OPTIMA Compact Actuators

DN10-DN32

Application

Proportional 0-10 V, 4-20 mA or 3-position modulating or On/Off control of OPTIMA Compact valves in heating, ventilating and air conditioning systems.

The actuator can be mounted on the valve by hand and without the need of a specific tool.

Due to the compact design of the actuator, it is particularly suitable for installations where space is limited.

Features Motoric Actuators

- Nominal stroke on proportional 0-10 V or 4-20 mA actuator up to 5.5 mm. Presetting from factory 2.5 or 5.5 mm
- Auto calibration to all valve strokes for version with feedback signal (53-1184)
- 3-position, 0-10 V DC or 4-20 mA control signal. Other control signals can be selected by use of dip switches
- Direct assembly with union nut to the neck of the valve.
- No tools required
- Bi-color LED for status and diagnostic
- Linear or EQ % characterization available on the same actuator
- The actuator is short-circuit-proof and protected against polarity reversal
- Plug-in cable for supply voltage and control signal
- Small outer dimensions
- Removable cable
- Auto zero detection
- IP54 for standard actuator versions. IP 43 protection for 230 V, 3-position (53-1182)
- Voltage and Current analog inputs

Features Thermic Actuators

- Auto calibration to all valve strokes for proportional 0-10 V actuator
- On/Off or 0-10 V DC control signal
- Simple snap-on installation
- Small outer dimensions
- Cable included
- First-Open function
- IP 54 protection
- Power consumption 1-2 W
- 0-10 V feedback signal
- Auxiliary switch to control external devices

Approval

Conforms to:

- 2014/30/EU Electromagnetic Compatibility (EMC) Directive.
- 2014/35/EU Low Voltage Directive (LVD)

CE

OPTIMA Compact Actuators

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Technical Data · Motoric 24 V Actuators

Supply voltage: See "Types and Operation Data"

Protection class: See "Types and Operation Data"

Frequency: 50/60 Hz

Input impedance: > 100 k Ohm (DC 0-10 V)

Parallel operation: Max 4 actuators

Force: >120 N

Stroke: See "Types and Operation Data"

Ambient conditions: Temperature 0 °C-50 °C
Humidity 10-90 % r.F.

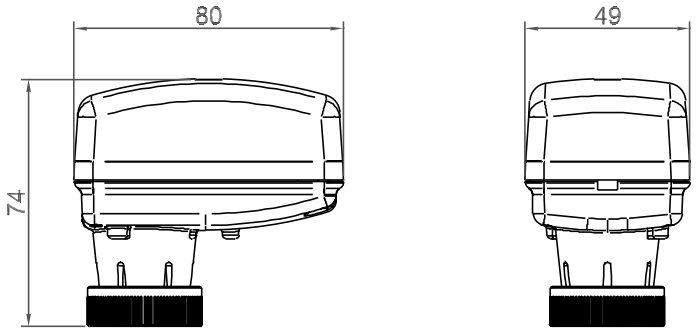
Cable length: 1.5 m

Weight: 215 g

Types andTechnical Data

Frese no.	Valve Dim.	Control signal	Feedback signal	Running time (50 Hz)	Supply voltage	Power Consumption	Protection Class (For valve stroke)
53-1180	DN10-DN32	DC 0-10 V 4-20 mA	-	8 s/mm	AC/DC 24 V +/- 15 %	2.5 VA	IP 54 (5.0 & 5.5 mm)
53-1181	DN10-DN32	3-position/ On/Off	-	13 s/mm	AC 24 V +/- 15 %	2.5 VA	IP 54 (All valve strokes)
53-1182	DN10-DN32	3-position/ On/Off	-	13 s/mm	AC 230 V +/- 10 %	6.5 VA	IP 43 (All valve strokes)
53-1183	DN10-DN32	DC 0-10 V 4-20 mA	-	8 s/mm	AC/DC 24 V +/- 15 %	2.5 VA	IP 54 (2.5 mm)
53-1184	DN10-DN32	DC 0-10 V 4-20 mA	0-10 V	8 s/mm	AC/DC 24 V +/- 15 %	2.5 VA	IP 54 (All valve strokes)

