Characterised control valve, 2-way, Internal thread
- **For open and closed cold and warm water systems**
- **For modulating water-side control of air handling units and heating systems**
- **Air bubble tight**

Type overview

Type	kvs [m³/h]	DN [ ]	Rp [“]	PN [ ]	n(gl) [ ]	Sv min. [ ]
R2015-P25-S1	0.25	15	1/2	40	3.2	50
R2015-P4-S1	0.4	15	1/2	40	3.2	50
R2015-P63-S1	0.63	15	1/2	40	3.2	50
R2015-1-S1	1	15	1/2	40	3.2	50
R2015-1P6-S1	1.6	15	1/2	40	3.2	50
R2015-2P5-S1	2.5	15	1/2	40	3.2	50
R2015-4-S1	4	15	1/2	40	3.2	100
R2015-6P3-S1	6.3	15	1/2	40	3.2	100
R2020-4-S1	4	20	3/4	40	3.2	100
R2020-6P3-S1	6.3	20	3/4	40	3.2	100
R2025-6P3-S2	6.3	25	1	40	3.2	100
R2025-10-S2	10	25	1	40	3.2	100
R2032-10-S2	10	32	1 1/4	25	3.2	100
R2032-16-S2	16	32	1 1/4	25	3.2	100
R2040-16-S2	16	40	1 1/2	25	3.2	100
R2040-25-S2	25	40	1 1/2	25	3.2	100
R2050-25-S3	25	50	2	25	3.2	100
R2050-40-S3	40	50	2	25	3.2	100

Technical data

Functional data	Media	Cold and warm water, water with glycol up to max. 50% vol.
	Medium temperature	-10...120°C
	Medium temperature note	The allowed media temperature can be limited, depending on the type of actuator. Limitations can be found in the respective data sheets of the actuators.
	Closing pressure Δps	1400kPa
	Differential pressure Δpmax	350kPa
	Differential pressure note	200kPa for low-noise operation
	Flow characteristic	Equal percentage (VDI/VDE 2178), optimised in the opening range
	Leakage rate	Leakage rate A, air-bubble-tight (EN 12266-1)
	Pipe connectors	Internal thread according to ISO 7-1
	Angle of rotation	90° (Operating range 15...90°)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Housing	Brass body nickel-plated
	Closing element	Stainless steel
	Stem	Stainless steel
	Stem seal	O-ring EPDM
	Valve seat	PTFE, O-ring EPDM
	Characterising disc	TEFZEL

UL marked actuators is optional, please contact your local Sales Representative for details.

Safety notes

- The valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve may not be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- When determining the flow rate characteristic of controlled devices, the recognised directives must be observed.

Product features

Mode of operation
The characterised control valve is adjusted by a rotary actuator. The actuator is controlled by a commercially available modulating or 3-point control system and moves the ball of the valve – the throttling device – to the position dictated by the positioning signal. Open the characterised control valve counterclockwise and close it clockwise.

Flow characteristic
Equal percentage flow control is ensured by the integrated characterising disc.

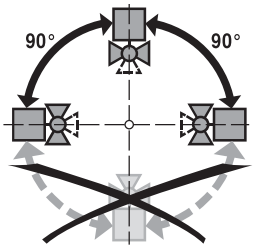
Accessories

Mechanical accessories

Description	Type
Pipe connector to ballvalves DN 15 Rp 1/2“	ZR2315
Pipe connector to ballvalves DN 20 Rp 3/4“	ZR2320
Pipe connector to ballvalves DN 25 Rp 1“	ZR2325
Pipe connector to ballvalves DN 32 Rp 1 1/4“	ZR2332
Pipe connector to ballvalves DN 40 Rp 1 1/2“	ZR2340
Pipe connector to ballvalves DN 50 Rp 2“	ZR2350

Installation notes

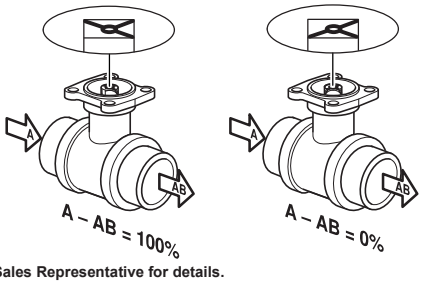
Recommended installation positions
The ball valve can be installed upright to horizontal. The ball valve may not be installed in a hanging position, i.e. with the stem pointing downwards.



Water quality requirements
The water quality requirements specified in VDI 2035 must be adhered to.
Belimo valves are regulating devices. For the valves to function correctly in the long term, they must be kept free from particle debris (e.g. welding beads during installation work).
The installation of suitable strainer is recommended.

Maintenance
Ball valves and rotary actuators are maintenance-free.
Before any kind of service work is carried out on the actuator, it is essential to isolate the rotary actuator from the power supply (by unplugging the electrical cable). Any pumps in the part of the piping system concerned must also be switched off and the appropriate slide valves closed (allow everything to cool down first if necessary and reduce the system pressure to ambient pressure level).
The system must not be returned to service until the ball valve and the rotary actuator have been properly reassembled in accordance with the instructions and the pipeline has been refilled in the proper manner.

