zone is exceeded. Up to 10 different transmitters can be programmed on the receiver. In the event of a power cut or reconnection, the programmed transmitters are saved. The controller is active again 5 minutes maximum after the power has been restored. The transmitter with the watch has an ON/OFF-button, which can be used to interrupt the controller.

The receiver has a jumper to select between the two engery saving functions, either 4K target-temperature increase or Cooling OFF. The chosen function starts as soon as the energy saving function has been activated. In the factory setting the jumper is set to 4K target-temperature increase.

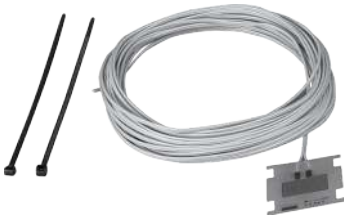
If the cooling is switched off in ECO mode, the jumper must be removed.

Further functions are mean value formulation, the master-slave-control and the central control.

Technical Data

Operating voltage	230 V ~, 50 Hz
Switch power	10 (2) A / 230 V
Switch contact	relay/closing contact
Received power	approx. 1.5 W (14 VA)
Control range	18 to 40 °C
Switching differential	approx. 0.5 K
Receiving frequency	868.3 MHz
Protection type	IP 30, after appropriate mounting
Protection class	II, after appropriate mounting
Admissible humidity	max. 95 % r.H., non-condensing
Storage temperature	– 20 to + 70 °C
Ambient temperature	– 20 to + 45 °C
Colour case	pure white, sim. to RAL 9010
Material case	plastic ABS
Mounting/fixing	surface-mounted or in wall
Art. no.	231056

Dew Point Sensor for CLIMALINE Ceiling Systems



10 m cable length, 2 cable straps – for pipes transporting cold water. Please note: because of the open construction, the sensor is only suitable for a clean environment and it must be installed in such a way that it can be replaced if necessary.

Art. no. 231166

Dew Point Controller for CLIMALINE Ceiling Systems

If the surface temperature of the dew point sensor is the same as the dew point itself a micro film of moisture occurs on his surface. This micro film changes the resistance of the dew point sensor to such an extent that the connected controller registers this change and deactivates the cooling. So even at max. cooling, dripping condensate and therefore moisture damage to the structure are prevented. After the dew point sensor has dried, the resistance value rises and the cooling is reactivated.

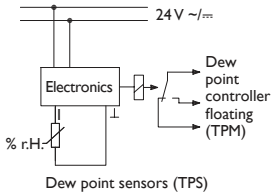
To make sure it is possible to detect in good time whether the temperature has fallen below the dew point, the dew point sensor must be fixed at the point where a fall in temperature is most probable.

Mostly these are the places in a room either close to the water supply or in the window areas. If the place cannot clearly be determined, it is possible to connect up to 5 dew point sensors in parallel to a controller or monitor. Sensors have to be ordered separately.

Equipment

24 V ~/⎓ safety extra-low voltage;
Switching capacity:
Min. switched current: 5 mA,
Max. switched current: 10 (3) A
Max. contact voltage: 48 V ~ / 60 V
Protection class: III

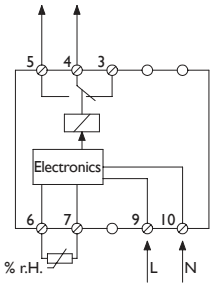
At the sensor inlet up to 5 sensors can be connected in parallel – the sensors must be ordered separately (TPS)



Dew point sensors (TPS)

230 V ~, 50 Hz
Switching capacity:
up to 230 V ~, 50 Hz max. 10 (3) A
up to 30 V ⎓ max. 10 A
up to 60 V ⎓ max. 1 A
Protection class: II, after appropriate mounting

At the sensor inlet up to 5 sensors can be connected in parallel – the sensors must be ordered separately (TPS)

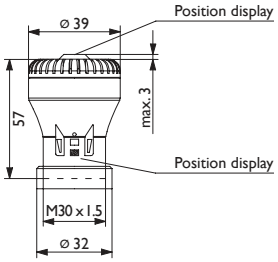


Technical Data

Operating voltage	see equipment
Input power	approx. 1 VA
Sensor	external TPS, max. 5 pieces connectable
Switch point	approx. 98 % r.H.
Switching output	floating changeover contact
Switching capacity	see equipment
Min.-switching current	5 mA
Display (LED)	red (dew point release)
Protection type	IP 20
Protection class	see equipment

