



KRAL Display and Processing Unit.

Series BEM 500

OIE 22en
Edition 2019-07 SW 3.004

Table of contents

- Menu 1: Display – Variables 3
- Menu 2: General settings 5
- Menu 3: Output settings 7
- Menu 4: Linearization K-factors Flowmeter A – Settings 9
- Menu 5: Linearization K-factors Flowmeter B – Settings 10
- Menu 6: Density table 1 – Settings 11
- Menu 7: Density table 2 – Settings 12
- Menu 8: Alarm variables V3.0 13

Menu 1: Display – Variables

Menu No.	Description	Address hex.	No. of words	Decimal places	Range of data value	Explanation of data value	General remarks
1.00	Serial number	4012	2	0	0...999999	No unit	Only readable
	Software	4020	1	3	U16	No unit	Only readable
	Hardware	410A	1	3	U16	No unit	Only readable
1.01	Consumption rate Q	4000	2	1...3	I32	Rate unit	Only readable
1.02	Total T1	4002	2	1...3	+/- 2000000000	Total unit	Read- and resettable
	Total T2	4004	2	1...3	+/- 2000000000	Total unit	Read- and resettable
1.03	Volumeter A Rate QA	4006	2	1...3	I32	Rate unit	Only readable
	Volumeter A Temp. tA	4008	2	1	-400...3920	Temp. unit	Only readable
1.04	Volumeter A Total TA1	4100	2	1...3	+/- 2000000000	Total unit	Read- and resettable
	Volumeter A Total TA2	4102	2	1...3	+/- 2000000000	Total unit	Read- and resettable
1.05	Volumeter B Rate QB	400C	2	1...3	I32	Rate unit	Only readable
	Volumeter B Temp. tB	400E	2	1	-400...3920	Temp. unit	Only readable
1.06	Volumeter B Total TB1	4104	2	1...3	+/- 2000000000	Total unit	Read- and resettable
	Volumeter B Total TB2	4106	2	1...3	+/- 2000000000	Total unit	Read- and resettable
1.07	Actual value	41AC	2	1...3	0...99999999	Total unit	Batching amount
	Nominal value	41AA	2	1...3	0...99999999	Total unit	
	Function	419E	1	0	1...4	1 = Stop 2 = Start 3 = Continue 4 = Cancel	
1.08	Direction change A	41A0	2	0	U32	No unit	Read- and resettable
1.09	Direction change B	41A2	2	0	U32	No unit	Read- and resettable
1.10	Resetting bypass and coll. error message	4108	1	0	1...2	1 = yes 2 = no	For resetting via modbus write 1!
1.11	Brightness	411F	1	0	U16	% of maximum	0...100 %
1.12	Contrast	4120	1	0	U16	% of maximum	0...100 %
1.13	Language	4022	1	0	1...4	1 = German 2 = English 3 = French 4 = Spanish	Standard = 2

Example for 1 decimal (modbus address 4186 =1)

Menu no.	Description	Data value decimal	Corresponds to	
1.01	Consumption rate Q	125	12.5	Rate units
1.03	Volumeter A Temp. tA	4294967276	-2.0	Temp. unit
1.05	Volumeter A Temp. tB	20	2.0	Temp. unit

Remarks to example

If 2 decimals (see menu 2.10) are used, the value for Consumption rate Q is 1.25.

If the rate unit (see menu 2.05) is 1, the unit of all displayed rates is l/sec.

So the result of Consumption rate Q is 1.25 l/sec.

Abbreviations

I32	Signed integer 32 bit = -2147483648...+2147483648; in case of overflow ($>2^{31}$ or $<-2^{31}$) it shows -1
U32	Unsigned integer 32 bit = 0...4294967295
U16	Unsigned integer 16 bit = 0...65536

Remarks to overflow

In case of an overflow, all totals keep their minimum respective maximum value.
These values correspond to a modulus value of - 2 000 000 000 or + 2 000 000 000.