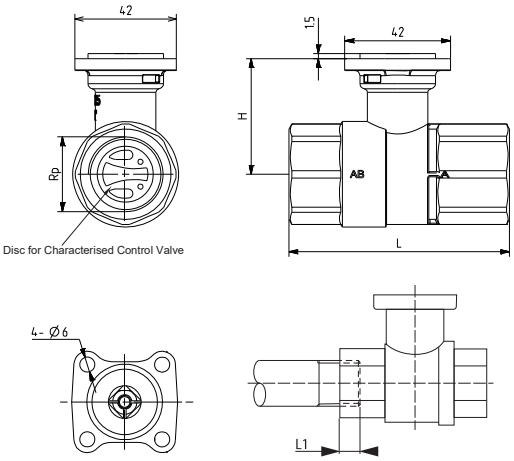
Flow direction
The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the ball valve could become damaged. Please ensure that the ball is in the correct position (marking on the spindle).



UL marked actuators is optional, please contact your local Sales Representative for details.

Dimensions [mm]

Dimensional drawings



L1: Maximum screwing depth.
The actuator dimensions can be found on the respective actuator data sheet.

Type	DN [ ]	Rp [”]	L [mm]	L1 [mm]	H [mm]	Weight approx. [kg]
R2015-P25-S1	15	1/2	67	13	35	0.24
R2015-P4-S1	15	1/2	67	13	35	0.24
R2015-P63-S1	15	1/2	67	13	35	0.24
R2015-1-S1	15	1/2	67	13	35	0.24
R2015-1P6-S1	15	1/2	67	13	35	0.24
R2015-2P5-S1	15	1/2	67	13	44	0.30
R2015-4-S1	15	1/2	67	13	44	0.30
R2015-6P3-S1	15	1/2	67	13	44	0.30
R2020-4-S1	20	3/4	79	14	44	0.37
R2020-6P3-S2	20	3/4	79	14	44	0.37
R2025-6P3-S2	25	1	87	16	46	0.55
R2025-10-S2	25	1	87	16	46	0.55
R2032-10-S2	32	1 1/4	105	19	46	0.7
R2032-16-S2	32	1 1/4	105	19	46	0.8
R2040-16-S2	40	1 1/2	111	19	50.5	0.95
R2040-25-S2	40	1 1/2	111	19	50.5	0.95
R2050-25-S3	50	2	125	22	56	1.5
R2050-40-S3	50	2	125	22	56	1.5

UL marked actuators is optional, please contact your local Sales Representative for details.

V8.1 01.2015•Subject to modification

LR24A-SR

Modulating rotary actuator for ball valves
- **Nominal torque 5Nm**
- **Nominal voltage AC/DC 24V**
- **Control Modulating DC (0)2...10V**
- **Position feedback DC 2...10V**

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 19.2...28.8V
	Power consumption in operation	1.5W
	Power consumption in rest position	0.4W
	Power consumption for wire sizing	3VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 5Nm
	Positioning signal Y	DC (0)2...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 2...10V
	Position feedback U	DC 2...10V
	Position feedback U note	Max. 1mA
	Position accuracy	±5%
	Manual override	Gear disengagement with push-button, can be locked
	Running time motor	90s / 90°
	Sound power level motor max.	35dB(A)
	Position indication	Mechanically, pluggable
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight	Approx. 0.55kg

Safety notes

- This device has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The switch for changing the direction of rotation may only be operated by authorised specialists. The direction of rotation must not in particular be reversed in a frost protection circuit.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cables must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

UL marked actuators is optional, please contact your local Sales Representative for details.

V8.1 01.2015•Subject to modification

Product features

Mode of operation The actuator is connected with a standard modulating signal of DC (0)2...10V and travels to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the valve position 0...100% and as slave control signal for other actuators.

Simple direct mounting Straightforward direct mounting on the ball valve with only one central screw. The assembly tool is integrated in the plug-in position indication. The mounting position in relation to the ball valve can be selected in 90° steps.

Manual override Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).

High functional reliability The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Adjustable angle of rotation Adjustable angle of rotation with mechanical end stops.

Accessories

	Description	Type
Electrical accessories	Auxiliary switch, add-on, 1 x SPDT	S1A
	Auxiliary switch, add-on, 2 x SPDT	S2A
	Feedback potentiometer 140 Ohm, add-on	P140A
	Feedback potentiometer 200 Ohm, add-on	P200A
	Feedback potentiometer 500 Ohm, add-on	P500A
	Feedback potentiometer 1 kOhm, add-on	P1000A
	Feedback potentiometer 2.8 kOhm, add-on	P2800A
	Feedback potentiometer 5 kOhm, add-on	P5000A
	Feedback potentiometer 10 kOhm, add-on	P10000A

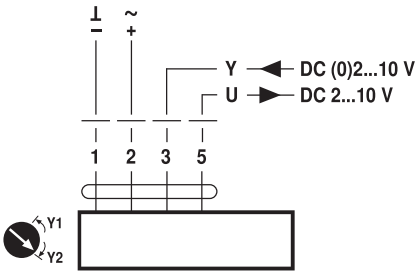
Electrical installation

Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2.

Wiring diagrams

AC/DC 24V, modulating

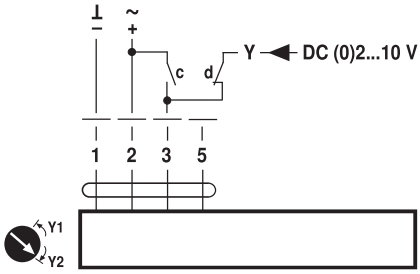


Cable colours:
1 = black
2 = red
3 = white
5 = orange

UL marked actuators is optional, please contact your local Sales Representative for details.