Admissible humidity	max. 95 % r.H., non-condensing
Storage temperature	– 20 to + 70 °C
Safety and EMC	according to DIN EN 60730
Ambient temperature	0 to 55 °C
Colour case	light grey, sim. to RAL 7035
Material case	plastic PC
Mounting/fixing	norm profile mounting
Weight	NEHR/WFRRN approx. 160 g
Electric connections	screw terminals
Art. no.	231175 (230 V model) 231174 (24 V model)

Electrothermal Valve Actuators for CLIMALINE Ceiling Systems



Extremely compact design. Thanks to their slim shape, the electrothermal valve actuators can be quickly and easily assembled in the area of the fastening nut.

Assembly in any position: drain holes on the side lead any leaking water from the valve tappet to the outside and prevent damage to the drive.

Additional valve monitoring: with two additional inspection windows on the side the valve position can easily be visually checked.

Equipment

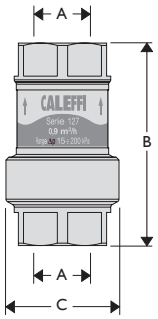
Electrothermal valve actuator:	230 V	24 V
Operating voltage:	230 V ~, 50 Hz	24 V = or 24 V ~
Max. starting current:	approx. 0.3 A	approx. 0.5 A

Technical Data

Operating voltage	see equipment
Function type	currentless closed
Max. starting current	see equipment
Continuous output	approx. 3 W
Opening/closing time:	approx. 4 min
Nominal stroke	3 mm
Nominal closing force	90 N
Ambient temperature	0 to 50 °C
Storage temperature	– 20 to + 70 °C
Connection cable	0.8 m / 2 x 0.5 mm²

Position display	on top and sidewise
Protection type	IP 42
Protection class	II
Safety and EMC	according to DIN EN 60730
Colour case	pure white, sim. to RAL 9010
Material case	PC with 20 % fibre glass
Mounting/fixing	M 30 x 1.5
Weight	approx. 85 g
Art. no.	231165 (230 V model)
	231173 (24 V model)

AUTOFLOW Automatic Flow Rate Control for CLIMALINE Ceiling Systems (0.12 – 5.0 m³/h)



A	B	C	Weight
½"	74	41	0.24 kg
¾"	74	41	0.25 kg
1"	120	61	0.76 kg
1 ¼"	110	61	0.75 kg
1 ½"	170	81	2.00 kg
2"	172	81	2.35 kg

AUTOFLOW valves are automatic mass flow limiters, which ensure a constant volume flow even in the event of fluctuations in the operating conditions of the hydraulic circuit of the cooling and heating system.

They help the automatic equalization of the system and guarantee the planned flow volume of each consumer.

This series of AUTOFLOW valves comes with a replaceable, low-noise controlling element made of highly resistant polymer, insensitive to lime. It is especially suitable for use in heating and cooling systems.

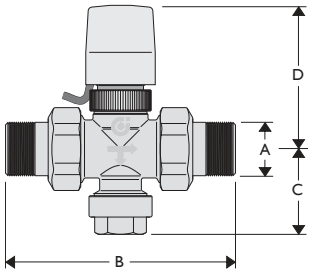
The compact valve case needs only a small amount of space and can therefore be installed on the individual consumers or distributors without any problems.

Technical Data

Case	brass EN 12164 CW614N
Cartridge	
– ½" to 1 ¼":	highly resistant polymer
– 1 ½" to 2":	highly resistant polymer and stainless steel
Spring	stainless steel
Seals	EPDM
Media	water, glycol dilutions
Max. glycol content	50 %

Max. operating pressure	16 bar
Operating temperature	0 to 100 °C
Δp-range	15 to 200 kPa
Flow volume	0.085 to 11 m³/h
Precision	± 10 %
Connections	½" to 2", see table
Art. no.	231160 (¾" model) 231139 (1" model)

Two-Way Zone Valve for CLIMALINE Ceiling Systems



Zone valves regulate the heat transfer medium in heating and cooling systems.