Menu 2: General settings

Menu no.	Description	Address hex.	No. of words	Decimal places	Range of data value	Explanation of data value	Standard value
2.01	Enable password	410C	1	0	1...2	1 = yes 2 = no	2
2.02	Change password	401C	1	0	1...2	1 = no 2 = yes	1
2.03	Select mode	4014	1	0	1...3	1 = volume 2 = vol. at tA 3 = vol. at X°	1
2.04	Select temperature X	4019	1	1	-400...3920	Unit °C or °F	15
2.05	Select rate unit	4016	1	0	1...23	1 = l/sec 2 = l/min 3 = l/h 4 = kg/sec 5 = kg/min 6 = kg/h 7 = t/min 8 = t/h 9 = lb/sec 10 = lb/min 11 = lb/h 12 = USgal/sec 13 = USgal/min 14 = USgal/h 15 = UKgal/sec 16 = UKgal/min 17 = UKgal/h 18 = m³/min 19 = m³/h 20 = g/sec 21 = g/min 22 = ml/sec 23 = ml/min	1
2.06	Select total unit	4015	1	0	1...9	1 = l 2 = kg 3 = t 4 = lb 5 = galUS 6 = galUK 7 = m³ 8 = g 9 = ml	1
2.07	Select temperature unit	4017	1	0	1...2	1 = °C 2 = °F	1
2.08	Select unit density	4018	1	0	1...3	1 = kg/m³ 2 = lb/galUS 3 = lb/galUK	1
2.09	Select density determination	401A	1	0	1...3	1 = density table 1 2 = density table 2 3 = density calculation	3
2.10	Number of decimal places	4186	1	0	1...3		1

Menu no.	Description	Address hex.	No. of words	Decimal places	Range of data value	Explanation of data value	Standard value
2.11	Display start message	411C	1	0	1...2	1 = no 2 = yes	1
2.12	Function pick up	411E	1	0	1...3	1 = NPN 2 = PNP 3 = Namur	2
2.13	Function pulse inputs	4122	1	0	1...2	1 = Counter 2 = Encoder	1
2.14	Link channel	4121	1	0	1...2	1 = A-B 2 = A+B	1
2.15	Threshold value A-B	402C	2	1...3	0...1000000	Unit rate	0
2.16	Averaging display rate	401B	1	0	0...10000	$Tr = x * 0,02s + P$	20
2.17	Deactivate alarm messages	419D	1	0	1...2	1 = no 2 = yes	1
2.18	Maximum flow rate error message	4180	1	0	0...50	% of fn	5
2.19	Minimum temperature Volumeter	4181	1	0	-40...392	Unit °C or °F	-25
2.20	Maximum temperature Volumeter	4182	1	0	-40...392	Unit °C or °F	125
2.21	Reset to factory settings	4123	1	0	1...2	1 = no 2 = yes	1

Description

Tr	Reaction time = time for a 61 % change in display or in analog value, when an abrupt frequency change was simulated. For a 99.9 % change in display, the Tr would be approximately 7 times more.
fn	Frequency of the pulse at nominal flow of flowmeter. The fn is the last still valid frequency of each linearization. This information can be traversed determines how much % of the flowmeter.

Remarks

To reset the factory settings via modbus first write a 1 and afterwards a 2 into the address 4123! (positive edge)

Menu 3: Output settings

Menu-no.	Description	Address hex.	No. of words	Decimal places	Range of data value	Explanation of data value	Standard value
3.01	Function analog outputs	410D	1	0	1...2	1 = 0...10 V 2 = 4...20 mA	2
3.02	Allocation analog output 1	410E	1	0	1...6	1 = Q 2 = QA 3 = QB 4 = T1 5 = TA1 6 = TB1	1
3.03	Scale max. analog output 1	4028	2	1...3	0...1000000	Rate or total unit	1000
3.04	Allocation analog output 2	410F	1	0	1...6	1 = Q 2 = QA 3 = QB 4 = T1 5 = TA1 6 = TB1	2
3.05	Scale max. analog output 2	402A	2	1...3	0...1000000	Rate or total unit	3000
3.06	Average analog No.values	4115	1	0	0...10000	$Tr = x * 0.02s + P$	20
3.07	Function pulse output	4110	1	0	1, 2	1 = Encoder 2 = Independent	2
3.08	Allocation pulse output 1	4111	1	0	1...3	1 = T1 2 = TA1 3 = TB1	1
3.09	Scale pulse output 1	4112	2	1...3	0...1000000	Total unit	10
3.10	Allocation pulse output 2	4114	1	0	1...3	1 = T1 2 = TA1 3 = TB1	1
3.11	Scale pulse output 2	4116	2	1...3	0...1000000	Total unit	10
3.12	Pulse output pulse width	4187	1	0	2...200	Unit = ms	2
3.13	Function relay 1	41A6	1	0	1...6	1 = Off 2 = Bypass 1 3 = Bypass 2 4 = Bypass 3 5 = Batching 6 = Bypass 4	6
3.14	Limit value bypass	4118	2	1...3	0...1000000	Rate unit	0
3.15	Delay bypass	41A7	1	1	0...30000	Unit = s	300
3.16	Waiting period repeat bypass	41A8	1	1	0...30000	Unit = s	300
3.17	Relay 1 switch	41A4	1	0	1...2	1 = Off 2 = On	2
3.18	Relay 2 switch	41A5	1	0	1...2	1 = Off 2 = On	1
3.19	Address modbus	411D	1	0	1...247	Address	1