Electrical installation

Override control (frost protection circuit)

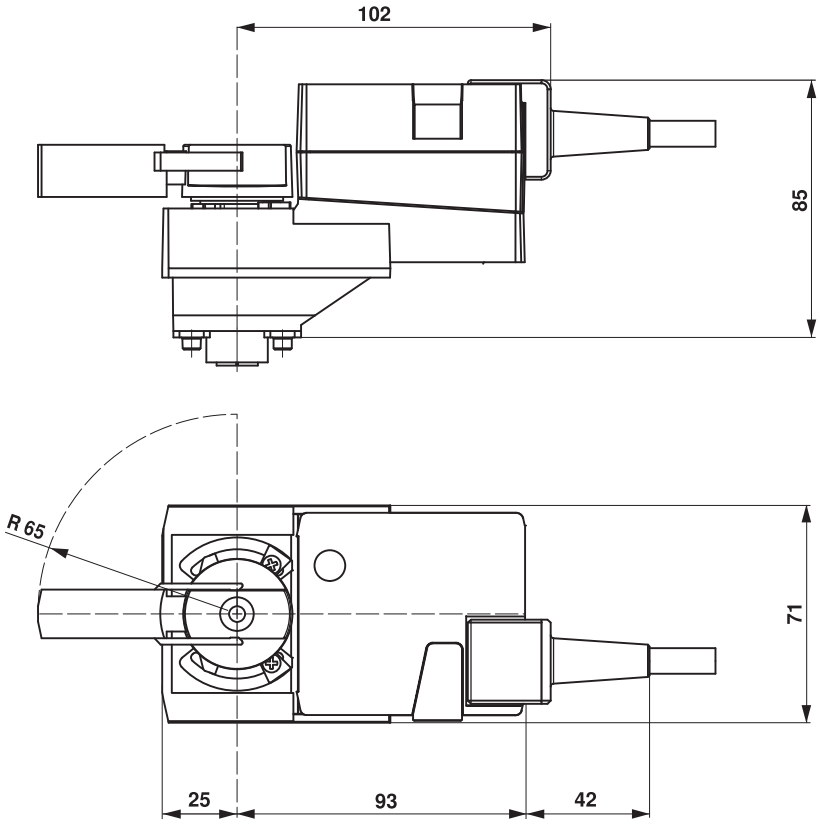


c	d	Y1 / Y2	
⊥	~	Y1	A – AB = 100%
~	~	Y2	A – AB = 0%
~	⊥	DC (0)2...10 V	

Cable colours:
1 = black
2 = red
3 = white
5 = orange

Dimensions [mm]

Dimensional drawings



UL marked actuators is optional, please contact your local Sales Representative for details.

Modulating rotary actuator for ball valves

- **Nominal torque 10Nm**
- **Nominal voltage AC/DC 24V**
- **Control Modulating DC (0)2...10V**
- **Position feedback DC 2...10V**

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 19.2...28.8V
	Power consumption in operation	2.5W
	Power consumption in rest position	0.4W
	Power consumption for wire sizing	5VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 10Nm
	Positioning signal Y	DC (0)2...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 2...10V
	Position feedback U	DC 2...10V
	Position feedback U note	Max. 1mA
	Position accuracy	±5%
	Manual override	Gear disengagement with push-button, can be locked
	Running time motor	90s / 90°
	Sound power level motor max.	35dB(A)
	Position indication	Mechanically, pluggable
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight	Approx. 0.75kg

Safety notes

- This device has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The switch for changing the direction of rotation may only be operated by authorised specialists. The direction of rotation must not in particular be reversed in a frost protection circuit.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cables must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

UL marked actuators is optional, please contact your local Sales Representative for details.

Product features

Mode of operation The actuator is connected with a standard modulating signal of DC (0)2...10V and travels to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the valve position 0...100% and as slave control signal for other actuators.

Simple direct mounting Straightforward direct mounting on the ball valve with only one central screw. The assembly tool is integrated in the plug-in position indication. The mounting position in relation to the ball valve can be selected in 90° steps.

Manual override Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).

High functional reliability The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Adjustable angle of rotation Adjustable angle of rotation with mechanical end stops.

Accessories

Electrical accessories

Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Feedback potentiometer 140 Ohm, add-on	P140A
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 10 kOhm, add-on	P10000A

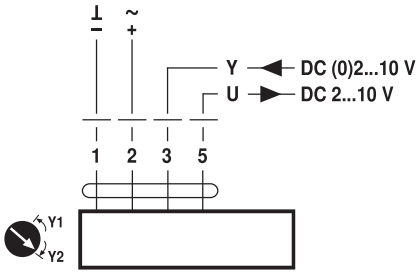
Electrical installation

Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2.

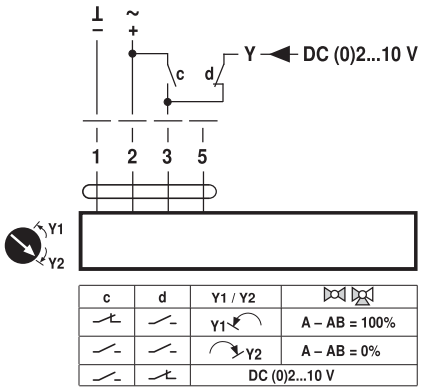
Wiring diagrams

AC/DC 24V, modulating



Cable colours:
1 = black
2 = red
3 = white
5 = orange

Override control (frost protection circuit)



Cable colours:
1 = black
2 = red
3 = white
5 = orange

UL marked actuators is optional, please contact your local Sales Representative for details.