Dimensions [mm]



OPTIMA Compact Actuators

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Technical Data · Thermic Actuators

Characteristics:	Thermic actuators, NC or NO
Protection class:	IP 54
Frequency:	50/60 Hz or DC
Control signal:	0-10 V DC or On/Off
Force:	100 N
Stroke:	2.5 - 5.0 - 5.5 mm
Running time:	120 s 0-10V/180 s On/Off
Ambient conditions:	0 °C-60 °C
Cable length:	1.0 m
Weight:	100 g

Types and Operation Data · Normally Closed (NC) Versions

Types	Valve Dim.	Control signal	Feedback signal/AUX-switch	Running time (50 Hz)	Supply voltage	Power Consumption	For valve stroke
48-5525	DN10-DN20	On/Off	-	180 s	AC/DC 24 V	1 W / 300 mA*	2.5 mm
48-5526	DN10-DN20	On/Off	-	180 s	AC 230 V	1 W / 300 mA*	2.5 mm
48-5527	DN10-DN32	On/Off	-	180 s	AC/DC 24 V	1.2 W / 300 mA*	5.0-5.5 mm
48-5528	DN10-DN32	On/Off	-	180 s	AC 230 V	1.2 W / 550 mA*	5.0-5.5 mm
48-5529	DN10-DN32	DC 0-10 V	-	30 s/mm	AC 24 V	1.2 W / 320 mA*	2.5-5.0-5.5 mm
48-5529-1	DN10-DN32	DC 0-10 V	-	30 s/mm	DC 24 V	1.2 W / 320 mA*	2.5-5.0-5.5 mm
48-5542	DN10-DN32	DC 0-10 V	DC 0-10 V	30 s/mm	AC/DC 24 V	1.2 W / 320 mA*	2.5-5.0-5.5 mm
48-5532	DN10-DN20	On/Off	-	180 s	AC/DC 24 V	2 W / 250 mA*	2.5 mm
48-5533	DN10-DN20	On/Off	-	180 s	AC 230 V	2 W / 350 mA*	2.5 mm
48-5539	DN10-DN32	On/Off	AUX-switch	240 s	AC 230 V	1 W / 300 mA*	2.5-5.0-5.5 mm**
48-5540	DN10-DN32	On/Off	AUX-switch	240 s	AC/DC 24 V	1 W / 300 mA*	2.5-5.0-5.5 mm**

*) Inrush current
**) When mounted on valves with 5.0 and 5.5 mm stroke, the flow will be reduced by 20%

OPTIMA Compact Actuators

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Technical Data · Thermic Actuators

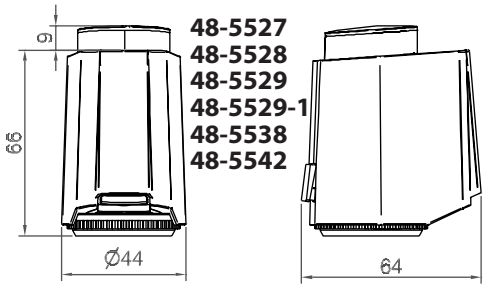
Characteristics:	Thermic actuators, NC or NO
Protection class:	IP 54
Frequency:	50/60 Hz or DC
Control signal:	0-10 V DC or On/Off
Force:	100 N
Stroke:	2.5 - 5.0 - 5.5 mm
Running time:	120 s 0-10V/180 s On/Off
Ambient conditions:	0 °C-60 °C
Cable length:	1.0 m
Weight:	100 g

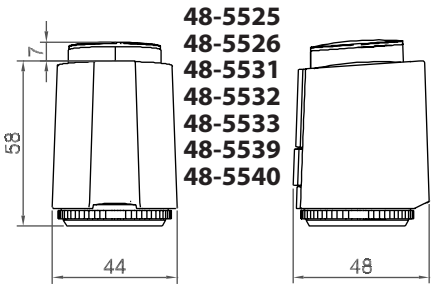
Types and Operation Data · Normally Open (NO) Versions

