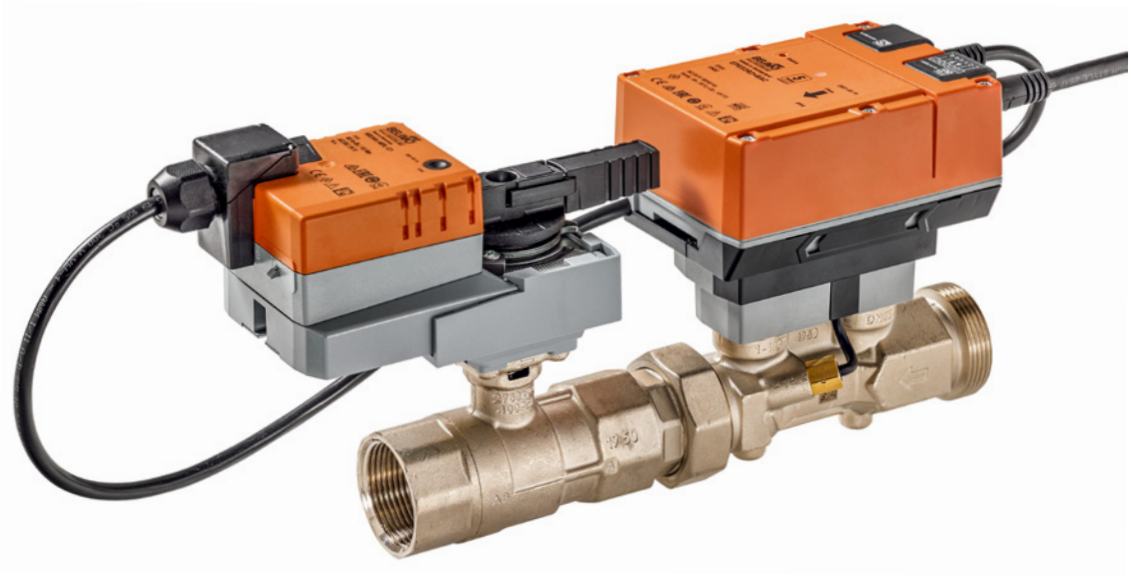
MP BUS



MP-Bus Data-Pool Values

2-way EPIV, DN 15…150 / V4.3.0
Electronic pressure-independent characterized control valve

Edition 2026-04

BELIMO

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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 is 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.

Configuration

MP-Bus	Configuration data are not password protected. No login is required.
Tool	Belimo Assistant 2

Identification

The connected type can be identified by its series number:

Prefix	Profile type	Profile category	Type
2	2	35	EP..R2+..

Interface version

This description is valid for these models:

Product model number	Remark
EP..R2+(K)BAC	Version 4, DN15...50
EP..F2-16+(K)BAC	Version 4, DN65-150
EP..F2-25+(K)BAC	Version 4, DN65-150

Timing of MP-Bus queries

Client implementations typically poll the server in cycles (MP1, MP2, MP3, ...). Reading all data pool values of the node in one cycle is 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**

Values overview

Operation

ID	Name	Access
10	Setpoint Relative [%]	R / W
11	Command	R / W
12	Relative Position [%]	R
13	Absolute Position [°]	R
14	Override Control	R / W
15	Sensor 1 Value [mV] [-]	R
16	Setpoint Analog [%]	R
19	Relative Volumetric Flow [%]	R
20	Absolute Volumetric Flow [l/s]	R
22	Absolute Volumetric Flow [selected unit]	R
26	Glycol Concentration [%]	R
29	Temperature (flowbody) [°C]	R
51	Accumulated Volume [m^3]	R

Configuration

ID	Name	Access
110	Malfunction & Service information	R
111	Control Mode	R / W
114	Bus Fail Action After Startup	R / W
115	Bus Fail Action	R / W
116	Timeout for Bus Watchdog [s]	R / W
117	Setpoint Source	R / W
120	Sensor 1 Type	R / W
125	Minimum Volumetric Flow Limit (V'_{min}) [%]	R / W
129	Maximum Volumetric Flow Limit (V'_{max}) [%]	R / W
133	Nominal Volumetric Flow [l/s]	R
151	Unit Selection Flow	R / W
200	Flow Meter Serial Number First Digits	R
201	Flow Meter Serial Number Last Digits	R

Access definition: R = Read, W = Write

All writeable data points with ID >100 (configuration data) are persistent and are **not** supposed to be written on a regular basis. Designated data points are highlighted in colour in the document.

