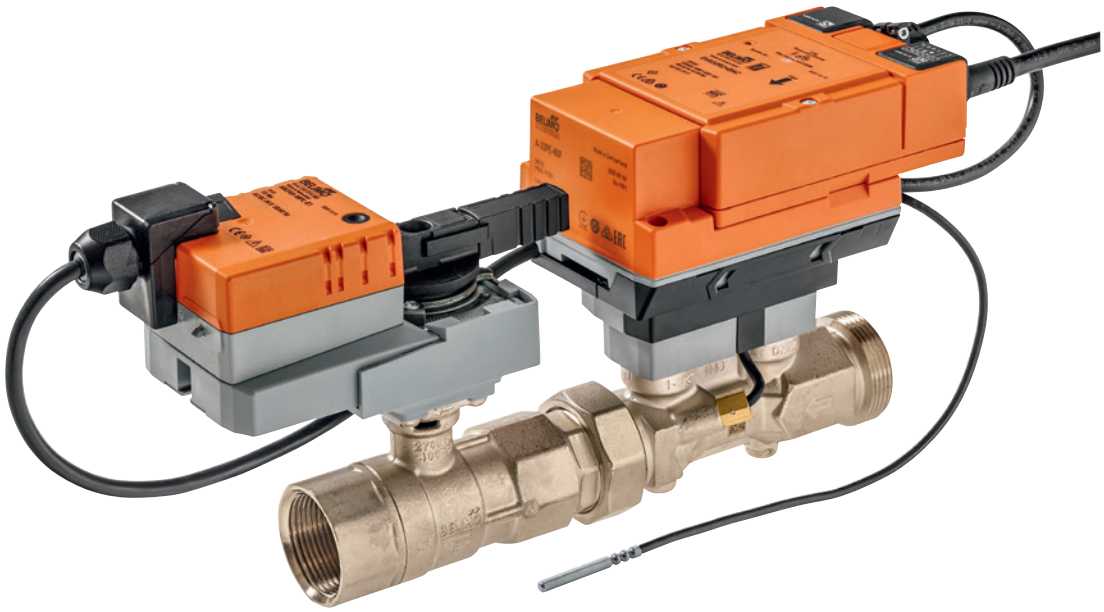
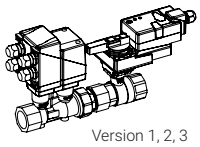
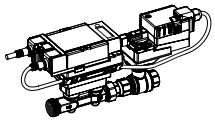


Data-Pool Values

Where is the Ethernet socket?	
On the actuator	**On the flow sensor**
 Version 1, 2, 3	 Version 4
See „Data-pool Vaues Energy Valve (V1, V2, V3)“	Stay with this document

For guidance in replacing an old EV with EV V4 -> see “Replacement Guide V1, V2, V3 vs. V4“

MP-BUS

Energy Valve DN 15...50 (Version 4)

Edition 2024-10 / V4.1.1

BELIMO

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Data-Pool general notes

General information

– The device supports the MP Data-Pool functional profile. All available data points are managed in a data pool and accessible with MP read/ write commands.
– This document describes all public data pool values of the device. It's divided into process values and configuration values.
– The MP Data-Pool functional profile is specified in the MP Cooperation Documentation. The document is provided to Belimo MP-Partners.
– See the technical datasheet for technical information about the device itself.

Identification

The connected type can be identified by its series number:

Prefix	Profile type	Profile category	Type
2	1	22	EV..R2+..

Interface version

This description is valid for these models:

Product Model Number	Remark
EV..R2+(K)BAC	Version 4, DN 15...50
EV..R2+MID	Version 4, DN 15...50
EV..R3+BAC	Version 4, DN 15...50

Configuration

Configuration data are not password protected. No Login is required.

Timing of MP-Bus queries

Client implementations typically poll the servers in cycles (MP1, MP2, MP3, ...). Reading all data pool values of this node in one cycle are not recommended, because it would reduce the overall MP-Bus performance.

Recommendation:
– Split up the queries into several cycles (e.g. 3 queries per cycle).
– Adjust repetition rates (reading values) according to the rate of change of the value.
– Prevent from reading unused data pool values.

Signed integer

Signed integers are represented as two's complement.

