

Butterfly valve with Wafer types

- For open and closed cold and warm water systems
- For switching heat generators or cooling machines on and off


Type overview

Type	DN []	PN []	kvmax [m ³ /h]
D625N	25	6 / 10 / 16	45
D632N	32	6 / 10 / 16	55
D640N	40	6 / 10 / 16	70
D650N	50	6 / 10 / 16	90
D665N	65	6 / 10 / 16	180
D680N	80	6 / 10 / 16	300
D6100N	100	6 / 10 / 16	580
D6125N	125	6 / 10 / 16	820
D6150N	150	6 / 10 / 16	1600
D6200W	200	6 / 10 / 16	2900
D6250W	250	6 / 10 / 16	4400
D6300W	300	6 / 10 / 16	7300
D6350N	350	10 / 16	10900
D6400N	400	16	14200
D6450N	450	16	18800
D6500N	500	16	24100
D6600N	600	16	37300

The types D6200N, D6250N and D6300N have been replaced by the types D6200W, D6250W and D6300W. For technical data please check the datasheet D6..W.

Technical data

Functional data	Media	Cold and warm water, water with glycol up to max. 50% vol.
	Medium temperature	-20...120°C
	Permissible pressure ps	1600 kPa
	Leakage rate	Leakage rate A, tight (EN 12266-1)
	Pipe connector	Flange PN 6/10/16 (according to ISO 7005-2) (DN 25...300) Flange PN 10/16 (according to ISO 7005-2) (DN 350) Flange PN 16 (according to ISO 7005-2) (DN 400...600)
	Angle of rotation	90°
	Installation position	Upright to horizontal (in relation to the stem)
	Suitable connection flange	In accordance with ISO 7005-2 and EN 1092-2
	Maintenance	Maintenance-free
	Materials	Housing
Closing element		SS304 (stainless steel)
Stem		SS416 / SS420 (stainless steel)
Stem seal		O-ring EPDM
Stem bearing		RPTFE, Bronze, Steel
Seat		EPDM

Safety notes


- The valve has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.

Safety notes

- 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.
- The damper must be opened and closed slowly in order to avoid hydraulic shocks in the pipe system.

Product features

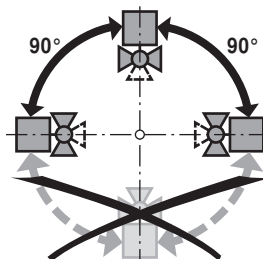
- Mode of operation** The butterfly valve is opened or closed completely by an open-close rotary actuator. Continuous rotary actuators are connected by a commercially available controller and move the valve to any position desired. The valve disk made of stainless steel is pressed into the soft-sealing EPDM seat by a rotary movement and ensures leakage rate A (tight). The pressure losses are slight in the open position and the kv value is at a maximum.
- Manual override** Manual throttling or shut-off can be carried out with a lever or a worm gear (see «Accessories»).
- With lever (DN25...150): Adjustable in 10 ratchet steps with position indication (0 = 0° (angle); 9 = 90° (angle))
 - With worm gear (DN25...600): steplessly adjustable (self-locking) with position indication.

Accessories

	Description	Type
Electrical accessories	Stem heating flange ISO 5211, F05 (30W)	ZR24-F05
Mechanical accessories	Worm gear for D6.. butterfly valves, DN25...DN100	ZD6N-S100
	Manual control for D6.. butterfly valves, for DN25...DN100	ZD6N-H100
	Worm gear for butterfly valves DN125...300	ZD6N-S150
	Manual control for D6.. butterfly valves, for DN125...DN150	ZD6N-H150
	Worm gear for D6.. butterfly valves, DN300...350	ZD6N-S350
	Worm gear for D6.. butterfly valves, DN400	ZD6N-S400
	Worm gear for D6.. butterfly valves, DN450	ZD6N-S450
	Worm gear for D6.. butterfly valves, DN500	ZD6N-S500
	Worm gear for D6.. butterfly valves, DN600	ZD6N-S600

Installation notes

- Recommended installation positions** The butterfly valves may be mounted upright to horizontal. The butterfly valves may not be installed in a hanging position i.e. with the spindle pointing downwards.