Values descriptions

Control and general settings

These data-pool values can be used to control and configure the fundamental functionalities and read the corresponding feedback values of the 2-way EPIV.

No.	Description Comments	Values	Unit	Scaling	Size	Access
10	**Setpoint relative** The setpoint is related to either the position or the volumetric flow (of V'_{min}, V'_{max}). It is scaled between Min and Max limits. The setpoint is active if the setpoint is controlled by ID 117: Setpoint source = 1: Bus See also: ID 125: Minimum volumetric flow limit ID 129: Maximum volumetric flow limit	0...10'000	%	0.01	2	R / W
16	**Setpoint analog** Shows the setpoint in % if the actuator is controlled by ID 117: Setpoint source = 0: Analog. Not considered if forced control (bus, tool and/or analog forced control) is active.	0...10'000	%	0.01	2	R
12	**Relative position**	0...10'000	%	0.01	2	R
13	**Absolute position**	0...9'600	°	0.01	2	R
117	**Setpoint source** Analog: Setpoint from analog signal 0.5...10 V on wire 3 Bus: Setpoint via MP-Bus ID 10: Setpoint relative	0: Analog 1: Bus Default: 0	–	–	1	R / W
111	**Control mode** This value defines the interpretation of the setpoint. A reset will be performed if the state of this object is changed.	0: Position control 1: Flow control Default: 1	–	–	1	R / W
14	**Override control** Override the setpoint with definded value.	0: None 1: Open valve 2: Close valve 3: Minimum flow 4: – 5: Maximum flow 6: Nominal flow 7: – 8: – 9: – 10: Motor Stop Default: 0	–	–	1	R / W
11	**Command** Initiation of actuator functions for service and test. After command is sent, value returns to 0: None	0: None 1: – 2: Sync	–	–	1	R / W
114	**Bus Fail Action After Startup** If enabled, the Bus Fail Action is immediately applied on startup. Otherwise the configured ID 116: Timeout for bus watchdog is taken into account. Triggered Bus Fail Action After Startup is indicated in ID 110: Malfunction and service information.	0: Disabled 1: Enabled	–	1	1	R / W
115	**Bus fail action** In the event of a breakdown in communication, the actuator enables the bus fail action. The bus monitoring controls the bus communication. If neither ID 10: Setpoint relative nor ID 14: Override control is renewed before the ID 116: Timeout for bus watchdog, the actuator moves to the bus fail position. Triggered bus monitoring is indicated in ID 110: Malfunction and service information.	0: None 1: Open valve 2: Close valve 3: Max. flow 4: Min. flow 5: – 6: Stop Default: 0	–	–	1	R / W

No.	Description Comments	Values	Unit	Scaling	Size	Access
116	**Timeout for bus watchdog** If no write request is received within the timeout, the device will execute the action defined in ID 115: Bus fail action.	5...3'600 Default: 120	s	1	2	R / W

Flow

These data-pool values can be used to configure and read values related to Flow control.
For setpoint see ID 10: Setpoint relative in section "Control and general settings".