Types	Valve Dim.	Control signal	Feedback signal/AUX-switch	Running time (50 Hz)	Supply voltage	Power Consumption	For valve stroke
48-5531	DN10-DN20	On/Off	-	180 s	AC/DC 24 V	1 W / 300 mA*	2.5 mm
48-5538	DN10-DN32	On/Off	-	180 s	AC/DC 24 V	1.2 W / 300 mA*	5.0-5.5 mm

*) Inrush current

Dimensions [mm]





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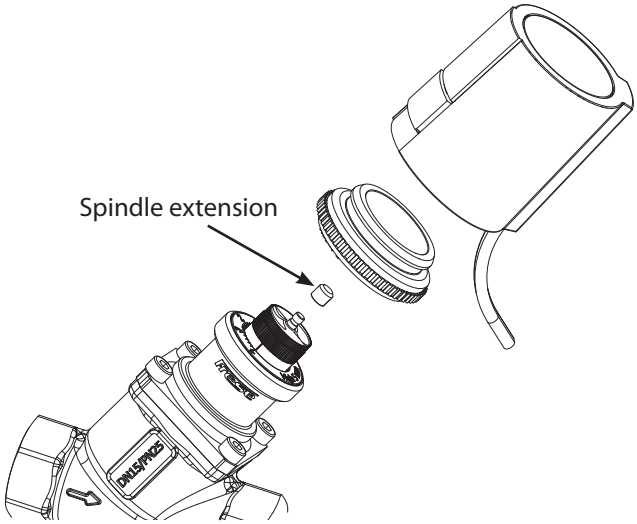
Mounting of Thermic Actuators with Aux-Switch

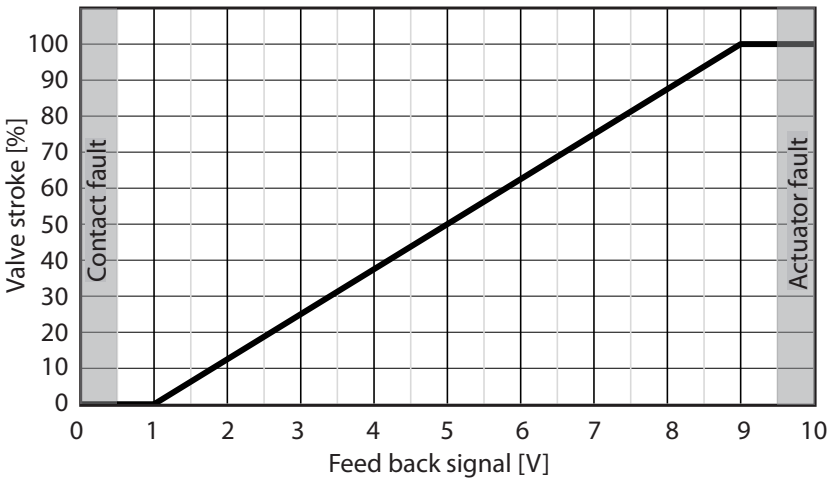
When actuators with AUX-switch are mounted on valves with 5.0 and 5.5 mm stroke, the spindle extension delivered with the actuator must be mounted (clicked on) to the spindle of the OPTIMA Compact valve.

Please note: The flow will be reduced by 20 %

Valves with 2.5 mm stroke shall not be mounted with the spindle extension and the flow will remain unchanged.



Feedback signal actuator (48-5542)



Feed back signal

Voltage	Description
< 0.5 V	No contact/Lost wire
1 - 9 V	Voltage proportional to valve stroke
1 V	Fully closed valve
9 V	Fully open valve
> 9.5 V	Internal actuator fault