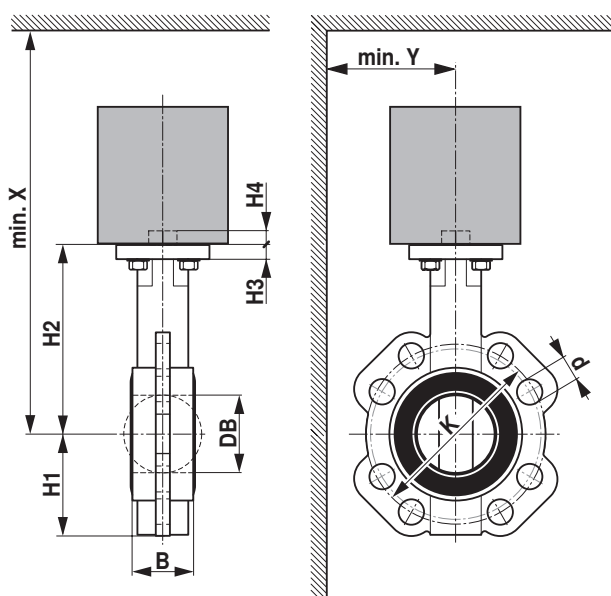
- Water quality requirements** The water quality requirements specified in VDI 2035 must be adhered to.

Installation notes

- Stem heating** In cold water applications and warm humid ambient air can cause condensation in the actuators. This can lead to corrosion in the gear box of the actuator and causes a breakdown of it. In such applications, the use of a stem heating is provided. The stem heating must be enabled only when the system is in operation, because it does not have temperature control.
- Maintenance** Butterfly valves and rotary actuators are maintenance-free. Before any service work on the final controlling device is carried out, it is essential to isolate the rotary actuator from the power supply (by unplugging the electrical cable if necessary). Any pumps in the part of the piping system concerned must also be switched off and the appropriate slide valves closed (allow all components to cool down first if necessary and always reduce the system pressure to ambient pressure level). The system must not be returned to service until the butterfly valve and the rotary actuator have been reassembled correctly in accordance with the instructions and the pipeline has been refilled by professionally trained personnel. To avoid a torque increase during off season shut down, exercise the butterfly valve (full open and close) at least once a month.

Dimensions / Weight

Dimensional drawings



Type	DN []	B [mm]	DB [mm]	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	d (PN6)	K (PN6) [mm]
D625N	25	32	30	57	86	10	13	4 x 11	75
D632N	32	33	35	60	100	10	13	4 x 14	90
D640N	40	33	42	68	119	10	13	4 x 14	100
D650N	50	43	52	72	133	11	13	4 x 14	110
D665N	65	46	64	81	147	11	13	4 x 14	130
D680N	80	46	78	96	158	11	13	4 x 19	150
D6100N	100	52	103	106	170	11	13	4 x 19	170
D6125N	125	56	122	122	194	15	19	8 x 19	200
D6150N	150	56	155	140	202	15	19	8 x 19	225
D6200W	200	60	202	172	240	15	19	8 x M16	280
D6250W	250	68	250	206	268	15	24	12 x M16	335
D6300W	300	78	301	244	316	15	24	12 x M20	395
D6350N	350	78	333	267	361	15	24		
D6400N	400	102	391	308	400	20	48		
D6450N	450	114	442	337	422	22	48		
D6500N	500	127	493	359	480	22	48		
D6600N	600	154	594	454	562	25	48		

Dimensions / Weight

Type	d (PN10)	K (PN10) [mm]	d (PN16)	K (PN16) [mm]	X [mm]	Y [mm]	Weight [kg]
D625N	4 x 14	85	4 x 14	85	320	150	1.1
D632N	4 x 19	100	4 x 19	100	340	150	1.5
D640N	4 x 19	110	4 x 19	110	350	160	1.6
D650N	4 x 19	125	4 x 19	125	370	160	2.4
D665N	4 x 19	145	4 x 19	145	380	170	3.0
D680N	8 x 19	160	8 x 19	160	390	180	3.3
D6100N	8 x 19	180	8 x 19	180	410	190	4.0
D6125N	8 x 19	210	8 x 19	210	530	210	6.7
D6200W	8 x M20	295	12 x M20	295	500	300	13
D6250W	12 x M20	350	12 x M24	355	530	300	21
D6300W	12 x M20	400	12 x M24	410	580	300	32
D6150N	8 x 23	240	8 x 23	240	540	220	7.4
D6350N	16 x 23	460	16 x 28	470	730	340	34
D6400N			4 x 31	525	1300	1300	60
D6450N			4 x 31	585	1300	1400	73
D6500N			4 x 33	650	1700	1500	98
D6600N			16 x 37	770	1800	1800	190

Further documentation

- Overview Valve-actuator combinations
- Data sheets for actuators
- Installation instructions for actuators and/or butterfly valves
- General notes for project planning

- Rotary actuator for butterfly valves
- Nominal torque 160 Nm
 - Nominal voltage AC 24...240 V / DC 24...125 V
 - Control modulating, communicative
 - with 2 integrated auxiliary switches
 - Conversion of sensor signals
 - Communication via BACnet MS/TP, Belimo MP-Bus or conventional control


