

# SERIES E-8000

## Digital Readout / Control Systems



### > Single and Dual Channel Modules

Bronkhorst High-Tech B.V., manufacturers of advanced mass flow metering and control systems, offer digital Readout/Control Modules for use with digital Mass Flow Meters/Controllers, Pressure Meters/Controllers and other transmitters and transducers with RS232 communication. The E-8000 Series have one or two colour TFT displays per module for indication of measured/totalised values and a push button menu to easily enable the user to change the setpoint, reset the counter value, select other fluids and many functions more.

### > Multi Channel Configurations

Based on the modular technique of the E-8000 series, it is easy to assemble multi channel configurations in 1/2 19" and 19" housings, either for rack mount or table top. The exact number of channels to be served with one (1/2 19") or two (19") power supplies, depends on the type of instruments (meters/controllers) to be connected. For most applications one power supply can serve at least four channels.



### > Configurations for CEM-system

For Controlled Evaporation Mixing (CEM) systems a single channel module for temperature control can be integrated into a 1-channel cassette and 1/2 19" or 19" housings. This module is available with or without display and with various fieldbus options.

### > Features

- ◆ Bright, wide angle, 1.8" display (TFT technology)
- ◆ User friendly operation, menu driven with 4 push buttons
- ◆ Indication/operation/configuration of
  - measured value (direct or %)
  - setpoint
  - totalised flow
  - fluid / tag number
  - control characteristics
  - fieldbus settings
  - alarm functions (min/max, response, counter)
  - fluid selection (up to 8 fluids/curves stored in MFM/MFC)

### > Specifications

#### Mechanical:

- ◆ 1- or 2-channel table top housing (1 module)
- ◆ 1- or 2-channel cassette for panel mounting (1 module)
- ◆ 1/2 19" table top housing (max. 3 modules)
- ◆ 1/2 19" rack housing (max. 3 modules)
- ◆ 19" table top housing (max. 6 modules)
- ◆ 19" rack housing (max. 6 modules)
- ◆ As an option, 1/2 19" and 19" housings can be supply with front handles or carrying handles
- ◆ An overview of the dimensions can be found on the last page

#### Electrical:

- ◆ Mains voltage 100...240 Vac (50...60 Hz)
- ◆ Output signal/setpoint signal: Digital: FLOW-BUS (RS-485) or RS-232
- ◆ Option for CEM-modules only: PROFIBUS DP, DeviceNet™, Modbus or EtherCAT® interface
- ◆ Subminiature D-connector socket for RS-232 instrument connection
- ◆ RJ45-connection for connection with FLOW-BUS communication
- ◆ Power Supply capacity +24 Vdc, 1.25 A (30 W)

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## > Model number identification

### I) Model key housing, mains supply and bus options

E-8	N	N	N	-	A	-	N	A	....
					Code			Bus options	
					0			no external communication	
					A			RS232	
					R			FLOW-BUS	
					Z			specified	
					Code			Mains and instrument power supply	
					0			n.a.	
					1			<sup>1) 2)</sup> 100...240Vac / 24Vdc instrument/FLOW-BUS single supply	
					2			<sup>3)</sup> 100...240Vac / 24Vdc instrument/FLOW-BUS dual supply	
					3			<sup>1) 2)</sup> 220...240Vac / 24Vdc instrument/FLOW-BUS single supply	
					4			<sup>3)</sup> 220...240Vac / 24Vdc instrument/FLOW-BUS dual supply	
					5			<sup>1) 2)</sup> 110...120Vac / 24Vdc instrument/FLOW-BUS single supply	
					6			<sup>3)</sup> 110...120Vac / 24Vdc instrument/FLOW-BUS dual supply	
					7			<sup>4)</sup> 220...240Vac Mains supply	
					8			<sup>4)</sup> 110...120Vac Mains supply	
					9			special	
					Code			Handles	
					0			no handles	
					1			front handles	
					2			carrying handle	
					Code			Housing	
					1			½ 19" tabletop housing	
					2			19" tabletop housing	
					3			½ 19" rack housing	
					4			19" rack housing	
					5			tabletop cassette	
					6			panelmount cassette	
					9			special	