Description

Tr	Reaction time = time for a 61 % change in display or in analog value, when an abrupt frequency change was simulated. For a 99.9 % change in display, the Tr would be approximately 7 times more.
ms	fmax out [Hz] with setting pulse outputs independent = $1000 / (2 * \text{pulse width in ms})$ fmax out [Hz] with setting pulse outputs Encoder = $1000 / (4 * \text{pulse width in ms})$
Address	Changings of modbus address should always be made at start or end of programing telegram!

Remarks

After changings regarding any pulse output parameters the BEM should be restarted by disconnecting the power supply.

Menu 4: Linearization K-factors Flowmeter A – Settings

Menu-No.	Description	Address hex.	No. of words	Decimal places	Range of data value	Unit	Standard values
4.01	Point 1 Frequency	4032	2	3	0...99 999 999	Hz	1 000 000
	Point 1 K-factor	4034	2	3	1000...999 999 999	P/l	1 000
4.02	Point 2 Frequency	4036	2	3	0...99 999 999	Hz	0
	Point 2 K-factor	4038	2	3	1000...999 999 999	P/l	1 000
4.03	Point 3 Frequency	403A	2	3	0...99 999 999	Hz	10 000
	Point 3 K-factor	403C	2	3	1000...999 999 999	P/l	1 000
4.04	Point 4 Frequency	403E	2	3	0...99 999 999	Hz	50 000
	Point 4 K-factor	4040	2	3	1000...999 999 999	P/l	1 000
4.05	Point 5 Frequency	4042	2	3	0...99 999 999	Hz	100 000
	Point 5 K-factor	4044	2	3	1000...999 999 999	P/l	1 000
4.06	Point 6 Frequency	4046	2	3	0...99 999 999	Hz	500 000
	Point 6 K-factor	4048	2	3	1000...999 999 999	P/l	1 000
4.07	Point 7 Frequency	404A	2	3	0...99 999 999	Hz	1 000 000
	Point 7 K-factor	404C	2	3	1000...999 999 999	P/l	1 000

Example

Menu-No.	Description	Data value decimal	Equates to:
4.01	Point 1 Frequency	4564	4.564 Hz
	Point 1 K-factor	71123	71.123 P/l

Remarks

The number of linearization points is limited by the input of the frequency "0".

So if point 2 frequency = 0 Hz only the one K-factor from point 1 is in operation, therefore first K-factor should be the resulting K-factor of flowmeter.

If we set up a normal linearization in BEM, point 7 frequency is always approx. 100 % of nominal flow of flowmeter. The highest frequency which is in use is always the last point of linearization, which means the point before 0 Hz. That highest frequency will be used to calculate the max. flow for error message. (Alarm 8.07) So if point 2 frequency = 0 Hz, point 1 frequency must be equal to the point 7 frequency.

Menu 5: Linearization K-factors Flowmeter B – Settings

Menu No.	Description	Address hex.	No. of words	Decimal places	Range of data value	Unit	Standard value
5.01	Point 1 Frequency	404E	2	3	0...99 999 999	Hz	1 000 000
	Point 1 K-factor	4050	2	3	1000...999 999 999	P/l	1 000
5.02	Point 2 Frequency	4052	2	3	0...99 999 999	Hz	0
	Point 2 K-factor	4054	2	3	1000...999 999 999	P/l	1 000
5.03	Point 3 Frequency	4056	2	3	0...99 999 999	Hz	10 000
	Point 3 K-factor	4058	2	3	1000...999 999 999	P/l	1 000
5.04	Point 4 Frequency	405A	2	3	0...99 999 999	Hz	50 000
	Point 4 K-factor	405C	2	3	1000...999 999 999	P/l	1 000
5.05	Point 5 Frequency	405E	2	3	0...99 999 999	Hz	100 000
	Point 5 K-factor	4060	2	3	1000...999 999 999	P/l	1 000
5.06	Point 6 Frequency	4062	2	3	0...99 999 999	Hz	500 000
	Point 6 K-factor	4064	2	3	1000...999 999 999	P/l	1 000
5.07	Point 7 Frequency	4066	2	3	0...99 999 999	Hz	1 000 000
	Point 7 K-factor	4068	2	3	1000...999 999 999	P/l	1 000

Example

Menu-No.	Description	Data value decimal	Equates to:
5.01	Point 1 Frequency	16234	16.234 Hz
	Point 1 K-factor	1225123	1225.123 P/l

Remarks

The number of linearization points is limited by the input of the frequency "0".