Technical data

Electrical data	Nominal voltage	AC 24...240 V / DC 24...125 V	
	Nominal voltage frequency	50/60 Hz	
	Nominal voltage range	AC 19.2...264 V / DC 19.2...137.5 V	
	Power consumption in operation	20 W	
	Power consumption in rest position	6 W	
	Power consumption for wire sizing	with 24 V 20 VA / with 230 V 52 VA	
	Auxiliary switch	2 x SPDT, 1 x 10° / 1 x 0...90° (ex works 85°)	
	Switching capacity auxiliary switch	1 mA...3 (0.5 inductive) A, AC 250 V	
	Connection supply	Terminals 2.5 mm ²	
	Connection control	Terminals 1.5 mm ²	
	Connection auxiliary switch	Terminals 2.5 mm ²	
	Parallel operation	Yes (note the performance data)	
	Functional data	Torque motor	160 Nm
		Communicative control	MP-Bus BACnet MS/TP (Details see separate document "PICS")
Positioning signal Y		DC 0...10 V	
Positioning signal Y note		Input impedance 100 kΩ	
Operating range Y		DC 2...10 V	
Operating range Y variable		DC 0.5...10 V 4...20 mA	
Position feedback U		DC 2...10 V	
Position feedback U note		Max. 0.5 mA	
Position feedback U variable		DC 0.5...10 V	
Position accuracy		±5%	
Manual override		with hand crank, can be fixed in any position	
Running time motor		35 s / 90°	
Motor running time variable		30...120 s	
Sound power level motor		68 dB(A)	
Position indication	Mechanically (integrated)		
Safety	Protection class IEC/EN	II reinforced insulation	
	Protection class UL	II reinforced insulation	
	Protection class auxiliary switch IEC/EN	II reinforced insulation	
	Degree of protection IEC/EN	IP66 + IP67	
	Degree of protection NEMA/UL	NEMA 4X, UL Enclosure Type 4X	
	EMC	CE according to 2014/30/EU	
	Low voltage directive	CE according to 2014/35/EU	
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14	
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02	
	Mode of operation	Type 1	
	Rated impulse voltage supply	4 kV	
	Rated impulse voltage control	0.8 kV	
	Rated impulse voltage auxiliary switch	2.5 kV	
	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		

Technical data

Mechanical data	Connection flange	F07 (F05 only with accessory)
Weight	Weight	5.8 kg

Safety notes


- This device has been designed for use in stationary heating, ventilation and air conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Caution: Power supply voltage!
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- Apart from the connection box, 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 device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Fields of application	The actuator is particularly suitable for utilisation in outdoor applications and is protected against the following weather conditions: - UV radiation - dirt / dust - rain / snow - Humidity
Converter for sensors	Connection option for two passive sensors. This means the analogue sensor signal can be easily digitised and transferred via field bus to the higher level system.
Parameterisable actuators	The factory settings cover the most common applications. The Belimo Assistant App is required for parameterisation via Near Field Communication (NFC) and simplifies commissioning. Moreover, it provides a variety of diagnostic options. The ZTH EU service tool provides a selection of both diagnostic and setting options.
Simple direct mounting	Simple direct mounting on the butterfly valve. The mounting orientation in relation to the butterfly valve can be selected in 90° (angle) increments.
Manual override	The valve can be manually operated using a hand crank. Unlocking is carried out manually by removing the hand crank.
Internal heating	An internal heater prevents condensation buildup. Thanks to the integrated temperature and humidity sensor the built-in heater automatically switches on and off.
High functional reliability	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
Flexible signalization	The actuator has one auxiliary switch with a fixed setting (10°) and one adjustable auxiliary switch (0...90°).


Accessories

	Description	Type
Gateways	Gateway MP for BACnet MS/TP, AC/DC 24 V	UK24BAC
	Gateway MP to Modbus RTU, AC/DC 24 V	UK24MOD
	Gateway MP to LonWorks, AC/DC 24 V, LonMark certified	UK24LON
	Gateway MP to KNX, AC/DC 24 V, EIBA certified	UK24EIB
Electrical accessories	Description	Type
	Connection cable 5 m, A+B: RJ12 6/6, To ZTH/ZIP-USB-MP	ZK1-GEN
Mechanical accessories	Description	Type
	Position indicator and tappet shaft, F07, square, SW 17	ZPR01
	Tappet shaft, F07, square, SW 17	ZPR02
	Position indicator and tappet shaft, F05, square, SW 14	ZPR03

