



M-Bus Converter

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General Note

General information	Date	15.01.2022
	Vendor Name	BELIMO Automation AG
	Vendor ID	423
Compatible products M-Bus	Product Name	Converter M-Bus
	Product Model Number	G-22PEM-A01
	Protocol	M-Bus: EN 13757-3:2018
	Product Model Number	EV..R2+MID, EV..R2+(K)BAC, 22PEM-1U..., 22PE-1U..
	Transmission format	1-8-E-1
Parameterisation EV/TEM	Baud rate	300, 600, 1200, 2400, 4800, 9600
	Primary Address	0...250 (Default: 0)
	Secondary Address	000000 if no device is connected to it, otherwise calculated form device serial number
	Manufacturer	BLM
	Tool	through the integrated webserver or Belimo Assistant App
Important note	The thermal energy meters 22PEM-1U... / 22PE-1U.. or the Belimo Energy Valve™ EV..R2+MID / EV..R2+(K)BAC must be set to MP-Bus with the Belimo Assistant App or the Belimo web server. The corresponding MP address is PP.	
Web server		
Web server		
Parameterisation M-Bus	Tool	commercially available M-Bus tools
Note	The system integration of the M-Bus converter on M-Bus and the assignment of the M-Bus address is done with a commercially available M-Bus tool.	

General Note

- ApplicationReset** „Application Reset“ (CI field: 50₁₆) message must be issued.
Sub-code must be a hexadecimal number.
00₁₆ : Reset to default readout (actual values / metric units / real time data).
- Metric / Imperial units** To select the data units the „Application Reset“ (50₁₆) message must be issued.
Sub-code must be a hexadecimal number.
20₁₆ : metric units (actual and historical values)
21₁₆ : imperial units (actual and historical values)
- Historical Data** The converter stores 12 months of data. To select the communication of historical data use the „Application Reset“ (50₁₆) message, where the code selects the month to be transmitted. If no data are present in selected month, an ACK message is sent instead of the data message.

30₁₆ : request all month (each REQ-UD2 you get one month back for a max. of 12month)
31₁₆ : request month 1 (end of last month or January recent past)
32₁₆ : request month 2
33₁₆ : request month 3
34₁₆ : request month 4
35₁₆ : request month 5
36₁₆ : request month 6
37₁₆ : request month 7
38₁₆ : request month 8
39₁₆ : request month 9
3A₁₆ : request month 10
3B₁₆ : request month 11
3C₁₆ : request month 12
- Read out data** REQ-UD2
- M-Bus state** RSP-UD. Is already partially coded in M-Bus specifications. The status byte is used to indicate different potential errors in the meter.

Bit	true	false
0, 1	See table below	See table below
2	Power low	Power OK
3	Permanent error	No permanent error
4	Temporary error	No permanent error
5	Manufacturer specific	Manufacturer specific
6	Manufacturer specific	Manufacturer specific
7	Manufacturer specific	Manufacturer specific

Bit 1	Bit 2	Description
0	0	No error
0	1	Application busy
1	0	Any application error
1	1	Abnormal condition / alarm

- Primary Address** Primary address can be changed by commercially available M-Bus tools.
- Secondary Address** Secondary address can be changed by commercially available M-Bus tools. Therefore, send a „Set Secondary Address“(CI field: 52₁₆) message. Calculated secondary address will still be available as read out data ID15.
- Change Baud rate of M-Bus** The baud rate can be changed by commercially available M-Bus tools. Select the „Set Baud rate“ (CI field: B8₁₆ - BD₁₆) function and set the new baud rate.
- Replacement converter** The protocol converter device can be replaced with a new one. Before replacing the unit, all data must be read out from device, as they will be lost. Then you can replace with a new unit, that will retain the secondary address but will have primary address equal to zero.
- Replacement meter** The meter connected to the protocol converter device can be replaced with a new one. Before replacing the meter, all data must be read out from protocol converter device, as they will be lost. Then it can be replaced with a new meter. The protocol converter will have a new secondary address derived from the meter serial number and a primary address equal to zero.

Datapoint Overview

ID	Name	Unit
1	Time point	-
2	Time point	-
3	Error flag	-
4	Operating time	Seconds
5	Energy accumulation positive	kWh
6	Energy accumulation negative	kWh
7	Volume	l
8	Power	W
9	Volume flow	l/h
10	Flow temperature	°C
11	Return temperature	°C
12	Temperature difference	K
13	Other software version #	-
14	Fabrication # (Series number meter)	-
15	Firmware version #	-
16	Fabrication # (Series number Energy Valve)	-
17	Identification # (secondary address)	-
18	Model version #	-
19	M-Bus state *)	-

*) only displayed with some tools

Datapoints Description

Nr.	Datapoint	Description	Unit																																																			
1	Time point	Actual Local Date Time	-																																																			
2	Time point	Local Date Time, error starting date and time	-																																																			
3	Error flag	Error code <table border="1" data-bbox="614 347 1343 1003"> <thead> <tr> <th>Bit</th> <th>Energy Valve V4</th> <th>Thermal Energy Meter</th> </tr> </thead> <tbody> <tr><td>0</td><td>No communication to actuator</td><td>-</td></tr> <tr><td>1</td><td>Gear disengaged</td><td>-</td></tr> <tr><td>2</td><td>Actuator cannot move</td><td>-</td></tr> <tr><td>3</td><td>Reverse flow</td><td>Reverse flow</td></tr> <tr><td>4</td><td>Flow setpoint not reached</td><td>-</td></tr> <tr><td>5</td><td>Flow with closed valve</td><td>-</td></tr> <tr><td>6</td><td>Actual flow exceeds Vnom</td><td>Actual flow exceeds Vnom</td></tr> <tr><td>7</td><td>Flow measurement error</td><td>Flow measurement error</td></tr> <tr><td>8</td><td>Remote temperature error</td><td>Remote temperature error</td></tr> <tr><td>9</td><td>Flowbody temperature error</td><td>Flowbody temperature error</td></tr> <tr><td>10</td><td>Com. to sensor interrupted</td><td>Com. to sensor interrupted</td></tr> <tr><td>11</td><td>Freeze warning</td><td>-</td></tr> <tr><td>12</td><td>Glycol detected</td><td>-</td></tr> <tr><td>13</td><td>Power setpoint not reached</td><td>-</td></tr> <tr><td>14</td><td>-</td><td>-</td></tr> <tr><td>15</td><td>-</td><td>-</td></tr> </tbody> </table>	Bit	Energy Valve V4	Thermal Energy Meter	0	No communication to actuator	-	1	Gear disengaged	-	2	Actuator cannot move	-	3	Reverse flow	Reverse flow	4	Flow setpoint not reached	-	5	Flow with closed valve	-	6	Actual flow exceeds Vnom	Actual flow exceeds Vnom	7	Flow measurement error	Flow measurement error	8	Remote temperature error	Remote temperature error	9	Flowbody temperature error	Flowbody temperature error	10	Com. to sensor interrupted	Com. to sensor interrupted	11	Freeze warning	-	12	Glycol detected	-	13	Power setpoint not reached	-	14	-	-	15	-	-	-
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