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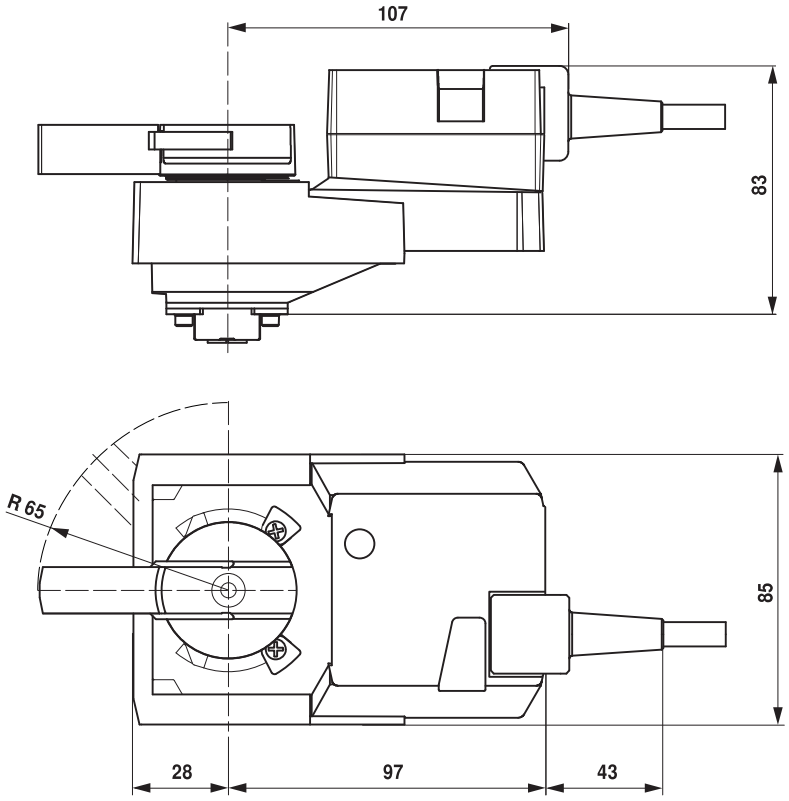
Dimensions [mm]

Dimensional drawings



UL marked actuators is optional, please contact your local Sales Representative for details.

Rotary actuator for rotary valves
- **Nominal torque 20Nm**
- **Nominal voltage AC/DC 24V**
- **Control Modulating DC (0)2...10V**
- **Position feedback DC 2...10V**

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 19.2...28.8V
	Power consumption in operation	2.5W
	Power consumption in rest position	0.4W
	Power consumption for wire sizing	5VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 20Nm
	Positioning signal Y	DC (0)2...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 2...10V
	Position feedback U	DC 2...10V
	Position feedback U note	Max. 1mA
	Position accuracy	±5%
	Manual override	Gear disengagement with push-button, can be locked
	Running time motor	90s / 90°
	Sound power level motor max.	45dB(A)
	Position indication	Mechanically, integrated, two-section
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	-30...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Mechanical data	Connection flange	F05
Weight	Weight	Approx. 1kg

Safety notes

- This device has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The switch for changing the direction of rotation may only be operated by authorised specialists. The direction of rotation must not in particular be reversed in a frost protection circuit.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cables must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

UL marked actuators is optional, please contact your local Sales Representative for details.

Product features

Mode of operation
The actuator is connected with a standard modulating signal of DC (0)2...10V and travels to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the valve position 0...100% and as slave control signal for other actuators.

Simple direct mounting
Simple direct mounting on the rotary valve with mounting flange. The mounting position in relation to the fitting can be selected in 90° steps.

Manual override
Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).

High functional reliability
The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Adjustable angle of rotation
Adjustable angle of rotation with mechanical end stops.

Combination valve/actuator
For valves with the following mechanical specifications in accordance with ISO 5211 F05:
- Square stem head SW = 14mm for form fit coupling of the rotary actuator.
- Hole circle d = 50mm

Accessories

Electrical accessories

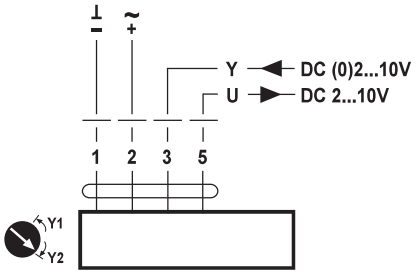
Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Feedback potentiometer 140 Ohm, add-on	P140A
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 10 kOhm, add-on	P10000A

Electrical installation

Notes
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2.

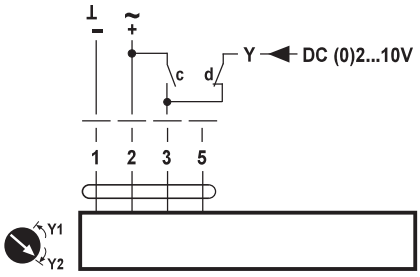
Wiring diagrams

AC/DC 24V, modulating



Cable colours:
1 = black
2 = red
3 = white
5 = orange

Override control (frost protection circuit)