Accessories

	Description	Type
	Retrofit adapter kit, F05/F07, flat head/ square, SW 17	ZPR05
	Retrofit adapter kit, F05/F07, square 45° turned, SW 14	ZPR06
	Retrofit adapter kit with ring, F07, square 45° turned, SW 17	ZPR08
	Retrofit adapter kit with ring, F07, flat head/ square, SW 14	ZPR09
	Retrofit adapter kit, F05/F07, flat head/ square, SW 14	ZPR10
	Retrofit adapter kit, F05/F07, square 45° turned, SW 18	ZPR11
	Retrofit adapter kit, F05/F07, flat head/ square, SW 16	ZPR12
	Hand crank for PR-actuator	ZPR20
	Description	Type
Service Tools	Smartphone app for easy commissioning, parameterising and maintenance	Belimo Assistant App
	Service tool for parametrisable and communicative Belimo actuators / VAV controller and HVAC performance devices	ZTH EU
	Description	Type
Sensors	Duct/Immersion Temperature Sensor 50 mm x 6 mm PT1000	01DT-1BH
	Duct/Immersion Temperature Sensor 100 mm x 6 mm PT1000	01DT-1BL
	Duct/Immersion Temperature Sensor 150 mm x 6 mm PT1000	01DT-1BN
	Duct/Immersion Temperature Sensor 200 mm x 6 mm PT1000	01DT-1BP
	Duct/Immersion Temperature Sensor 300 mm x 6 mm PT1000	01DT-1BR
	Duct/Immersion Temperature Sensor 450 mm x 6 mm PT1000	01DT-1BT
	Duct/Immersion Temperature Sensor 50 mm x 6 mm Ni1000	01DT-1CH
	Duct/Immersion Temperature Sensor 100 mm x 6 mm Ni1000	01DT-1CL
	Duct/Immersion Temperature Sensor 150 mm x 6 mm Ni1000	01DT-1CN
	Duct/Immersion Temperature Sensor 200 mm x 6 mm Ni1000	01DT-1CP
	Duct/Immersion Temperature Sensor 300 mm x 6 mm Ni1000	01DT-1CR
Duct/Immersion Temperature Sensor 450 mm x 6 mm Ni1000	01DT-1CT	

Electrical installation

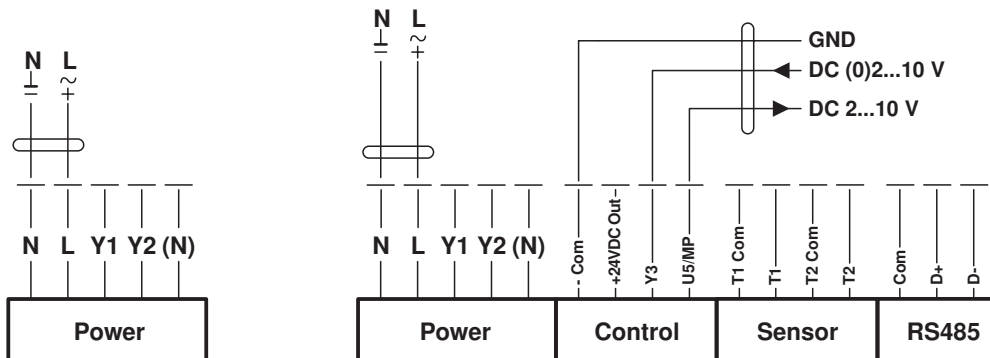


Notes

- Caution: Power supply voltage!
- Parallel connection of other actuators possible. Observe the performance data.
- The main power supply for the actuator and for the auxiliary switches shall be from the same phase.
- The wiring of the line for BACnet (MS/TP) has to be carried out in accordance with applicable RS485 regulations.

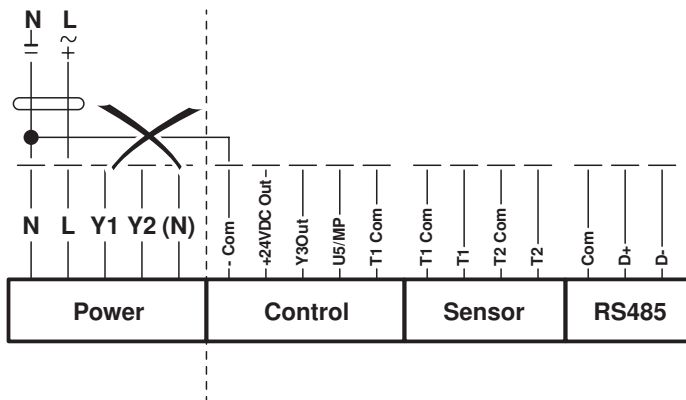
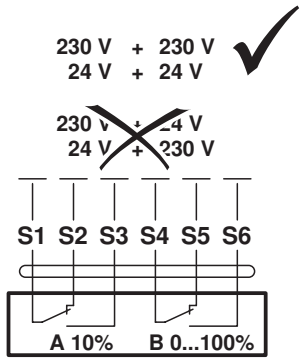
Wiring diagrams