So if point 2 frequency = 0 Hz, only the one K-factor from point 1 is in operation, therefore first K-factor should be the resulting K-factor of flowmeter.

If we set up a normal linearization in BEM, point 7 frequency is always approx. 100 % of nominal flow of flowmeter. The highest frequency which is in use is always the last point of linearization, which means the point before 0 Hz. That highest frequency will be used to calculate the max. flow for error message. (Alarm 8.21) So if point 2 frequency = 0 Hz, point 1 frequency must be equal to the point 7 frequency

Menu 6: Density table 1 – Settings

Menu-No.	Description	Address hex.	No. of words	Decimal places	Range of data value	Unit	Standard value
6.01	Point 1 Temperature	406A	2	1	-400...3920	°C or °F	-100
	Point 1 Density	406C	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8675
6.02	Point 2 Temperature	406E	2	1	-400...3920	°C or °F	0
	Point 2 Density	4070	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8606
6.03	Point 3 Temperature	4072	2	1	-400...3920	°C or °F	100
	Point 3 Density	4074	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8535
6.04	Point 4 Temperature	4076	2	1	-400...3920	°C or °F	150
	Point 4 Density	4078	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8500
6.05	Point 5 Temperature	407A	2	1	-400...3920	°C or °F	200
	Point 5 Density	407C	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8465
6.06	Point 6 Temperature	407E	2	1	-400...3920	°C or °F	300
	Point 6 Density	4080	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8394
6.07	Point 7 Temperature	4082	2	1	-400...3920	°C or °F	400
	Point 7 Density	4084	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8322
6.08	Point 8 Temperature	4086	2	1	-400...3920	°C or °F	500
	Point 8 Density	4088	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8251
6.09	Point 9 Temperature	408A	2	1	-400...3920	°C or °F	600
	Point 9 Density	408C	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8179
6.10	Point 10 Temperature	408E	2	1	-400...3920	°C or °F	700
	Point 10 Density	4090	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8107
6.20	Density at 15 °C LDO	40BE	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8500
	Density at 15 °C HFO	40BC	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	9750

Example

Menu no.	Description	Value I32	Equates to standard unit:
6.05	Point 1 Temperature	162	16.2 °C
	Point 1 Density	8500	850.0 kg/m ³

Description

1 or 3	The number of decimal depends on selection of density unit: kg/m ³ = 1 decimal; lb/Usgal + lb/Ukgal = 3 decimals
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Remarks

The number of density table values is limited by the input of the density value "0".
Menu 6.20 is only visible if density calculation is selected in menu 2.09.

Menu 7: Density table 2 – Settings

Menu no.	Description	Address hex.	No. of words	Decimal places	Range of data value	Unit	Standard value
7.01	Point 1 Temperature	4092	2	1	-400...3920	°C or °F	-100
	Point 1 Density	4094	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8675
7.02	Point 2 Temperature	4096	2	1	-400...3920	°C or °F	0
	Point 2 Density	4098	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8606
7.03	Point 3 Temperature	409A	2	1	-400...3920	°C or °F	100
	Point 3 Density	409C	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8535
7.04	Point 4 Temperature	409E	2	1	-400...3920	°C or °F	150
	Point 4 Density	40A0	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8500
7.05	Point 5 Temperature	40A2	2	1	-400...3920	°C or °F	200
	Point 5 Density	40A4	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8465
7.06	Point 6 Temperature	40A6	2	1	-400...3920	°C or °F	300
	Point 6 Density	40A8	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8394
7.07	Point 7 Temperature	40AA	2	1	-400...3920	°C or °F	400
	Point 7 Density	40AC	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8322
7.08	Point 8 Temperature	40AE	2	1	-400...3920	°C or °F	500
	Point 8 Density	40B0	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8251
7.09	Point 9 Temperature	40B2	2	1	-400...3920	°C or °F	600
	Point 9 Density	40B4	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8179
7.10	Point 10 Temperature	40B6	2	1	-400...3920	°C or °F	700
	Point 10 Density	40B8	2	1 or 3	0...99 999 999	kg/m ³ , lb/galUS or lb/galUK	8107