c	d	Y1 / Y2	
⊥	~	Y1	A – AB = 100%
~	~	Y2	A – AB = 0%
~	⊥	DC (0)2...10 V	

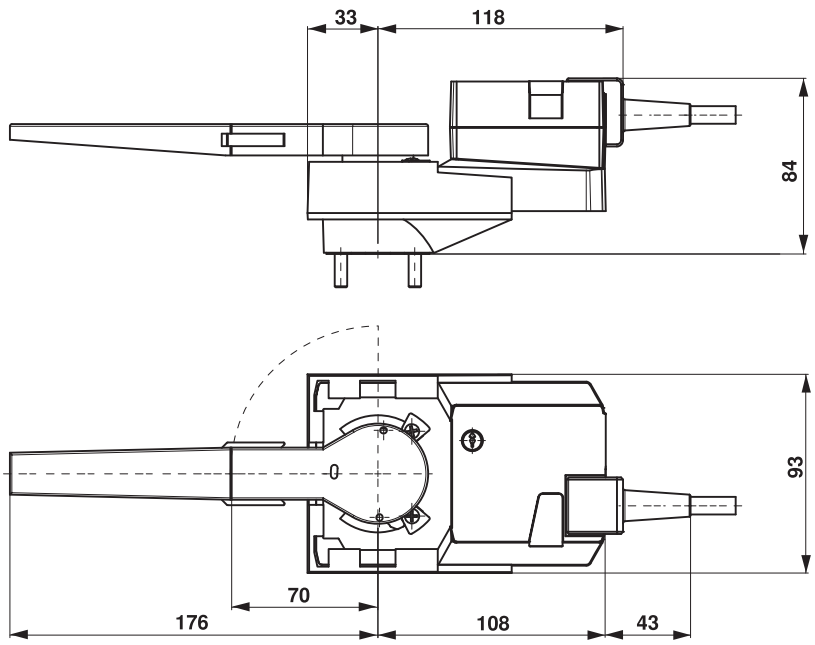
Cable colours:
1 = black
2 = red
3 = white
5 = orange

UL marked actuators is optional, please contact your local Sales Representative for details.

V8.1 01.2015•Subject to modification

Dimensions [mm]

Dimensional drawings



Characterised control valve, 3-way, Internal thread
- **For closed cold and warm water systems**
- **For modulating water-side control of air handling units and heating systems**
- **Air bubble-tight (control path A - AB)**

Type overview

Type	kvs [m³/h]	DN [ ]	Rp [”]	PN [ ]	n(gl) [ ]	Sv min. [ ]
R3015-P25-S1	0.25	15	1/2	40	3.2	50
R3015-P4-S1	0.4	15	1/2	40	3.2	50
R3015-P63-S1	0.63	15	1/2	40	3.2	50
R3015-1-S1	1	15	1/2	40	3.2	50
R3015-1P6-S1	1.6	15	1/2	40	3.2	50
R3015-2P5-S1	2.5	15	1/2	40	3.2	50
R3015-4-S1	4	15	1/2	40	3.2	100
R3020-4-S1	4	20	3/4	40	3.2	100
R3020-6P3-S1	6.3	20	3/4	40	3.2	100
R3025-6P3-S2	6.3	25	1	40	3.2	100
R3025-10-S2	10	25	1	40	3.2	100
R3032-10-S2	10	32	1 1/4	25	3.2	100
R3032-16-S2	16	32	1 1/4	25	3.2	100
R3040-16-S3	16	40	1 1/2	25	3.2	100
R3040-25-S4	25	40	1 1/2	25	3.2	100
R3050-25-S4	25	50	2	25	3.2	100
R3050-40-S4	40	50	2	25	3.2	100
R3050-58-S4	58	50	2	25	3.2	100

Technical data

Functional data	Media	Cold and warm water, water with glycol up to max. 50% vol.
	Medium temperature	-10...120°C
	Medium temperature note	The allowed media temperature can be limited, depending on the type of actuator. Limitations can be found in the respective data sheets of the actuators.
	Closing pressure Δps	1400kPa
	Differential pressure Δpmax	350kPa
	Differential pressure note	200kPa for low-noise operation
	Flow rate	Bypass B – AB: 70% of kvs value
	Flow characteristic	Control path A – AB: equal percentage (VDI/VDE 2178), optimised in the opening range, Bypass B – AB: linear (VDI/VDE 2178)
	Leakage rate	Control path A - AB: Leakage rate A, air-bubble-tight (EN 12266-1), Bypass B - AB: Leakage class I (EN 1349 and EN 60534-4) approx. 1...2% of the kvs value, with respect to the largest value within the DN
	Pipe connectors	Internal thread according to ISO 7-1
	Angle of rotation	90° (Operating range control path A - AB 15...90°, Bypass B – AB 15...70°)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Housing	Brass body nickel-plated
	Closing element	Stainless steel
	Stem	Stainless steel
	Stem seal	O-ring EPDM
	Valve seat	PTFE, O-ring EPDM
	Characterising disc	TEFZEL R3040-25-S4, R3050-40-S4, R3050-58-S4: Stainless steel

UL marked actuators is optional, please contact your local Sales Representative for details.

V8.1 01.2015•Subject to modification

Safety notes

- The valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve may not be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- When determining the flow rate characteristic of controlled devices, the recognised directives must be observed.

Product features

Mode of operation
The characterised control valve is adjusted by a rotary actuator. The actuator is controlled by a commercially available modulating or 3-point control system and moves the ball of the valve – the throttling device – to the position dictated by the positioning signal. Open the characterised control valve counterclockwise and close it clockwise.

Flow characteristic
Equal percentage flow control is ensured by the integrated characterising disc.