AC 24...240 V / DC 24...125 V Modulating control



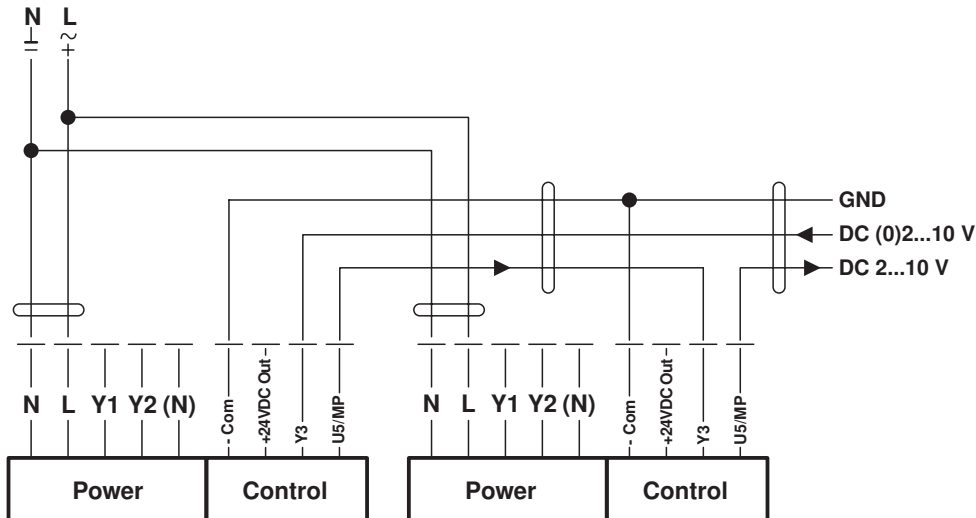
Electrical installation

Connection auxiliary switch



Power supply must not be connected to the signal terminals!

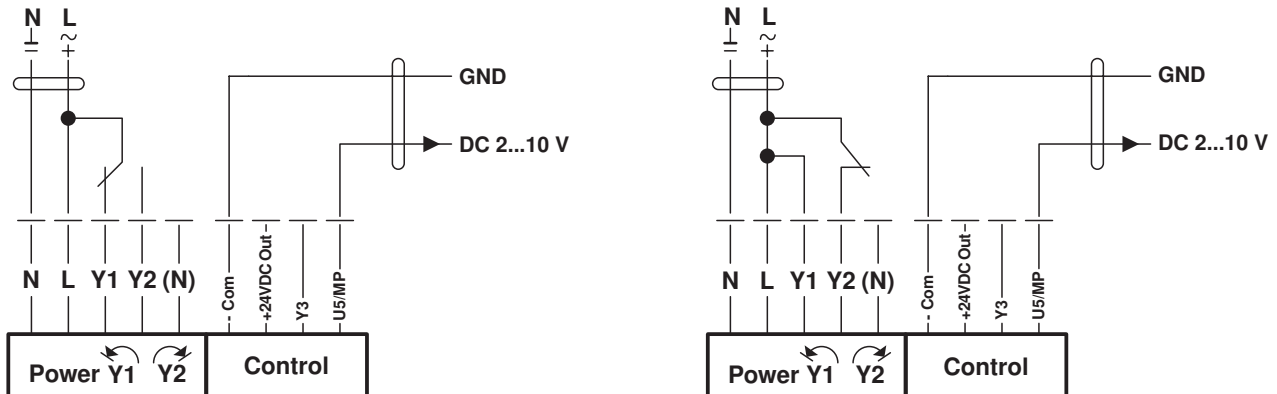
Follow-up control (position-dependent)



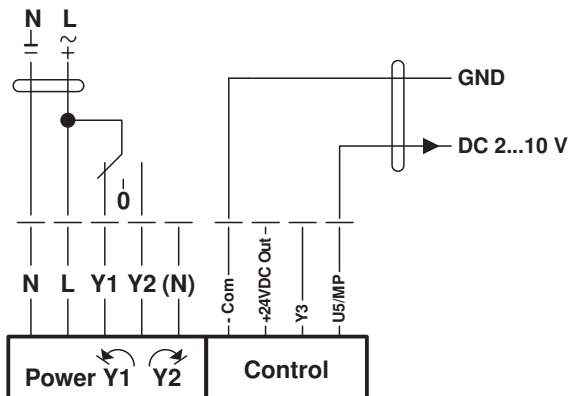
Functions

Functions for actuators with specific parameters (Parametrisation with Belimo Assistant App necessary)