Example

Menu-No.	Description	Value I32	Equates to standard unit:
7.01	Point 1 Temperature	-20	-2.0 °C
	Point 1 Density	8500	850.0 kg/m ³

Description

1 or 3	The number of decimal depends on selection of density unit: kg/m ³ = 1 decimal; lb/Us gal + lb/Uk gal = 3 decimals
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Menu 8: Alarm variables V3.0

Menu no.	Description	Address hex.	No. of words	Data range	Description Data range	Triggered by	Canceled permanently by	Possible checks or additional information
8.01	Alarm Password not valid	4140	1	0...1	0 = Off 1 = On	Wrong password entered	Not needed	Check password
		4160	1	0...65535	Counter reading			
8.02	Alarm K-factors Vol. A. Frequencies not in ascending order!	4141	1	0...1	0 = Off 1 = On	Wrong set up in any frequency of menu 4, see description	Correction of wrong set up	Check all frequencies in menu 4!
		4161	1	0...65535	Counter reading			
8.03	Alarm K-factors Vol. B. Frequencies not in ascending order!	4142	1	0...1	0 = Off 1 = On	Wrong set up in any frequency of menu 5, see description	Correction of wrong set up	Check all frequencies in menu 5!
		4162	1	0...65535	Counter reading			
8.04	Alarm Density table 1. Temperatures not in ascending order!	4143	1	0...1	0 = Off 1 = On	Wrong set up in any temperature of menu 6, see description	Correction of wrong set up	Check all temperatures in menu 6!
		4163	1	0...65535	Counter reading			
8.05	Alarm Density table 2. Temperatures not in ascending order!	4144	1	0...1	0 = Off 1 = On	Wrong set up in any temperature of menu 7, see description	Correction of wrong set up	Check all temperatures in menu 7!
		4164	1	0...65535	Counter reading			
8.06	Alarm Bypass valve active. Check Volumeters!	4145	1	0...1	0 = Off 1 = On	Depends on bypass function, see operating instruction	Clearance of triggers and reset manually in menu 1.10 or via modbus	Check all regarding set up values!
		4165	1	0...65535	Counter reading			
8.07	Alarm Maximum flow rate A exceeded. Check pick up!	4146	1	0...1	0 = Off 1 = On	Wrong set up (see highest frequency in menu 4), EMC problems BEG or overflow of flowmeter A	Clearance of triggers	Compare QA in menu 1.03 with max. flow rate
		4166	1	0...65535	Counter reading			
8.08	Alarm Volumeter A or B out of temperature range!	4147	1	0...1	0 = Off 1 = On	Wrong set up (see menu 2.19 + 2.20) or see description	Clearance of triggers	Check displayed temperatures in menu 1.03 and 1.05 (-40...200°C?).
		4167	1	0...65535	Counter reading			
8.09	Alarm Analog output 1 or 2 scale max exceeded!	4148	1	0...1	0 = Off 1 = On	Wrong set up (see menu 3.03 + 3.05) or see description	Clearance of triggers	Check regarding value in menu 1.01-1.06, depends on allocation in menu 3.02 or 3.04!
		4168	1	0...65535	Counter reading			
8.10	Alarm Pulse output 1 or 2 max. frequency exceeded!	4149	1	0...1	0 = Off 1 = On	Wrong set up (see menu 3.09 + 3.11) or see description	Clearance of triggers	Check regarding value in menu 1.02, 1.04, 1.06, depends on allocation in menu 3.08 or 3.10!
		4169	1	0...65535	Counter reading			

