



## KRAL BEM Electronic.

Electronic units that are coordinated to KRAL flowmeters and their diverse applications.



**AUSTRIA IS GREEN.  
KRAL THINKS GREEN.**

**WE RESPECT THE NATURAL ENVIRONMENT  
IN WHICH WE WORK AND LIVE.**

**OUR FLOWMETERS FOR LOW  
SULFUR FUELS ARE PROOF OF THAT.**

### Performance Characteristics.

Technical information of KRAL electronics.



Image scale 1:1

- Display: LCD 76 x 25 mm, contrast and illumination software-adjustable.
- Keys: 5 robust micro-switches.
- Units: SI, UK or US units. Total, rate as volume or mass. Temperature, density.
- Measured value: Total, flow rate, accumulated total.
- Power supply: 24 V DC.
- Environment: Protection class IP65, robust plastic casing. Operating temperature -20 to +70 °C.
- Mounting: In the control cabinet, on the flow measuring device, wall mounting or on the piping.
- Signal forwarding: Scalable 4 to 20 mA or 0 to 10 V analog outputs, scalable pulse outputs, Modbus.

## Clear Benefits of the KRAL Electronic. Designed for various applications .



### **Coordinated to the flowmeters and their applications.**

Users of conventional universal display units often cannot make use of their device's options. There is often a lack of functions that are important for special applications.

KRAL electronics BEM 300 and BEM 500 aid in the performance of KRAL Volumeter. The high quality electronic components and evaluation algorithms used, maintain precisely measured flow values to be shown on the display as well as the signal outputs. The BEM 500 uses KRAL calibration values for linearization. Temperature differences and liquid pulsations which can falsify the readings are corrected.

### **Perfect operation, informative display.**

A display unit must supply the required information and assure accurate operation.

The KRAL BEM 300 and 500 always display the measured flow values with their units. The display is clear and very easy to read. There is a choice of four languages. KRAL sets up the units, the calibration factors and the density tables to meet customer specifications. If you need to make changes, an easy to follow menu is available including configuration software for PCs. Contrast and brightness are adjustable.

### **Self-diagnostic and monitoring.**

The BEM 300 and 500 protect KRAL Volumeter and the customer's installation.

The flow and temperature ranges of the flowmeters are stored in the electronics and if values are exceeded then alarms are displayed. A bypass relay can be activated using flow rate limit value. The function of the temperature sensors is monitored. Knowing the temperature, the flow volume, the flow direction and the consumption assures the integrity of the installation.

Technical data.		BEM 300	BEM 500
Description		one channel, display of flow rate, 2 resettable totals, pulsation compensation, analog and pulse output, Modbus RTU interface	two channels, display of flow rate, 6 resettable totals, temperature, linearization, pulsation compensation with counter of flow direction change, analog, relay and pulse outputs, Modbus RTU interface
Power supply		24 V DC $\pm$ 20 %	same as BEM 300
Environment	Operating temperature Storage temperature Air moisture content EMC Shock Vibration	-20 bis +70 °C -20 bis +80 °C 97 %relative humidity EN 61 326 EN 61 373 EN 60 068-2-47 EN 60 068-2-64	same as BEM 300
Casing	Mounting  Dimensions Protection class Material  Mass	wall mounting, installation, control cabinet mounting 114x114x116 mm (WxHxD) IP65 plastic, UV-resistant coating 1 kg	same as BEM 300
Sensor	Sensor type Sensor supply Ub Rate accuracy Frequency	PNP, NPN, Namur 24 V DC, 8,2 V < 0,1 % 20 kHz	PNP, NPN, Namur, PT100 24 V DC, 8,2 V < 0,1 % 20 kHz
Operation and electronics	Display  Keyboard	LCD, 4 lines, 20 characters, with backlighting 5 robust micro-switches	same as BEM 300
Analog output	Range  Resolution	1 at 4 to 20 mA or 0 to 10 V (Cycle time 20 ms) 16 bit	2 at 4 to 20 mA or 0 to 10 V (Cycle time 20 ms) 16 bit
Pulse output	Maximum frequency	1 output at 250 Hz	2 outputs at 250 Hz direction of rotation option
Relay output	Function Voltage at nominal load Switching current, resistive Switching current, inductive		break contact, make contact 250 V AC, 30 V DC 6 A AC/DC 2 A AC/DC
Bus	Type  Baud rate Data format	Modbus RTU via RS 232 or RS 485 (slave) 9600 baud 8N1 (8 data bits, no parity, 1 stop bit)	same as BEM 300

## Standard Flow Measurement.

Measurement values in which you can trust.



### Flow rate.

The flow rate is displayed with a choice of units, such as l/min, galUS/h or kg/h. The temperature indicates the actual temperature of the liquid in Volumeter A. If the temperature is outside the valid range for this Volumeter, an alarm message is displayed.



### Total.

The flow volume is displayed with a choice of units such as l, galUS or kg. Total 1 can be reset without a password, Total 2 requires a password.



### Consumption measurement.

When measuring consumption, for example in engines or burners, the measurement result is calculated by subtraction. Because of error propagation, the individual measuring devices need to be very precise to ensure that the system keeps measuring accurately. Since KRAL Volumeter are robust precision flowmeters, they are very often used to measure consumption. So with the BEM 500, consumption is the first display 1.01.



### Connecting a second flowmeter.

The flow rate and flow volume of the second Volumeter B are also displayed with a choice of units. The temperature for the rate is given in °C or °F. Two Volumeters are usually connected to measure consumption. With the BEM 500, it is possible to take two independent measurements with just one set of electronics and two KRAL Volumeter.