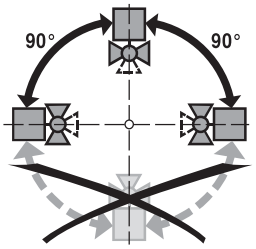
Accessories

Mechanical accessories

Description	Type
Pipe connector to ballvalves DN 15 Rp 1/2“	ZR2315
Pipe connector to ballvalves DN 20 Rp 3/4“	ZR2320
Pipe connector to ballvalves DN 25 Rp 1“	ZR2325
Pipe connector to ballvalves DN 32 Rp 1 1/4“	ZR2332
Pipe connector to ballvalves DN 40 Rp 1 1/2“	ZR2340
Pipe connector to ballvalves DN 50 Rp 2“	ZR2350

Installation notes

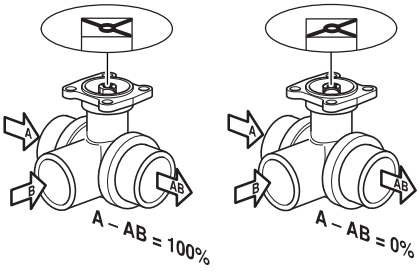
Recommended installation positions
The ball valve can be installed upright to horizontal. The ball valve may not be installed in a hanging position, i.e. with the stem pointing downwards.



Water quality requirements
The water quality requirements specified in VDI 2035 must be adhered to.
Belimo valves are regulating devices. For the valves to function correctly in the long term, they must be kept free from particle debris (e.g. welding beads during installation work).
The installation of suitable strainer is recommended.

Maintenance
Ball valves and rotary actuators are maintenance-free.
Before any kind of service work is carried out on the actuator, it is essential to isolate the rotary actuator from the power supply (by unplugging the electrical cable). Any pumps in the part of the piping system concerned must also be switched off and the appropriate slide valves closed (allow everything to cool down first if necessary and reduce the system pressure to ambient pressure level).
The system must not be returned to service until the ball valve and the rotary actuator have been properly reassembled in accordance with the instructions and the pipeline has been refilled in the proper manner.

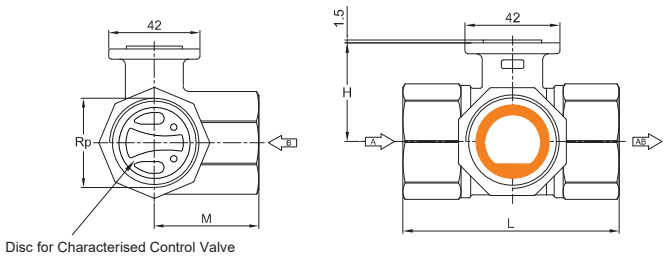
Flow direction
The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the ball valve could become damaged. Please ensure that the ball is in the correct position (marking on the spindle).



UL marked actuators is optional, please contact your local Sales Representative for details.

Dimensions [mm]

Dimensional drawings



L1: Maximum screwing depth.
The actuator dimensions can be found on the respective actuator data sheet.

Type	DN [ ]	Rp [”]	L [mm]	L1 [mm]	M [mm]	H [mm]	Weight approx. [kg]
R3015-P25-S1	15	1/2	67	13	36	35	0.27
R3015-P4-S1	15	1/2	67	13	36	35	0.27
R3015-P63-S1	15	1/2	67	13	36	35	0.27
R3015-1-S1	15	1/2	67	13	36	35	0.27
R3015-1P6-S1	15	1/2	67	13	36	35	0.27
R3015-2P5-S1	15	1/2	67	13	36	44	0.37
R3015-4-S1	15	1/2	67	13	36	44	0.37
R3020-4-S1	20	3/4	79	14	41.5	46	0.45
R3020-6P3-S1	20	3/4	79	14	41.5	46	0.45
R3025-6P3-S2	25	1	87	16	45	46	0.65
R3025-10-S2	25	1	87	16	45	46	0.65
R3032-10-S2	32	1 1/4	105	19	55.5	46	0.97
R3032-16-S3	32	1 1/4	105	19	55.5	50.5	0.99
R3040-16-S3	40	1 1/2	111	19	56	50.5	1.15
R3040-25-S4	40	1 1/2	122	19	66.5	62	1.15
R3050-25-S4	50	2	125	22	68	56	1.9
R3050-40-S4	50	2	142	22	79	68	1.8
R3050-58-S4	50	2	142	22	79	68	1.8

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2-way Characterised Control Valves DN65...150
Equal-percentage characteristics for modulating control of cold and hot water

Applications

- **Water-side control of air handling units in air conditioning systems**
- **Water-side control in heating systems**

Technical data

Flow medium	Cold and hot water, water with max. 50% volume of glycol
Temp. of medium	-5...+100°C
Rated pressure	1600kPa
Flow characteristic	Equal percentage
Rangeability	Sv>100
Leakage rate	0...0.01% Kvs (ANSI Class IV) (No leakage when ex-factory)
Pipe connector	Flanged ISO 7005-2
Differential pressure △Pmax	DN65...125 350kPa (200kPa for low-noise operation) DN150 <300kPa
Close-off pressure △Ps	DN65...125 700kPa DN150 400kPa
Angle of rotation	90°
Installation position	Upright to horizontal (in relation to the stem)
Maintenance	Maintenance-free
Valve Material	
Body	GG25, Polyester coated
Ball	Stainless steel
Seat	DN65...125 RPTFE DN150 TFM1600
Shaft	Stainless steel
O-ring	EPDM
Characterising disc	Stainless steel