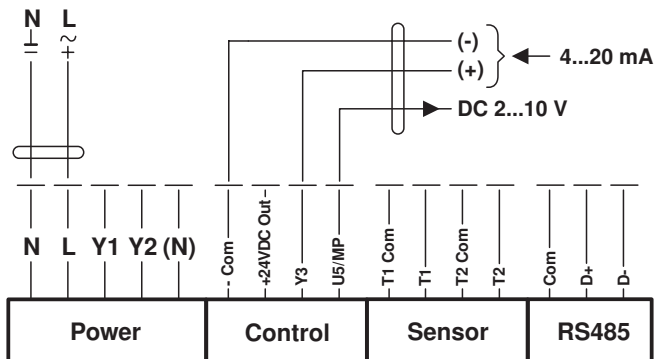
Open-close control



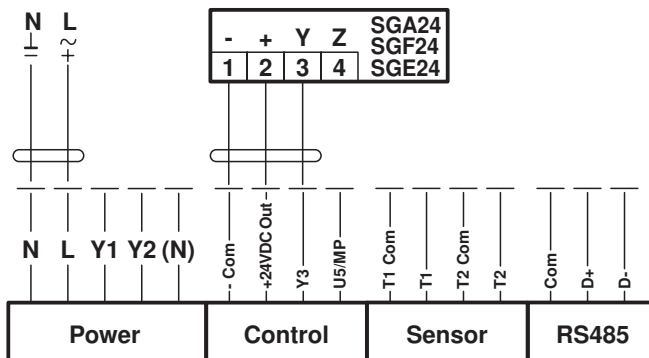
3-point control



Control 4...20 mA



Positioner SG..

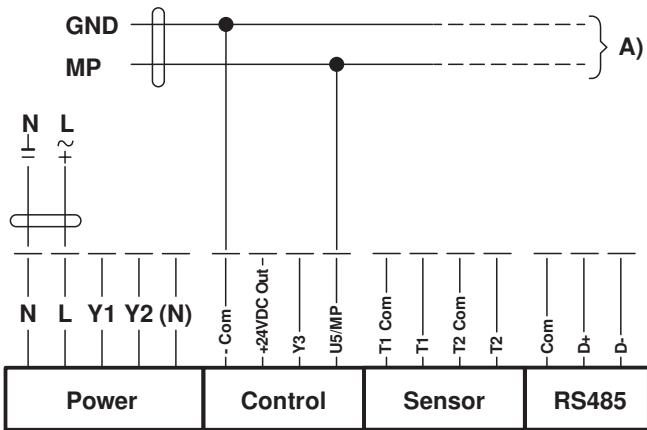


Note

Maximum output power «+ 24VDC out» 1.2 W @ 50 mA!
A separate safety transformer must be used for higher performance!

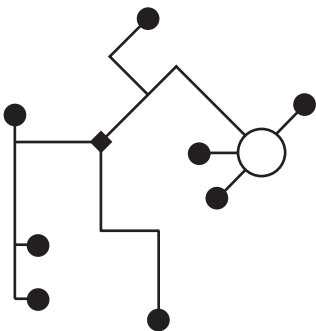
Functions

Connection on the MP-Bus



A) Additional actuators (max. 8)

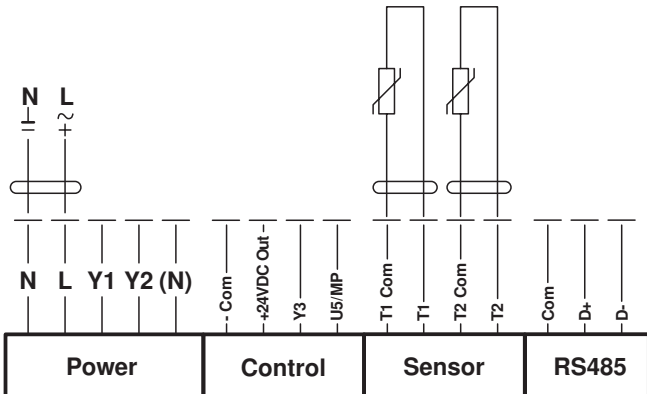
Network topology



There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).
Supply and communication in one and the same 3-wire cable

- no shielding or twisting necessary
- no terminating resistors required

Connection of passive sensors (BACnet only)