Menu no.	Description	Address hex.	No. of words	Data range	Description Data range	Triggered by	Canceled permanently by	Possible checks or additional information
8.11	Alarm Direction changes A (see menu 1.08) exceed 30/s. Check signals!	414A	1	0...1	0 = Off 1 = On	Function of pulse inputs in menu 2.13 of BEM must be Encoder! Direction changes of flowmeter A exceed 30 per second.	Find hydraulic reasons for pressure pulsations and eliminate them, or use pressure dampers to improve duration of ball bearings! Use vibration dampers. Change defect pick up. Correct pick up connection.	Check both pick up signals simultaneously with an oscilloscope: If both signals shows square waves: More than 30 direction changes per second occurred. If there is only a single pulse signal and definitively no flow, the signal is caused by some strong vibrations, otherwise the pick up with no signal is defective.
		416A	1	0...65535	Counter reading			
8.12	Alarm Direction changes B (see menu 1.09) exceed 30/s. Check signals!	414B	1	0...1	0 = Off 1 = On	Function of pulse inputs in menu 2.13 of BEM must be Encoder! Direction changes of flowmeter B exceed 30 per second.	Find hydraulic reasons for pressure pulsations and eliminate them, or use pressure dampers to improve duration of ball bearings! Use vibration dampers. Change defect pick up. Correct pick up connection.	Check both pick up signals simultaneously with an oscilloscope: If both signals shows square waves: More than 30 direction changes per second occurred. If there is only a single pulse signal and definitively no flow, the signal is caused by some strong vibrations, otherwise the pick up with no signal is defective.
		416B	1	0...65535	Counter reading			
8.13	Alarm Temperature sensor failure Volumeter A!	414C	1	0...1	0 = Off 1 = On	Temperature sensor of flowmeter A is wrongly connected or defect.	Change defect temperature sensor A or correct its connection	Check also displayed temperature in menu 1.03: TempA: --.-°
		416C	1	0...65535	Counter reading			
8.14	Alarm Temperature sensor failure Volumeter B!	414D	1	0...1	0 = Off 1 = On	Temperature sensor of flowmeter B is wrongly connected or defect.	Change defect temperature sensor B or correct its connection	Check also displayed temperature in menu 1.05: TempB: --.-°
		416D	1	0...65535	Counter reading			
8.15	Alarm Electronic unit out of temperature range!	414E	1	0...1	0 = Off 1 = On	Temperature inside BEM is out of range	Choose another installation point	Check ambient temperature, allowed range is: -20...70°C
		416E	1	0...65535	Counter reading			
8.16	Alarm New density unit. Check density values!	414F	1	0...1	0 = Off 1 = On	Selection of a new density unit manually in menu 2.08 or via modbus	Not needed	Check all density values in in the following menus: 6.01-6.07, 7.01-7.07
		416F	1	0...65535	Counter reading			
8.17	Alarm New temperature unit. Check temperature values!	4150	1	0...1	0 = Off 1 = On	Selection of a new temperature unit manually in menu 2.07 or via modbus	Not needed	Check all temperature values in the following menus: 2.19, 2.20, 6.01-6.07, 7.01-7.07
		4170	1	0...65535	Counter reading			
8.18	Alarm New rate unit. Check analog output scale!	4151	1	0...1	0 = Off 1 = On	Selection of a new rate unit manually in menu 2.05 or via modbus	Not needed	Check all rate values in the following menus: 2.15, 3.03, 3.05, 3.14
		4171	1	0...65535	Counter reading			
8.19	Alarm New total unit. Check pulse output scale!	4152	1	0...1	0 = Off 1 = On	Selection of a new total unit manually in menu 2.06 or via modbus	Not needed	Check all total values in the following menus: 1.07, 3.03, 3.05, 3.09, 3.11
		4172	1	0...65535	Counter reading			

Menu no.	Description	Address hex.	No. of. words	Data range	Description Data range	Triggered by	Canceled permanently by	Possible checks or additional information
8.20	Alarm Mode changed. Check values density determin!	4153	1	0...1	0 = Off 1 = On	Selection of a new mode manually in menu 2.03 or via modbus	Not needed	Check all values in the following menus: 1.07, 2.15, 3.03, 3.05, 3.09, 3.11, 3.14
		4173	1	0...65535	Counter reading			
8.21	Alarm Maximum flow rate B exceeded. Check pick up!	4154	1	0...1	0 = Off 1 = On	Wrong set up (see highest frequency in menu 5) EMC problems BEG or overflow of flowmeter B	Clearance of triggers	Compare QB in menu 1.05 with max. flow rate
		4174	1	0...65535	Counter reading			

1. **Max. flow rate**

Frequency of the last point (before 0 Hz) of the linearization A + setting in menu 0.08:
Maximum flow rate error in %

2. **Reset all alarms**

At address 4139 one word = write 1

3. **Reset counter reading x**

At addresses 4160...4173 one word = write 0

Remarks

For acknowledgement of an alarm and to confirm the reading of the alarm text the user has to push the SET button on BEM, or modbus master has to send the value 1 to the address 4108 (see also menu 1.10).

After the acknowledgement the displayed alarm text disappears permanently, as long as no new trigger for alarm happens.

For cause and elimination of alarms in detail see operating instructions.