Product features

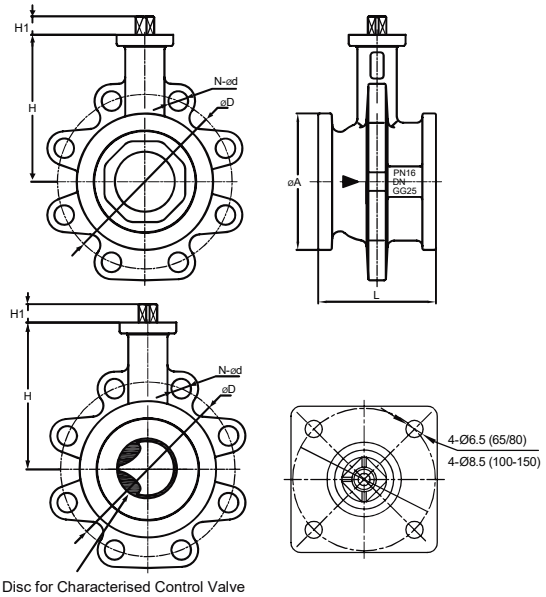
Mode of Operation The Characterised Control Valve is operated by a Rotary Actuator. The actuator is controlled by a standard modulating or 3-point control system and drives the ball of the valve - the throttling device - to the opening position dictated by the control signal.

Equal-percentage characteristic Equal-percentage characteristic of the flow rate ensured by the integral characterising disc.

Dimensions [mm]

Dimensional drawings

Valve type	DN		Dimensions[mm]						Weight [kg]
	mm	In	øA	øD	H	H1	L	N-Ød	
R664AO/R665AO	65	2½"	105	145	128.0	12.0	93.0	4-18	4.8
R679AO/R680AO	80	3"	125	160	134.5	12.0	108.0	8-18	7.2
R6099AO/R6100AO	100	4"	148	180	144.0	15.5	120.0	8-18	10.5
R6124AO/R6125AO	125	5"	174	210	158.0	15.5	142.0	8-18	14
R6149AO/R6150AO	150	6"	204	240	176.5	15.5	170.0	8-22	21



Disc for Characterised Control Valve

UL marked actuators is optional, please contact your local Sales Representative for details.

GR24A-SR-5 / -7

Modulating rotary actuator for rotary valves
GR24A-SR-5 with mounting flange ISO 5211-F05
GR24A-SR-7 with mounting flange ISO 5211-F07

- **Torque 40Nm**
- **Nominal voltage AC/DC 24V**
- **Control: modulating DC(0) 2...10V**
- **Position feedback DC 2...10V**

Technical data

Electrical data	Nominal voltage		AC 24V, 50/60 Hz / DC 24V
	Nominal voltage range		AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	In operation	4.5W @ nominal torque
		At rest	1.5W
		For wire sizing	6.5VA
	Connection		Cable 1m, 4 x 0.75mm^2
	Parallel operation		Possible, note the performance data
Functional data	Torque (nominal torque)		Min. 40Nm @ nominal voltage
	Control	Control signal Y	DC (0)2...10V, typical input impedance 100kΩ
		Operating range Y	DC 2...10V
	Position feedback		DC 2...10V, max. 1mA
	Position accuracy		±5%
	Manual override		Gearing latch disengaged with pushbutton, can be locked
	Running time		150s / 90°
	Sound power level		Max. 45dB(A)
	Position indication		Mechanical, pluggable
Safety	Protection class IEC/EN		III Safety extra-low voltage
	Protection class UL		UL Class 2 Supply
	Degree of protection IEC/EN		IP54
	Degree of protection EMA/UL		NEMA 2, UL Enclosure Type 2
	EMC		CE in accordance with 2004/108/EU
	Certification		Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation		Type 1
	Rated impulse voltage		0.8kV
	Control pollution degree		3
	Ambient temperature		0...+50°C
	Non-operating temperature		–40...+80°C
	Ambient humidity		95% r.h., non-condensating
	Maintenance		Maintenance-free
Mechanical data	Connection flange	GR24A-SR-5	F05
		GR24A-SR-7	F07
Dimensions / Weight	Dimensions		See «Dimensions»
	Weight		Approx. 2.5kg

Safety notes

- The actuator has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- The switch for changing the direction of rotation may only be operated by authorised personnel. The direction of rotation must not be reversed in a frost protection circuit.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

UL marked actuators is optional, please contact your local Sales Representative for details.

V8.1 01.2015•Subject to modification

Product features

Mode of operation The actuator is controlled with a standard modulating signal of DC (0)2...10V and travels to the position defined by the control signal. Measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Simple direct mounting Simple direct mounting on the rotary valve with mounting flange. The mounting position in relation to the fitting can be selected in 90° steps.

Manual override Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).

Adjustable angle of rotation Adjustable angle of rotation with mechanical end stops.