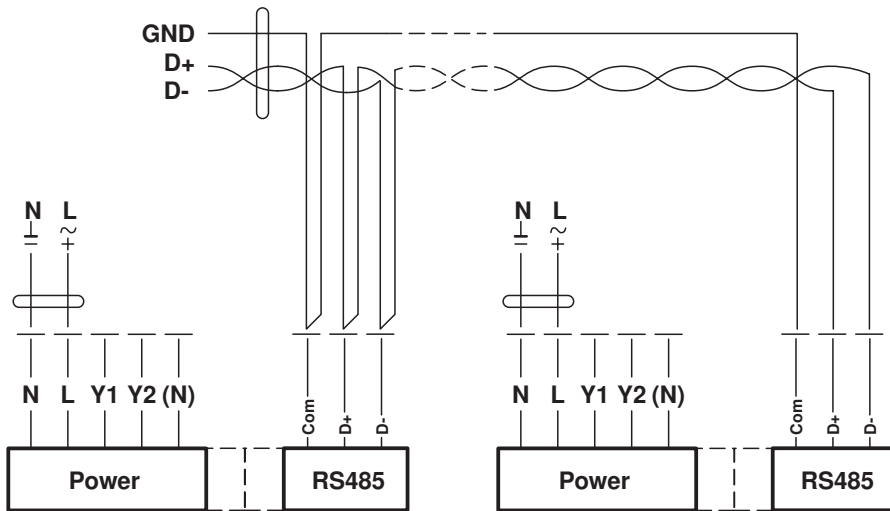


1)	2)
200 Ω...2 kΩ	0.1 Ω
2 kΩ...10 kΩ	1 Ω
10 kΩ...55 kΩ	10 Ω

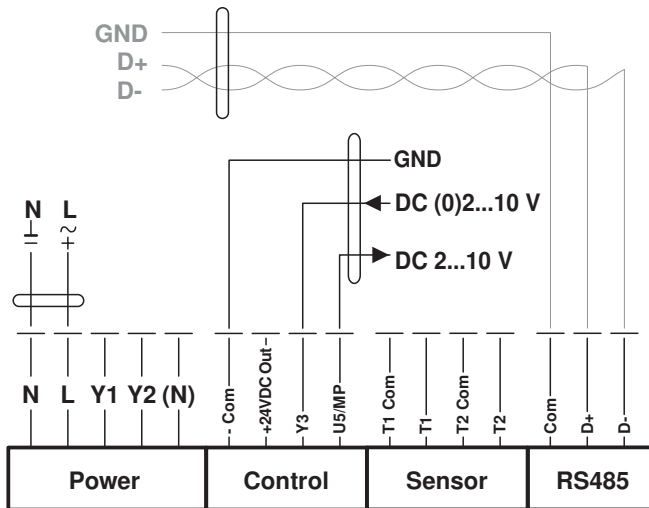
1) Resistance range
2) Resolution
- Suitable for Ni1000 and PT1000
- Suitable Belimo types 01DT-...

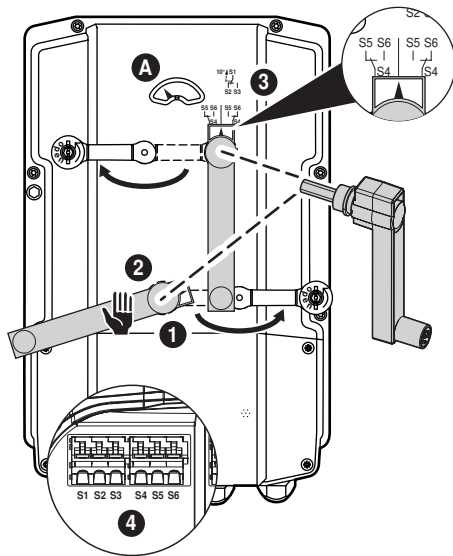
Functions

Connection BACnet MS/TP



Connection BACnet MS/TP with analog setpoint (hybrid mode)



Operating controls and indicators
Auxiliary switch settings


Note Perform settings on the actuator only in deenergised state.

1 Gear disengagement

Opening the manual override cover and adjusting the hand crank. Manual override is possible.

2 Manual override control

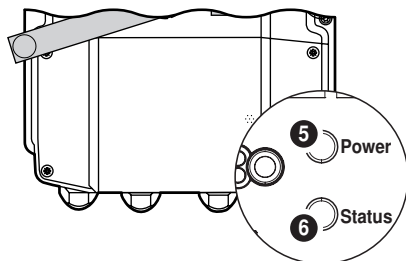
Turn the hand crank until the desired switching position **A** is indicated and then remove the crank.

3 Auxiliary Switch

Opening the auxiliary switch adjustment cover and adjusting the hand crank. Turn the crank until the arrow points to the vertical line

4 Terminals

Connect continuity tester to S4 + S5 or to S4 + S6.
 If the auxiliary switch should switch in the opposite direction, rotate the hand crank by 180°.