OPTIMA Compact Actuators

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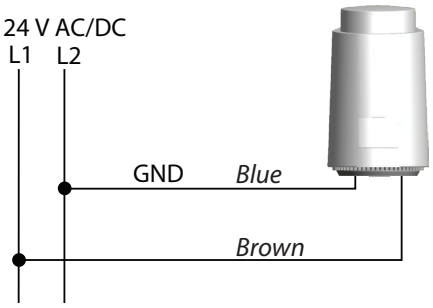
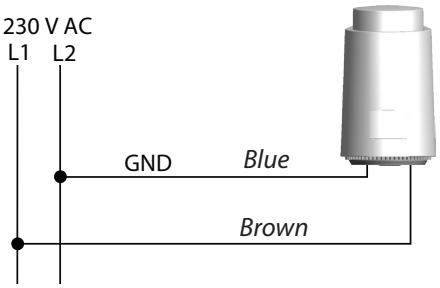
Connection diagrams · Thermic Actuators

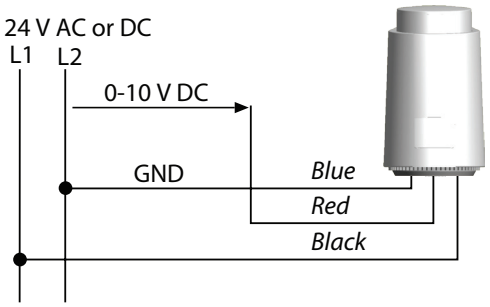
48-5525
48-5527
48-5531
48-5532
48-5538
On/Off 24V