No.	Description Comments	Values	Unit	Scaling	Size	Access
19	**Relative volumetric flow** Related to V'_{max} ID 129: Maximum volumetric flow limit	0...15'000	%	0.01	2	R
20	**Absolute volumetric flow** Actual measuring range depends on device type (see datasheet).	0...10'416.7	l/s	0.01	2	R
22	**Absolute volumetric flow in selected unit** Actual measuring range depends on device type (see datasheet). → Unit can be selected by ID 151: Unit selection flow	0..104.167 0..375'000 0...104'167 0...6'250'000 0..375'000'000 0..1'651'075 0..220'716	m^3/s m^3/h l/s l/min l/h gpm cfm	0.001	4	R
151	**Unit selection flow** The selected unit is valid for ID 22: Absolute volumetric flow in selected unit.	0: m^3/s 1: m^3/h 2: l/s 3: l/min 4: l/h 5: gpm 6: cfm Default: 4	–	–	1	R / W
125	**Minimum volumetric flow limit** (V'_{min})	0...V'_{max}	%	0.01	2	R / W
129	**Maximum volumetric flow limit** Maximum volumetric flow limit relative to V'_{nom} ID 133: Nominal volumetric flow. Considered when ID 111: Control mode = 1: Flow control. Values below 25% will be adjusted to 25%.	2'500...10'000	%	0.01	2	R / W
133	**Nominal volumetric flow** (V'_{nom})	0...6'250	l/s	0.01	2	R
26	**Glycol concentration** Actual measuring range depends on device type (see datasheet).	0...6'000	%	0.01	2	R
51	**Accumulated volume** (cannot be reset)	0...21'474'836	m^3	0.01	4	R
200	**Flow meter serial number first digits** ProductionOrderNumber	–	–	1	4	R
201	**Flow meter serial number last digits** ProductionSequenceNumber	–	–	1	4	R

Access definition: R = Read, W = Write

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

Temperature

The measured temperature values can be read out via the data-pool values below.

No.	Description Comments	Values	Unit	Scaling	Size	Access
29	**Temperature (flowbody)**	-2'000...15'000	°C	0.01	2	R

Conversion of sensor signals

These data-pool values can be used to configure the additional Sensor 1 Input on Y3 and related values.

No.	Description Comments	Values	Unit	Scaling	Size	Access
15	**Sensor 1 value** Current value of sensor 1, depending on setting of ID 120: Sensor 1 type	0...65'535	mV –	1	2	R
120	**Sensor 1 type** Additional sensor input. Only selectable if ID 117: Setpoint source = 1: Bus	0: None 1: Active 2: – 3: – 4: Switch	–	–	1	R / W

Access definition: R = Read, W = Write

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

Health state

These data-pool values allow to determine malfunctions, service information and error states of the 2-way EPIV.

No.	Description Comments	Values	Unit	Scaling	Size	Access
72	**Error State** 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: Communication with actuator not possible. Defective components, cable disconnected. 1: Manual override button is pressed. 2: Mechanical overload, due to blocked valve, etc. 3: Reverse flow is detected. Pump pressure too low; high resistance in the flow circuit; flushing bypass open; V'_{max} setting too high. 4: Setpoint cannot be reached within 15 min during flow control. Pump pressure too low; high resistance in the flow circuit; flushing bypass open; V'_{max} setting too high. 5: Flow is measured, but valve position is closed. Actuator incorrectly mounted. 6: Actual flow exceeds the designed nominal flow. 7: Air in the system, error occurred during flow measurement. Water contamination, not specified fluid used. 9: Error with embedded temperature sensor. 10: Internal communication to flow sensor interrupted. 11: Measured temperature and glycol concentration indicate that grease ice can build up. 12: Medium contains glycol. 15: Timeout for the Bus watchdog expired. No update of Setpoint / Override within specified time.	Bitmask = 0: No communication to actuator 1: Gear train 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: – 9: Flowbody temperature error 10: Communication to sensor interrupted 11: Freeze warning 12: Glycol detected 13: – 14: – 15: Bus watchdog triggered 16: – 17: – 18: – 19: – 20: – 21: Bus Fail Action After Startup active	–	–	2	R
110	**Malfunction and service information** Bit 0...15 of ID 72: Error State corresponds with ID 110 for legacy devices. See also Interface Description for older versions of this device.	–	–	–	2	R

Access definition: R = Read, W = Write

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

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.

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

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