Push-buttons and display

5 Push-button and LED display green

Off: No power supply or malfunction
 On: In operation
 Press button: Triggers test run, followed by standard mode

6 Push-button and LED display yellow

Off: Standard mode
 Flickering: MP communication active
 On: Test run active
 Flashing: Request for addressing from MP master
 Press button: Confirmation of the MP addressing

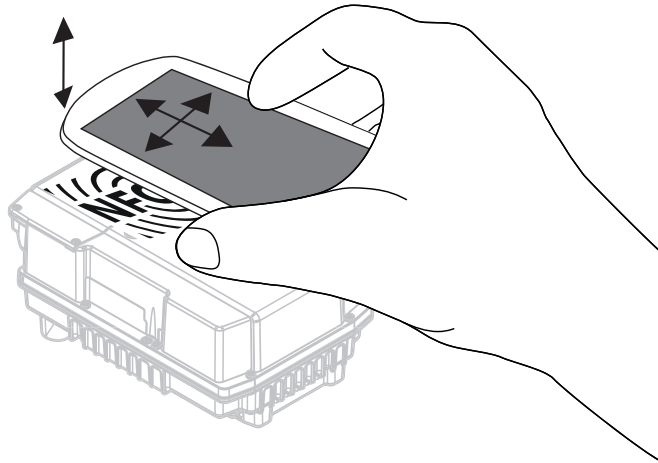
Service

NFC connection Belimo equipment marked with the NFC logo can be operated with the “Belimo Assistant App”.

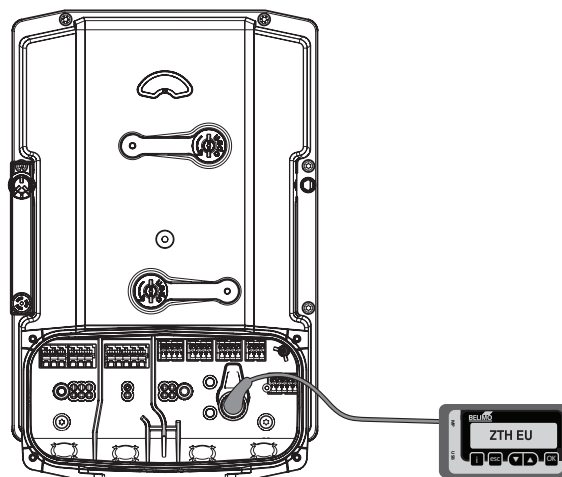
Requirement:

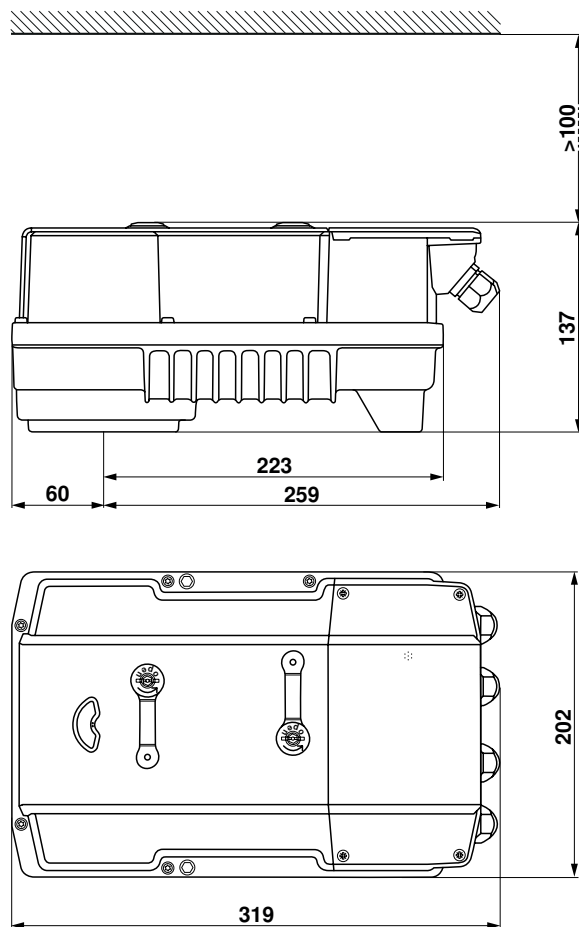
- NFC-capable Android smartphone
- Belimo Assistant App (Google Play Store)

Align smartphone on the actuator so that both NFC antennas are superposed.



Service Tools connection The actuator can be parameterised by the ZTH EU via the service socket.



Dimensions [mm]
Dimensional drawings

Further documentation

- Overview Valve-actuator combinations
- Data sheets for butterfly valves
- Installation instructions for actuators and/or butterfly valves
- General notes for project planning
- Overview MP Cooperation Partners
- Tool connections
- Introduction to MP-Bus Technology