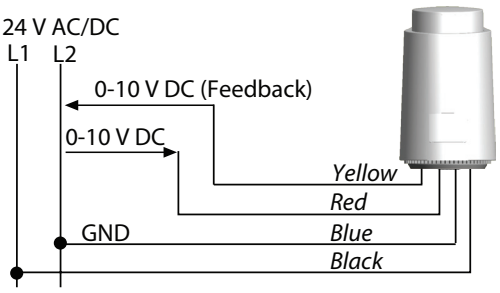
48-5526
48-5528
48-5533
On/Off
230V



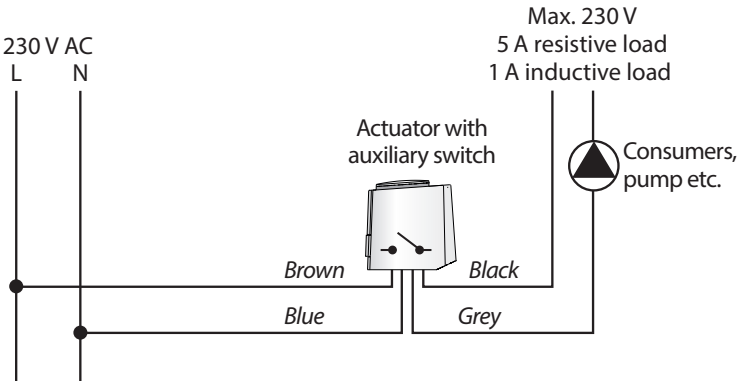
48-5529
48-5529-1
0-10 V 24 V



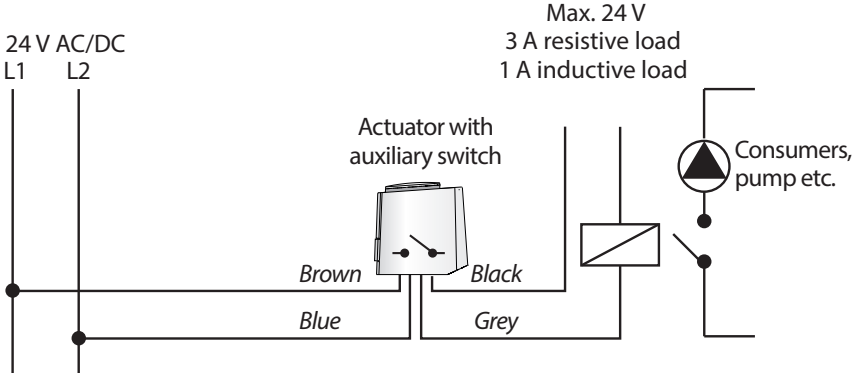
48-5542
0-10 V 24 V
Feedback



48-5539
On/Off 230V
AUX-switch



48-5540
On/Off 24V
AUX-switch



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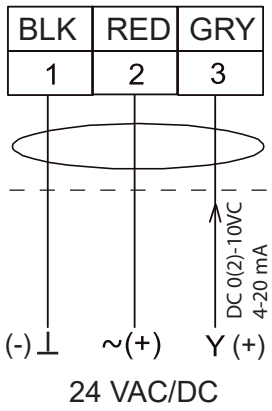
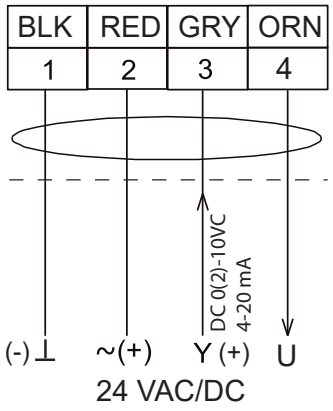
Connection diagrams · Motoric Actuators

53-1180
0-10 V & 4-20 mA,
24 V, 5.5 mm

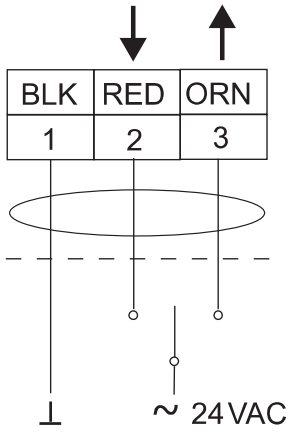
53-1183
0-10 V & 4-20 mA,
24 V, 2.5 mm



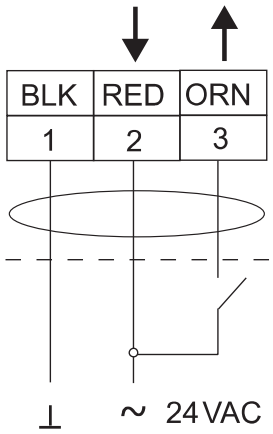
53-1184
0-10 V & 4-20 mA
All valve strokes
Feedback signal



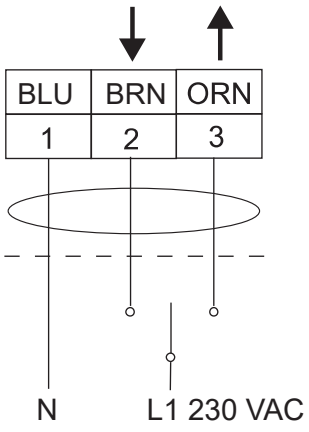
53-1181
3-position 24 V*



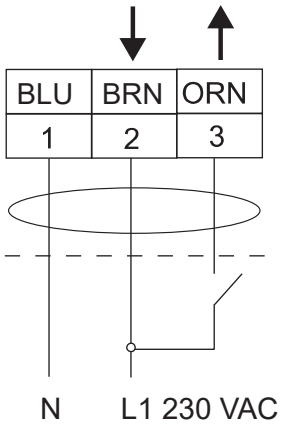
53-1181
On/Off 24 V



53-1182
3-position 230 V*



53-1182
On/Off 230 V



*The 3-position actuator can be used on OPTIMA Compact with the stroke of: 2.5, 5.0 and 5.5 mm.
A controller chosen to operate the 3-position actuator should be programmed to match the stroke of each of the valves based on the running time of the actuator's stem which is 13.0 s/mm.

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Operating status indication · Motoric Actuators

The actuators are equipped with a LED which provides the information about the operating status as follow:

53-1180 & 53-1183
0-10 V & 4-20 mA,

OFF	○	No power supply
Green blinking		Moving to position
Green blinking		End stroke confirmation
Green steady ON		Position reached
Red blinking		Auto-zero calibration (Duration 30 - 60 sec)
Red steady ON		4/20 mA or 2/10 Vdc signal lost

53-1184
0-10 V & 4-20 mA
Feedback signal

OFF	○	No power supply
Green blinking		Moving to position
Green steady ON		Position reached
Red blinking SLOW		Auto-stroke calibration (Duration 60 - 120 sec)
Red blinking FAST		Sticking Error
Red steady ON		4/20 mA or 2/10 Vdc signal lost

