



## Data-Pool Values

MP  BUS®

## Thermal Energy Meter (TEM)

Edition 2024-05 / V4.2.0

  
**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	34	22PE-..., 22PEM-...

## Interface version

This description is valid for these models:

Product Model Number	Remark
22PE..-1U.. e.g. 22PEM-1UC	22P(E)(F)-x1(X)Ux2(x3(x4))-(SG) x1: 1, 5 x2: C, D, E, F, G, H, H x3: H, N, K x4: H, T

## 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 ID 40 =  $1111\ 1101\ 1111\ 0010_2 = -526_{10}$

Actual value

= value \* scaling factor \* unit

=  $-526 * 0.01 * \text{unit}$

= **-5.26 unit**

# Data-Pool values overview

## Process

ID	Name	Access
15	Sensor 1 Value [mV] [ $\Omega$ ] [-]	R
19	Relative Volumetric Flow [%]	R
20	Absolute Volumetric Flow [l/s]	R
22	Absolute Volumetric Flow [selected unit]	R
26	Glycol Concentration [%]	R
27	Temperature 1 (remote) [ $^{\circ}$ C]	R
29	Temperature 2 (flow body) [ $^{\circ}$ C]	R
31	Delta Temperature [K]	R
34	Absolute Power Cooling [kW]	R
37	Absolute Power Heating [kW]	R
51	Volume [m <sup>3</sup> ]	R
54	Cooling Energy [kWh]	R
57	Heating Energy [kWh]	R

## Configuration

ID	Name	Access
110	Malfunction & Service information	R
120	Sensor 1 Type	R / W
121	Sensor 1 Passive Type	R / W
133	Nominal Volumetric Flow (qp) [l/s]	R
151	Unit Selection Flow	R / W
200	Energy Meter Serial Number First Digits	R
201	Energy Meter Serial Number Last Digits	R
202	Select Meter Register	R / W



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
15	<b>Sensor 1 value</b> The conversion of passive sensors can be selected by ID 121.  Scaling depends on the sensor type PT1000 / Ni1000 → 1 NTC10K → 10	mV Ω –	1 1 / 10 0 / 1	0...65'535	2	R
19	<b>Relative volumetric flow in % of qp</b> (nominal volumetric flow) Related to "Nominal Volumetric Flow" (qp) (ID 133)	%	0.01	0...15'000	2	R
20	<b>Absolute volumetric flow</b>	l/s	0.01	0...1.5*qp	2	R
22	<b>Absolute volumetric flow in selected unit</b> → Unit can be selected by ID 151	UnitSel	0.001	0...100 m <sup>3</sup> /s 0...360'000 m <sup>3</sup> /h 0...100'000 l/s 0...6'000'000 l/min 0...360'000'000 l/h 0...1'585'030 gpm 0...211'887.997 cfm	4	R
26	<b>Glycol concentration</b>	%	0.01	0...10'000	2	R
27	<b>Temperature 1 (remote)</b>	°C	0.01	-2'000...15'000	2	R
29	<b>Temperature 2 (flow body)</b>	°C	0.01	-2'000...15'000	2	R
31	<b>Delta temperature</b>	K	0.01	0...45'000	2	R
34	<b>Absolute power cooling</b>	kW	0.001	0...21'500'000	4	R
37	<b>Absolute power heating</b>	kW	0.001	0...21'500'000	4	R
51	<b>Volume</b>	m <sup>3</sup>	0.01	0...21'474'836	4	R
54	<b>Cooling energy</b>	kWh	1	0...21'474'836	4	R
57	<b>Heating energy</b>	kWh	1	0...21'474'836	4	R

## Configuration Data

No.	Description Comments	Unit	Scaling	Values	Size	Access
110	<b>Malfunction and service information</b> 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.  3: Reverse flow: Reverse flow is detected. 6: Flow actual exceeds flow nominal : Actual flow exceeds qp (designed nominal volumetric flow). 7: Flow measurement error: Air in the system, error occurred during flow measurement. 8: External temperature sensor not OK: No connection to the external temperature sensor 9: Integrated temperature sensor 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.	-	-	Bitmask = 0: - 1: - 2: - 3: Reverse flow 4: - 5: - 6: Actual flow exceeds nominal flow 7: Flow measurement error 8: External temperature error 9: Integrated temperature error 10: Communication to sensor interrupted 11: Freeze warning 12: Glycol detected 13: - 14: - 15: -	2	R
120	<b>Sensor 1 type</b> Additional sensor input	-	-	0: None 1: Active 2: - 3: Passive 4: Switch Default: 0	1	R / W
121	<b>Sensor 1 passive type</b> Only available if ID 120 Sensor 1 type is set to value 3 "Passive"	-	-	0: Resistance measurement 1: PT1000 2: Ni1000 3: - 4: - 5: - 6: - 7: NTC10k2 8: NTC10k3 Default: 0	1	R / W
133	<b>Nominal volumetric flow (qp)</b>	l/s	0.01	0...10'000	2	R
151	<b>Unit selection flow</b>	-	1	0: m <sup>3</sup> /s 1: m/h 2: l/s 3: l/min 4: l/h 5: gpm 6: cfm Default: 4	1	R
200	<b>Energy meter serial number first digits</b> ProductionOrderNumber	-	-	0...2'147'483'647	4	R
201	<b>Energy meter serial number last digits</b> ProductionSequenceNumber	-	-	0...2'147'483'647	4	R

No.	Description Comments	Unit	Scaling	Values	Size	Access
202	<p><b>Select meter register</b></p> <p>Value 0 only available for models with MID certification: EV..R2+MID. For non MID certified models value 1 is defined as default.</p> <p>Select between certified meter register and lifetime register.</p> <p>The certified meter register will be reset when the sensor module is replaced. The lifetime register is compensated for glycol (if applicable).</p> <p>Following IDs depend on the selected meter register: ID 51 ID 54 ID 57</p>	–	–	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 product (e.g. DN size) the HVAC application may perform a size limitation within the indicated MP-Bus value range. Each product may have different HVAC value size limitations.

# All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Damper actuators, control valves, sensors and meters represent our core business.

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



## **BELIMO Automation AG**

Brunnenbachstrasse 1, 8340 Hinwil, Switzerland  
+41 43 843 61 11, [info@belimo.ch](mailto:info@belimo.ch), [www.belimo.com](http://www.belimo.com)

