

xBALL - DATA SHEET

xBALL replacement - electronic expansion ball valve, stepper signal operated by superheating controller

- › For flammable refrigerants of safety group A3 (ISO817)
- › CFC , HFC, HFO, R290 refrigerant compatible
- › Perfect seal closure
- › Suitable for main superheating controller with stepper signal
- › Nominal voltage AC/DC 24 V
- › IP54
- › Feedback signal 0...10V
- › Optional safety closure with supercap
- › Configuration by app Bereva (Android or iOS)



Product range

Cod. without supercap without cable	Cod. with supercap without cable	Description
EXR10D16D16N	EXR10D16D16Y	Expansion valve replacement, 100 kW, copper connection ODF 16-16 mm
EXR20D16D16N	EXR20D16D16Y	Expansion valve replacement, 200 kW, copper connection ODF 16-16 mm
EXR50D22D22N	EXR50D22D22Y	Expansion valve replacement, 500 kW, copper connection ODF 22-22 mm
EXR10D28D28N	EXR10D28D28Y	Expansion valve replacement, 100 kW, brass connection ODF 28-28 mm
EXR10D35D35N	EXR10D35D35Y	Expansion valve replacement, 100 kW, brass connection ODF 35-35 mm
EXR20D35D35N	EXR20D35D35Y	Expansion valve replacement, 200 kW, brass connection ODF 35-35 mm
EXR50D42D42N	EXR50D42D42Y	Expansion valve replacement, 500 kW, brass connection ODF 42-42 mm

Cable connection kit for EXR valves

Code	Description
CABRO0030	EXR replacement expansion valve cables kit, crimped terminals, lenght 3mt
CABRO0060	EXR replacement expansion valve cables kit, crimped terminals, lenght 6mt
CABRO0090	EXR replacement expansion valve cables kit, crimped terminals, lenght 9mt

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.228. V / DC 21.628.8 V
	Power consumption	1,5 W (2,6VA)
Working data	Connection supply / control	Cables not included, use Bereva cables CABR only
	Running time motor	15s / 90° (typical)
	Sound power level motor	35dB(A)
	Position indication	Mechanical
	Position feedback	0,5V -...9,5V
	Configuration	By app Bereva (Android or iOS)
	Compatible refrigerants	CFC, HFC, HFO*
	Fluid temperature	-20°C ...70°C
	Maximum pressure Ps	50 barg
	Maximum differential pressure Δpmax	35 barg
	Flow characteristic	Equal percentage (VDI/VDE 2178)
	Leakage rate with closed valve	Leakage rate A: air bubble tight (EN 12266-1)
	Connection	Solder
Position of installation	From vertical to horizontal	
Maintenance	Not necessary	

Technical data
Control general data

Controlling scope	Valve positioning / control
Controlling installation	Independent mounting
Cable removal	Cables may be removed by qualified technicians (manufacturer or authorized service center) only
Type of movement	Rotary (90° adjustable)
Maximum rated mechanical load	1,0 Nm
Maximum angular rotation	90°
Safety Protection class IEC/ EN	III, Safety Extra-Low Voltage (SELV)
Index of protection IEC/EN	IP54
Directives RoHS (2015/863/EU), RED (2014/53/EU), PED (2014/68/EU), LVD (2014/35/EU), EMC (2014/30/EU)	Compliant
Compatible refrigerants	R1234ze, R134a, R404A, R407C, R407H, R410A, R417A, R427A, R448A, R449A, R450A, R507A, R452A, R513A, R1234yf, R32, R452B, R454A, R454B, R454C, R455A, R290
Others Wireless Directive	FCC and IC compliant
Flammable refrigerants	The product is not to be considered a source of ignition when used together with A2L and A3 classified refrigerants and is compliant against clauses 22.116 and 22.117 from IEC 60335-2-40. Compliance against cl. 22.117 is checked by measuring the appropriate surface temperatures during the tests of IEC 60335-2-40, Clauses 11 and Clauses 19. The maximum surface temperature of the devices and components does not exceed the temperature limit of 370 °C.
Operation type	Type 1
Pollution degree	2
Ambient temperature	-30°C ... +50°C (without irradiation)
Storage temperature	-40°C ... +80°C
Maximum ambient humidity	95% RH, non-condensing
Heat and fire strength	Category D
Overvoltage category	Category III
Rated impulse voltage supply	0,8 kV
Software class and structure	A

Safety tips


- The device has been designed to be used for stationary refrigeration equipment ventilation and air conditioning systems. Usage is not permitted outside the foreseen application fields, especially on airplanes or any kind of airplane transport
- External application: only possible if it is not in direct contact with sea water, snow, ice, heating or aggressive gases at direct contact with the actuator. The environmental conditions should remain any time within the limits indicated in the technical data sheet.
- The installation can only be carried out by authorized technicians. All applicable legal or institutional regulations must be respected.
- The device can only be opened at the manufacturing site. It not contain parts repairable or replaceable by the user.
- The device contains electrical and electronic components and cannot be disposed of in normal household waste. All local disposal regulations must be observed.
- Acceptability of these products in end use application where flammable refrigerants are used shall be reviewed and judged in the end use application.