Combined with an electrothermal actuator and a room thermostat, they enable two-point control in the area of the hydraulic circuit in which they are used.

They are especially characterized by their low flow rate coefficient. Due to this they are well suited to controlling smaller zones or for direct use at the consumer.

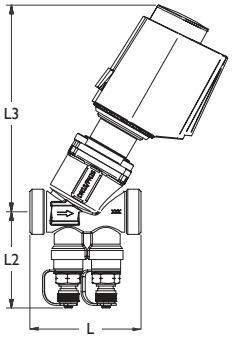
A	B	C	D
½"	113	41	81
¾"	113	41	81
1"	122	41	81

Technical Data

Case	brass EN 12165 CW617N
Gate	brass EN 12165 CW617N
Regulating spindle	rustproof steel
Seals in contact w. water	EPDM
Media	water, glycol dilutions
Max. glycol content	30 %

Temperature range	0 to 95 °C
Max. operating pressure	10 bar
Max. pressure difference	1.2 bar
Connections	½", ¾", 1", with bolting
Art. no.	231162 (¾" model)
	231161 (1" model)

OPTIMA Compact Pressure-Independent Balancing and Control



The OPTIMA Compact pressure-independent balancing and control valve for CLIMALINE ceiling systems can be used for heating and cooling in 2-pipe systems. Its linear control characteristic is used to handle two different mass flows for heating and cooling with only one valve.

The volume flow for the cooling system is adjusted on the OPTIMA Compact.

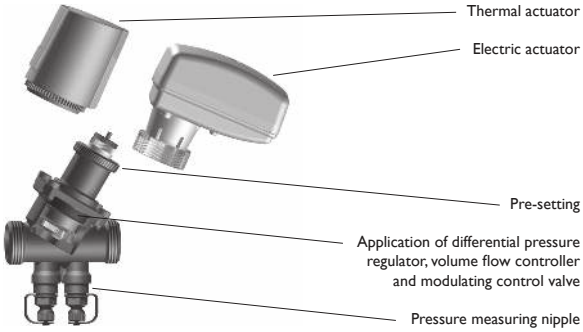
The mass flow of the heating system is limited by the volt-signal on the actuator.

Cooling system:
The maximum volume flow is set on the scale of the OPTIMA Compact. It can be adjusted from 0 l/h up to the volume flow set on the scale by an input-signal in a range of 0 – 10 V on the actuator.

Heating system:
The defined volume flow of the heating system is limited by the voltage on the actuator. It can be adjusted from 0 l/h up to the volume flow set on the scale by the limitation of the voltage on the actuator by an input-signal of 0 V.

Valve Dimension		DN10		DN15		DN20		DN25	
Connection thread*		AG/AG (G ½)	IG/IG (G ⅜)	AG/AG (G ¾)	IG/IG (G ½)	AG/AG (G 1)	IG/IG (G ¾)	AG/AG (G 1¼)	IG/IG (G 1)
Length	L	65	–	65	75	70	79	104	100
	L1	114	–	122	–	131	–	–	–
	L2	57	57	57	57	57	57	63	63
	L3	121	121	121	121	121	121	139	139
Weight	Basis	0.36	–	0.38	0.42	0.40	0.45	1.02	1.04
kg	DM	0.45	–	0.47	0.52	0.50	0.54	1.12	1.14

* AG/AG: male-/male-thread; IG/IG: female-/female-thread



Technical Data

Valve case	free of dezincification brass, CW602N
Differential pressure regulator	PPS 40 % glass
Spring	stainless steel
Membrane	HNBR
Seals	EPDM
Pressure stage	PN25
Max. differential press.	800 kPa

Medium temperature 0 to 120 °C

Dimension	Model	Volume flow
DN10	OPTIMA Compact Low	30 – 370 l/h
DN15	OPTIMA Compact Low	30 – 370 l/h
DN15	OPTIMA Compact High	100 – 575 l/h
DN20	OPTIMA Compact High	100 – 1330 l/h
DN25	OPTIMA Compact	600 – 3600 l/h