Example:

Value of ID40 = 1111 1101 1111 0010_2 = -526_{10}

Actual value
= value * scaling factor * unit
= -526 * 0.01 * unit
= **-5.26 unit**

Data-Pool values overview

Process

ID	Name	Access
10	Setpoint [%]	R / W
11	Command	R / W
12	Relative Position [%]	R
13	Absolute Position [°]	R
14	Override	R / W
15	Sensor 1 Value [mV] [Ω] [-]	R
16	Analog Setpoint [%]	R
19	Relative Volumetric Flow [%]	R
20	Absolute Volumetric Flow [l/s]	R
22	Absolute Volumetric Flow in selected unit	R
26	Glycol Concentration [%]	R
27	Temperature 1 (remote) [°C]	R
29	Temperature 2 (integrated) [°C]	R
31	Delta Temperature [K]	R
33	Relative Power [%]	R
34	Absolute Cooling Power [kW]	R
37	Absolute Heating Power [kW]	R
51	Total Volume [m^3]	R
54	Cooling Energy [kWh]	R
57	Heating Energy [kWh]	R

Definition Access: R = Read, W = Write

Data-Pool values overview

Configuration

ID	Name	Access
110	Malfunction & Service information	R
111	Control Mode	R / W
115	Bus Fail Position [%]	R / W
116	Communication Watchdog [s]	R / W
117	Setpoint Source	R / W
120	Sensor 1 Type	R / W
125	V'_{min} [%]	R / W
129	V'_{max} [%]	R / W
133	V'_{nom} [l/s]	R
140	P_{nom} [kW]	R
143	P_{max} [%]	R / W
147	DeltaT Limitation	R / W
148	DeltaT Manager Status	R
151	Unit Selection Flow	R
160	Setpoint DeltaT [K]	R / W
162	Setpoint Abs Flow DeltaT [l/s]	R / W
200	Energy Meter Serial Number First Digits	R
201	Energy Meter Serial Number Last Digits	R
202	Select Meter Register	R / W

Definition Access: R = Read, W = Write

All writeable datapoints with ID >100 (configuration data) are persistent and are **not** supposed to be written on a regular basis.

Data-Pool values

Process data

No.	Description Comments	Unit	Scaling	Values	Size	Access
10	**Setpoint** The setpoint refers to the demanded position, flow or power according to the selected control mode. It is scaled between Min and Max limits. The setpoint is active, if the setpoint is controlled by bus (Setpoint Source = Bus)	%	0.01	0...10'000	2	R / W
11	**Command** Initiation of actuator functions for service. After command is sent, value changes back to None (0)	–	–	0: None 1: – 2: Sync.	1	R / W
12	**Relative position**	%	0.01	0...10'000	2	R
13	**Absolute position**	–	0.01	0...9'600	2	R
14	**Override control** Overriding the setpoint with defined values	–	–	0: None 1: Open valve 2: Close valve 3: Min flow 4: – 5: Max flow 6: Nom. flow 7: – 8: – 9: – 10: Motor stop	1	R / W
15	**Sensor 1 value** Current value of sensor 1, depending on setting of "Sensor 1 Type" (ID 120)	mV Ω –	1	0...65'535	2	R
16	**Setpoint analog** Shows the setpoint in % if the actuator is controlled by analog signal (ID 117)	%	0.01	0...10'000	2	R
19	**Relative volumetric flow** Related to V'_{max} "Maximum Flow Limit" (ID 129)	%	0.01	0...15'000	2	R
20	**Absolute volumetric flow**	l/s	0.01	0...10'000	2	R
22	**Absolute volumetric flow in selected unit** → based on selection in ID 151	UnitSel	0.001	0...360'000	4	R
26	**Glycol concentration**	%	0.01	0...10'000	2	R
27	**Temperature 1 (remote)**	°C	°C	–2'000...12'000	2	R
29	**Temperature 2 (integrated)**	°C	°C	–2'000...12'000	2	R
31	**Delta temperature**	K	0.01	0...14'000	2	R
33	**Relative power** Related to "Nominal Power" (ID 140)	%	0.01	0...30'000	2	R
34	**Absolute cooling power**	kW	0.001	0...21'474'836	4	R
37	**Absolute heating power**	kW	0.001	0...21'474'836	4	R
51	**Total volume**	m^3	0.01	0...21'474'836	4	R
54	**Cooling energy**	kWh	1	0...21'474'836	4	R
57	**Heating energy**	kWh	1	0...21'474'836	4	R