Product features

Selection Bereva recommends its sizing software, that is free to download from Bereva web site.

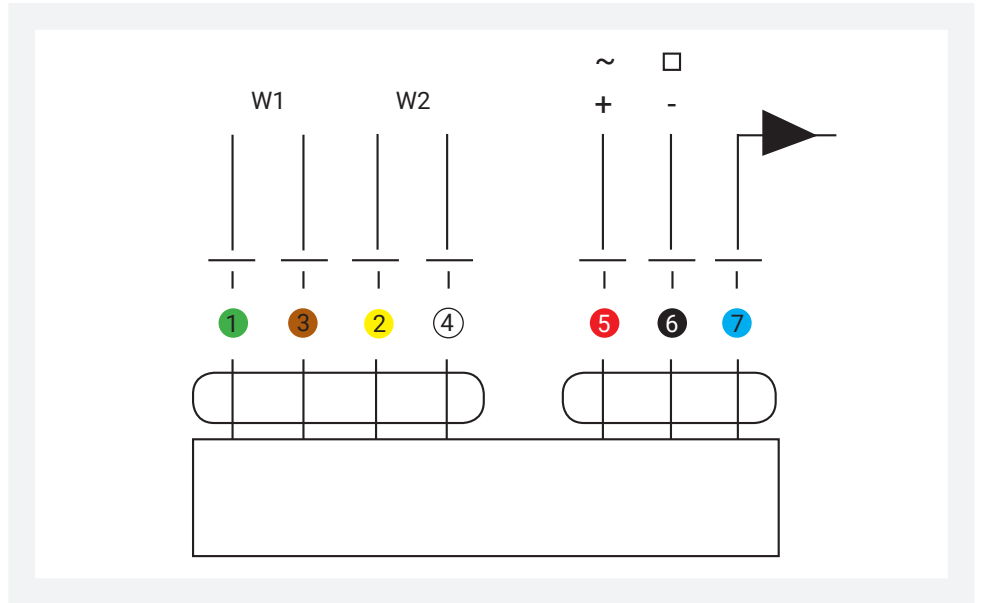
Working concept The actuator receives from the superheat control driver a signal of the desired position of the valve and it moves in correspondence to this.
The feedback signal is used to indicate the position of the actuator from 0 to 100%.
The opening of the ball valve is counterclockwise and closing clockwise.

Start up time The devices with an emergency closing function require a pre-charge time. This time is used to charge the capacitors to the necessary level. That ensures that, in the event of a power failure, the actuator can move in each moment from its current position to the fully closed position.
The time of pre-charge mainly depends on the duration of the power failure. Nominal pre-charge time goes from 6 seconds for interruptions of less than 24 hours, to 14 seconds for interruptions of more than 12 days.

Friendly installation Snap-on assembly without tools. The actuator is installed on the valve with the simple pressure of the hands (Attention! vertical movement only).
The pins must match the holes on the flange. The actuator mounting position on the valve can be selected in 180° steps.
The actuator is protected from overload, does not require electrical limit switches and stops automatically when reaching the mechanical stops.

Manual action Only in case of need and in compliance with the operating conditions of the refrigeration circuit and its components, remove the actuator and rotate the valve stem with the help of the Belimo ZCQ-FL accessory.

Wiring connection



Contact **Bereva** to connect other "driver" controllers other than those indicated. The cable sequence illustrated is mandatory.

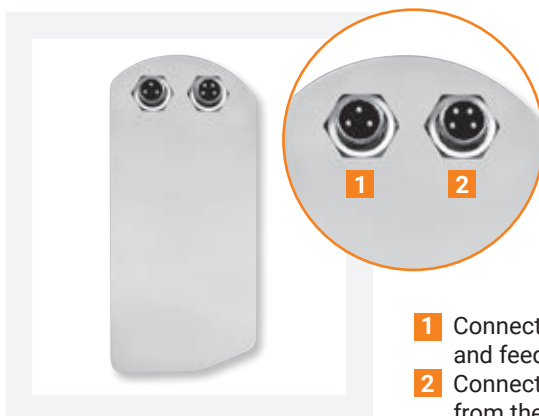
Bereva Cables color	Driver connection					
	Carel EVD Evo	Sporlan PSD4	Danfoss EKE	Emerson EXD-SH1/2	Dixell XEV32D	Siemens POL94
Green	1	SO 1A	B2	16 (21)	4	M1+
Brown	3	SO 1B	B1	17 (22)	2	M1-
Yellow	2	SO 2A	A1	14 (19)	1	M2-
White	4	SO 2B	A2	15 (20)	3	M2+

Configuration and led indicator

App The device is configured by smartphone, Bereva app and Radio interfacing. The Bereva Key app is available by contacting Bereva or requesting it from the Bereva.it website.

