

**MP**  **BUS®**

VAV-Universal VRU-D3-BAC VRU-M1-BAC VRU-M1R-BAC

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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	32	VRU-D3-BAC
2	2	32	VRU-M1-BAC
2	3	32	VRU-M1R-BAC

Configuration Configuration data are password protected.
The default password is '0000'.

Timing of MP-Bus queries Master implementations typically poll the slaves in cycles (MP1, MP2, MP3, ...). Reading all data pool values of a 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 = $-526 * 0.01 * ^\circ\text{C} = -5.26\text{ }^\circ\text{C}$



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

Data-Pool Values Overview

	ID	Name	R/W
Process	10	Setpoint [%]	R/W
	11	Override Control	R/W
	12	Command	R/W
	13	Relative Position [%]	R
	14	Absolute Position [°]	R
	15	Relative Volumetric Flow [%]	R
	16	Absolute Volumetric Flow [m3/h]	R
	17	Sensor 1 Value [mV] [Ω] [-]	R
	19	Setpoint Analog [%]	R
	20	Relative Delta Pressure [%]	R
	21	Absolute Delta Pressure [Pa]	R
	23	Malfunction and Service Information	R
Configuration	100	Position	R/W
	101	Min [%]	R/W
	102	Max [%]	R/W
	103	Setpoint Source	R/W
	114	Operation Mode	R/W
	116	Sensor 1 Type	R/W
	117	Application	R
	118	Control Mode	R
	119	Room Pressure Cascade	R
	120	Nominal Volumetric Flow [m3/h]	R
	123	Nominal Delta Pressure [Pa]	R

Data-Pool Values "Process"

Nr	Description	Unit	Scaling	Values	Size	R/W
10	<p>Setpoint</p> <p>The setpoint refers to the demanded flow, pressure or damper position according to the selected application and control mode. It is scaled between Min and Max limits.</p> <p>The setpoint is active, if the setpoint is controlled by bus (Setpoint Source =Bus)</p>	%	0.01	0...10'000	2	R/W
11	<p>Override Control</p> <p>Overriding the setpoint with defined values</p>	-	-	0:None 1:Open 2:Close 3:Max 4:Min 5:- 6: Motor Stop 7: Vnom/Pnom	1	R/W
12	<p>Command</p> <p>Initiation of actuator functions for service and test. After command is sent, value changes back to None (0).</p>	-	-	0: None 1: Adaption 2: Test 3: Sync	1	R/W
13	<p>Relative Position</p> <p>If the selected application does not support a local actuator (Flow measurement, Room Pressure Cascade), the ID is not active.</p>	%	0.01		2	R
14	<p>Absolute Position</p> <p>If the selected application does not support a local actuator (Flow measurement, Room Pressure Cascade), the ID is not active.</p>	°	0.01		2	R
15	<p>Relative Volumetric Flow</p> <p>Related to the "Nominal volumetric flow in m3/h" (ID 120)</p> <p>If the selected application does not support flow measurement (pressure control, room pressure control), the entry is inactive (= 65'535).</p>	%	0.01		2	R
16	<p>Absolute Volumetric Flow</p> <p>If the selected application does not support flow measurement (pressure control, room pressure control), the entry is inactive (= 65'535).</p>	m³/h	1		2	R
17	<p>Sensor 1 Value</p> <p>Current value of sensor 1, depending on the setting of the Sensor 1 Type (ID 116)</p>	mV Ω -	1 1 -		2	R
19	<p>Setpoint Analog</p> <p>Shows the setpoint in %, if the actuator is controlled by analog signal (ID 103 = Analog).</p>	%	0.01		2	R
20	<p>Relative Delta Pressure</p> <p>Related to the "Nominal differential pressure in Pa" (ID 123)</p>	%	0.01		2	R
21	Absolute Delta Pressure	Pa	0.1		2	R
23	Malfunction and Service Information	-	-	Bit0: - Bit1: - Bit2: - Bit3: - Bit4: Error dP Sensor Bit5: Reverse Airflow detected Bit6: Airflow not reached Bit7: Flow in closed position Bit8: Internal activity Bit9: Gear disengaged Bit10: Bus watchdog triggered Bit11: Actuator doesn't fit to application Bit12: Pres. Sensor wrong connected Bit13: Pressure Sensor not reached Bit14: Error dP Sensor out of Range	2	R

Data-Pool Values "Configuration"

Nr	Description	Unit	Scaling	Values	Size	R/W
100	Position Alphanumeric character string to store the location of the device (optional, helpful for maintenance and troubleshooting)	-	-	One byte per character The string is not null terminated. Fill up unused bytes with 0x20 (space character).	64	R/W
101	Min The min setpoint in % is related to the nominal flow, nominal differential pressure or to the adapted mechanical range of the actuator according to the selected application and control mode	%	0.01	0..Max	2	R/W
102	Max The max setpoint in % is related to the nominal flow, nominal differential pressure or to the adapted mechanical range of the actuator according to the selected application and control mode	%	0.01	2'000...10'000	2	R/W
103	Setpoint Source Defines whether the setpoint is controlled by the analog input signal on wire 3 or the by bus signal on the serial communication line D+/D- (Modbus RTU).	-	-	0:Analog 1:Bus	1	R/W
114	Operation Mode Selection is only available for actuator type VRU-M1R-BAC. It changes the room pressure from positive pressure (default) to negative pressure.	-	-	0: Negative Pressure 1: Positive Pressure	1	R/W
116	Sensor 1 Type If Setpoint Source (ID 103) is analog (Hybrid mode), the sensor type 1 can be set to Active(1) in order to see the Setpoint Analog in mV	-	-	0:None 1:Active 2:Passive 3: - 4:Switch	1	R/W
117	Application Visualisation of the application selected by the damper manufacturer. VRU-D3-BAC / VRU-M1-BAC: - Flow control - Pressure control - Flow measurement VRU-M1R-BAC: - Room pressure control	-	-	0: Flow control 1: Pressure control 2: Room pressure control 3: Flow measurement	1	R
118	Control Mode Visualization of the control mode selected by the damper manufacturer. Available for application "Flow control" only. If the control mode "Flow control" is selected, the Min/Max limits are related to "Nominal volumetric flow in m3/h". If the control mode "Position control" is selected, the Min/Max limits are related to the adapted mechanical range of the actuator.	-	-	0: Position control 1: Flow control	1	R
119	Room Pressure Cascade If the room pressure cascade is enabled, the sensor input S1 will be set as input signal for the room pressure cascade (0-10V).	-	-	0: disabled 1: enabled 2: enabled fast	1	R
120	Nominal Volumetric Flow	m ³ /h	1	0...60'000	2	R
123	Nominal Delta Pressure	Pa	0.1	0...10'000	2	R