Configuration Data

No.	Description Comments	Unit	Scaling	Values	Size	Access
110	**Malfunction and service information** Value is bit-coded. More than one bit can be set to 1. Not all bits mentioned in the enumeration are used for this product range. 0: No communication to actuator: Communication with actuator not possible. 1: Gear disengagement: Gear disengaged button is pressed 2: Actuator cannot move: Mechanical overload due to blocked valve, etc. (only available for EV..R+KBAC) 3: Reverse flow: Reverse flow is detected 4: Flow setpoint not reached: Setpoint cannot be reached within 15 min during flow control 5: Flow with closed valve: Flow is measured but position of valve is closed 6: Flow actual exceeds flow nominal: Actual flow exceeds the designed nominal flow 7: Flow measurement error: Air in the system, error occurred during flow measurement 8: Remote temperature not OK: No connection to external temperature sensor 9: Flowbody temperature not OK: Error with embedded temperature sensor 10: Communication to sensor interrupted: Internal communication to flow sensor interrupted 11: Freeze warning: Measured temperature & glycol concentration indicate that grease ice can build up 12: Glycol detected: Glycol was detected in a MID application 13: Power setpoint not reached: Setpoint cannot be reached within 15 min during power control.	–	–	Bitmask = 0: No communication to actuator 1: Gear disengaged 2: Actuator cannot move 3: Reverse flow 4: Flow setpoint not reached 5: Flow with closed valve 6: Flow actual exceeds flow nominal 7: Flow measurement error 8: Remote temperature not OK 9: Flowbody temperature not OK 10: Communication to Sensor interrupted 11: Freeze warning 12: Glycol detected 13: Power setpoint not reached 14: – 15: –	2	R
111	**Control mode**	–	–	0: Position control 1: Flow control 2: Power control	1	R / W
115	**Bus fail position** **Not functional, reserved for future extension**	%	0.01	0...10'000	2	R / W
116	**Communication watchdog** **Not functional, reserved for future extension**	s	1	0...3'600 (0 = watchdog deactivated)	2	R / W
117	**Setpoint source** Defines whether the setpoint is controlled by the analog input signal on wire 3 or the MP-Bus	–	–	0: Analog 1: Bus	1	R/ W
120	**Sensor 1 type** If Setpoint Source (ID 117) is analog (Hybrid mode), the Sensor 1 Type can be set to Active (1) to see the Setpoint Analog in mV.	–	–	0: None 1: Active 2: – 3: Passive 4: Switch	1	R / W
125	**V'_{min}** The min setpoint in % is related to V'_{nom} (ID 133) and considered when Control Mode = Flow Control or Power Control.	%	0.01	0...V'_{max}	2	R / W

No.	Description Comments	Unit	Scaling	Values	Size	Access
129	**V'_{max}** Maximum flow limit in % between 25% and 100% of V'nom. Values below 25% will be adjusted to 25%. The maximum flow setpoint is related to V'nom "Nominal Volumetric Flow" (ID133) and is considered when Control Mode = Flow Control or Power Control.	%	0.01	2'500...10'000	2	R / W
133	**V'_{nom}** Nominal volumetric flow	l/s	0.01	0...10'000	2	R
140	**P_{nom}** Nominal power	kW	0.001	0...21'474'836	4	R
143	**P_{max}** The max setpoint in % is related to P_{nom} (ID 140) and considered when Control Mode = Power Control.	%	0.01	50...10'000	2	R / W
147	**DeltaT limitation** Defines whether the device acts on low delta T. Check datasheet for further information.	–	–	0: Disabled 1: DeltaT-Manager 2: DeltaT-Manager-Scaled	1	R / W
148	**DeltaT manager status** Indicates the status of the DeltaT Manager. Check datasheet for further information.	–	–	0: Not selected 1: Standby 2: Active 3: Scaling-standby 4: Scaling-active	1	R
151	**Unit selection flow**	–	1	0: m^3/s 1: m^3/h 2: l/s 3: l/min 4: l/h 5: gpm 6: cfm	4	R / W
160	**Setpoint DeltaT** Considered when DeltaT limitation active (not disabled). Check datasheet for further information.	K	0.01	0...6'000	2	R / W
162	**Setpoint abs flow DeltaT** Considered when DeltaT limitation is set to DeltaTManager-Scaled. Check datasheet for further information.	l/s	0.001	0...100'000	4	R / W
200	**Energy meter serial number first digits**	–	–	0...2'147'483'647	4	R
201	**Energy meter serial number last digits**	–	–	0...2'147'483'647	4	R
202	**Select meter register** Select the active meter register: The certified meter register is not compensated for glycol and will be reset when the sensor module is replaced. The lifetime register is compensated for glycol (if applicable). **Avoid toggling between the two registers.**	–	–	0: Certified meter register 1: Lifetime meter register	1	R / W

Definition Access: R = Read, W = Write

Note: According to the present configuration settings of the Energy Valve (e.g. DN size) the HVAC application may perform a size limitation within the indicated MP-Bus value range.
Each Energy Valve may have different HVAC value size limitations.

All inclusive.

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air-conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The “small” Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

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