53-1181 & 53-1182
3-position

OFF	○	No power supply
Green blinking		Moving to position

OPTIMA Compact Actuators

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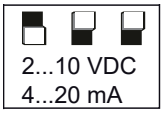
Configuration · Motoric Actuators

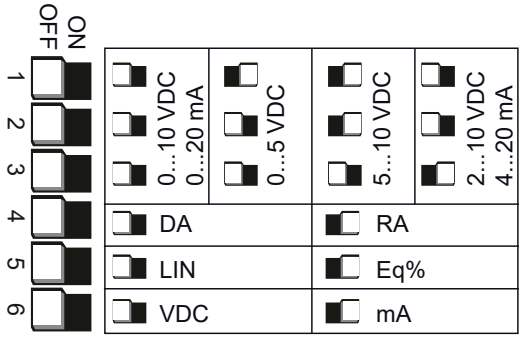
53-1180, 53-1183 and 53-1184

Dip switch 1-2-3
Control signal: Factory setting 0-10 V

4-20 mA control signal:
- Set dip switch 6 to mA
- Set dip switch 1-2-3 as below

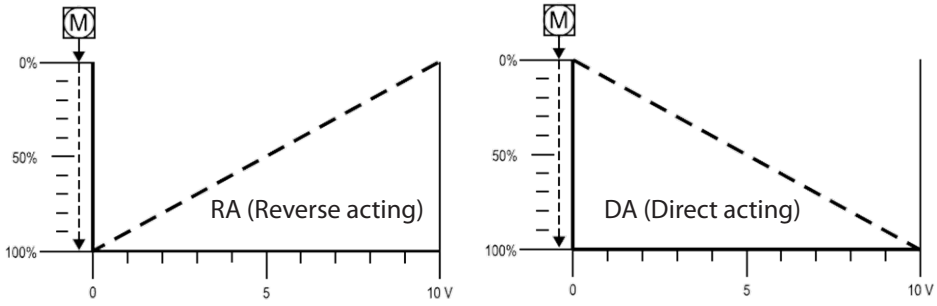


*On 53-1184 dip switches 7 and 8 are not used



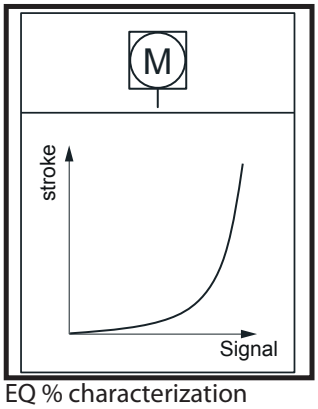
Dip switch 4

Stem action
Factory setting RA (Reverse acting)

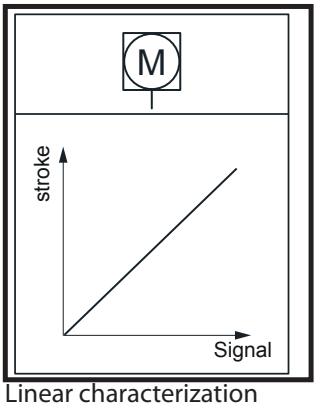


Dip switch 5

Actuator characterization
Factory setting EQ%



EQ % characterization



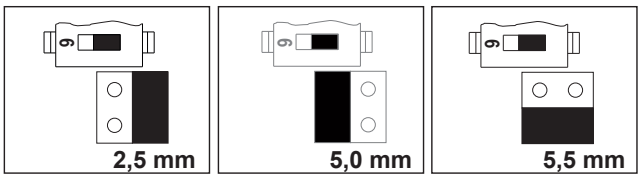
Linear characterization

53-1180, 53-1183

The actuator stroke can be selected via the Jumper and can be set to 2.5 mm - 5.0 mm or 5.5 mm

53-1180: Factory setting 5.5 mm
53-1183: Factory setting 2.5 mm

***53-1184:** Selfcalibrating with no Jumper



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