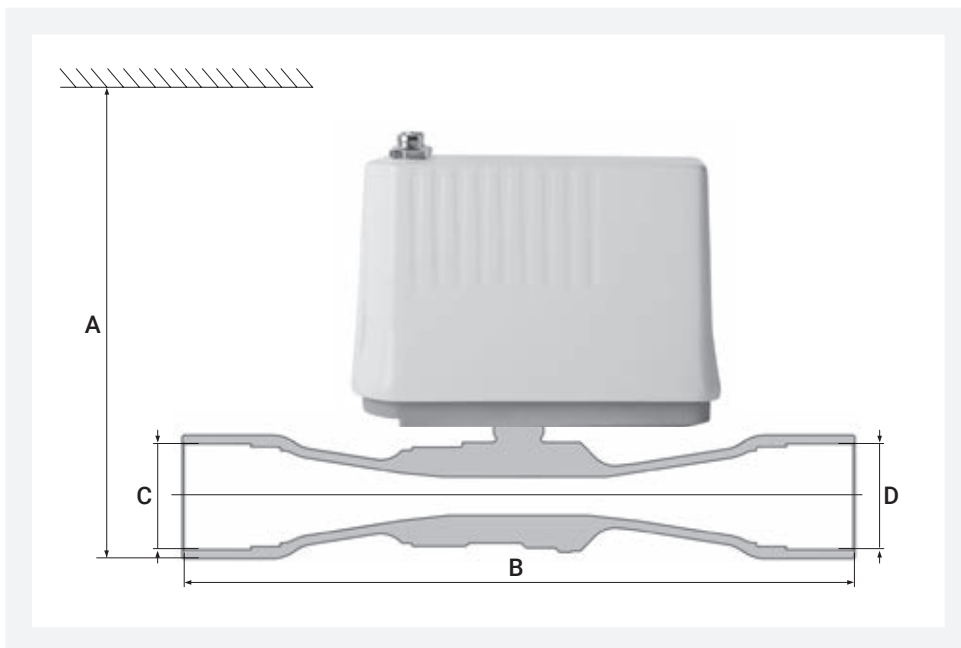
LED Meaning of led crown ("Halo")
 LED Off: no power.
 LED Lighting of the led under the connectors only: device powered and valve stopped.
 LED On, 2 at a time according to the direction of movement: opening / closing.
 LED On, all steady: device in boot mode.
 LED All flashing: radio connection in progress.
 LED Flashing on the two extremes: alarm (manual positioner left active in the absence of connection with App or HW malfunction).

Operational controls and indicators



- 1** Connector to power supply and feedback signal.
- 2** Connector to stepper signal from the valve driver.

Dimensions (mm)



Valve model	A*	B	C	D	Depth*
EXR10D16D16...	25	180	16	16	50
EXR20D16D16...	25	180	16	16	50
EXR50D22D22...	25	190	22	22	50
EXR10D28D28...	25	180	28	28	50
EXR10D35D35...	25	180	35	35	50
EXR20D35D35...	25	180	35	35	50
EXR50D42D42...	25	190	42	42	50

(*) : necessary dimension to installation
 The representation of the dimensions on the drawing is valid for all available models

FCC/ISED – for US/Canada market relevant only

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- FCC** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- FCC RF Exposure Statement:** This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This equipment shall be installed and operated with a minimum distance of 20 cm between the user and this device.
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- ISED** This device complies with Industry Canada's license-exempt RSS standards. Operation is subject to the following two conditions:
1. This device may not cause interference; and
 2. This device must accept any interference, including interference that may cause undesired operation of the device.
- RF Exposure Statement:**
Equipment conforms to the RF Exposure Evaluation Limits laid down in RSS 102.
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- ISED (French)** Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
1. L'appareil ne doit pas produire de brouillage;
 2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
- Déclaration d'exposition RF:**
L'équipement est conforme aux valeurs limites d'évaluation de l'exposition aux radiofréquences selon CNR 102.
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