High functional reliability The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator For valves with the following mechanical specifications in accordance with ISO 5211 F05:
- Square stem head SW = 14mm for form-fit coupling of the rotary actuator.
- Hole circle d = 50mm

For valves with the following mechanical specifications in accordance with ISO 5211 F07:
- Square stem head SW = 17mm for form-fit coupling of the rotary actuator.
- Hole circle d = 70mm

Accessories

Electrical accessories

Description	Type
Auxiliary switch, add-on, 1 x SPDT	S1A
Auxiliary switch, add-on, 2 x SPDT	S2A
Feedback potentiometer 140 Ohm, add-on	P140A
Feedback potentiometer 200 Ohm, add-on	P200A
Feedback potentiometer 500 Ohm, add-on	P500A
Feedback potentiometer 1 kOhm, add-on	P1000A
Feedback potentiometer 2.8 kOhm, add-on	P2800A
Feedback potentiometer 5 kOhm, add-on	P5000A
Feedback potentiometer 10 kOhm, add-on	P10000A

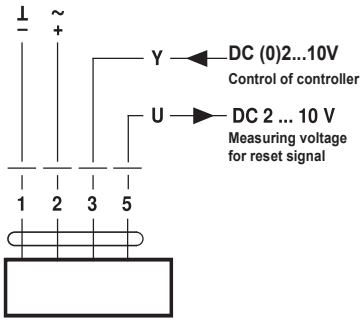
Wiring diagram

GR24A-SR-5

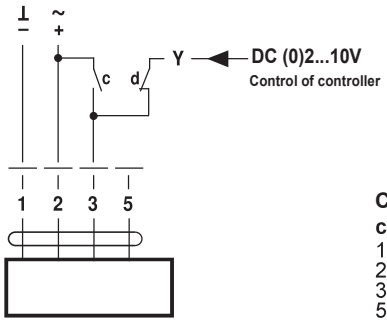
Notes
- Connect via safety isolation transformer.
- Other actuators can be connected in parallel. Note performance data for supply.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2

Direction of rotation Y1 / Y2

Standard connection



Override control (Frost protection circuit)



Cable colours:
1 = black
2 = red
3 = white
5 = orange

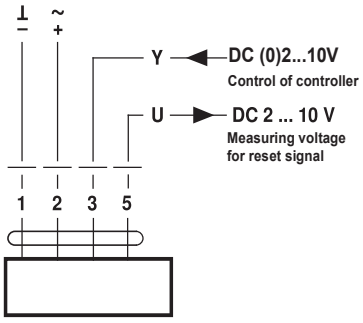
c	d	Actuator	Butterfly valve
⌐	⌐	Y1	A – AB = 100%
⌐	⌐	Y2	A – AB = 0%
⌐	⌐	Modulating operation	

GR24A-SR-7

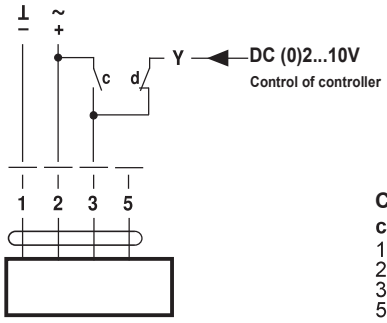
Notes
- Connect via safety isolation transformer.
- Other actuators can be connected in parallel. Note performance data for supply.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2

Direction of rotation Y1 / Y2

Standard connection



Override control (Frost protection circuit)



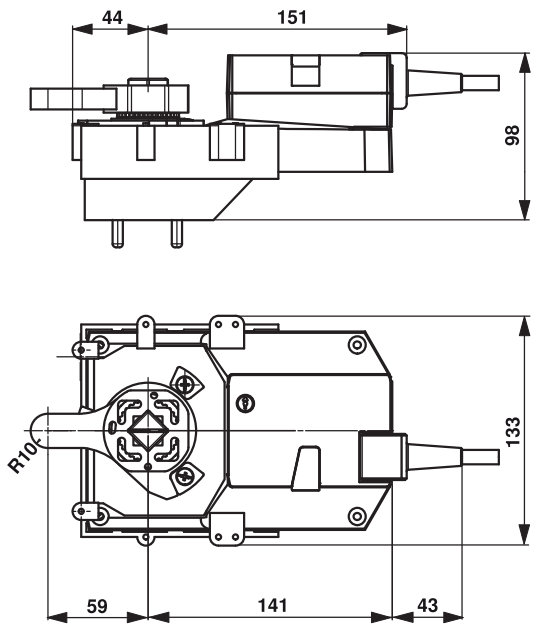
Cable colours:
1 = black
2 = red
3 = white
5 = orange

c	d	Actuator	Butterfly valve
⌐	⌐	Y1	A – AB = 100%
⌐	⌐	Y2	A – AB = 0%
⌐	⌐	Modulating operation	

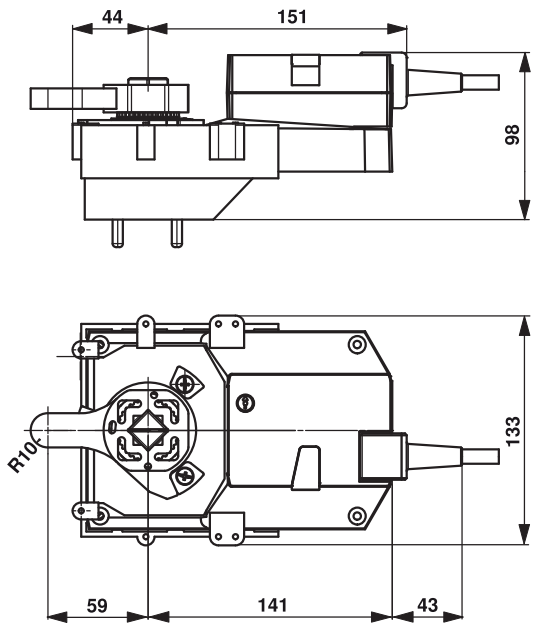
UL marked actuators is optional, please contact your local Sales Representative for details.

Dimensions [mm]

GR24A-SR-5



GR24A-SR-7



UL marked actuators is optional, please contact your local Sales Representative for details.