<sup>1)</sup> Single supply in cassette, max. load: 15 Watt  
<sup>2)</sup> Single supply in ½ 19" housing, max. load: 30 Watt  
<sup>3)</sup> Dual supply in 19" housing, max. load: 2x30 Watt  
<sup>4)</sup> Mains supply for CEM only

### II) Model key power supply modules

E-8	N	N	N	-	A	-	N	N	....
					Code			Rear panel	
					0			FLOW-BUS Power Supply (only at 1 <sup>st</sup> or 2 <sup>nd</sup> Supply unit)	
					A			2x 9pSub Instrument Power Supply	
					Code			Front panel	
					0			blind	

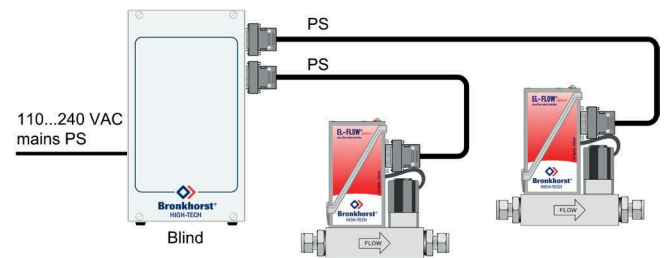
### III) Model key readout/control modules

E-8	N	N	N	-	A	-	N	A	....
					Code			Rear panel	
					0			none, FLOW-BUS terminal only	
					A			RS232 instrument readout	
					Code			Front panel	
					0			blind	
					1			1 display	
					2			2 displays	

## > Examples of typical configurations

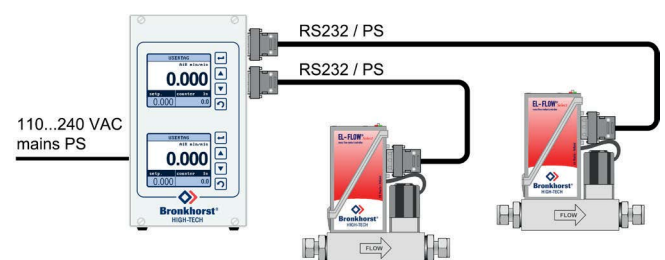
### Blind power supply

By means of a blind power supply module one or two instruments can be powered (total power consumption max. 15 W). The model key for this typical example is **E-8501-0-0A**



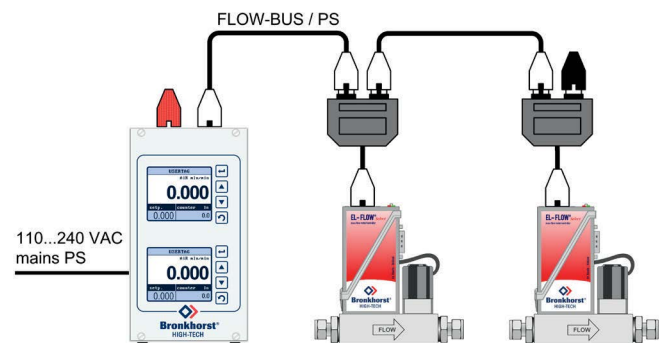
### Instrument terminal

Via RS232 one or two instruments can be hooked up per module. The model key for this typical example is **E-8501-0-2A**



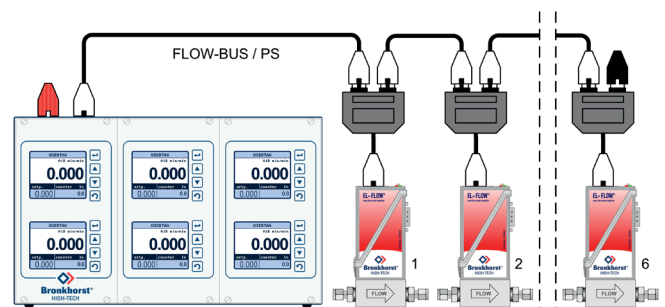
### FLOW-BUS terminal

FLOW-BUS is a field bus, designed by Bronkhorst, based on RS485 technology, for digital communication between digital devices, offering the possibility of host-control by PC or digital R/C-module (E-8000 or BRIGHT). Below example shows two instruments with integrated FLOW-BUS interface in a bus configuration with an E-8000 module. The model key for this typical example is **E-8501-R-20**



Below you will find a FLOW-BUS set-up with 6 Mass Flow Meters.

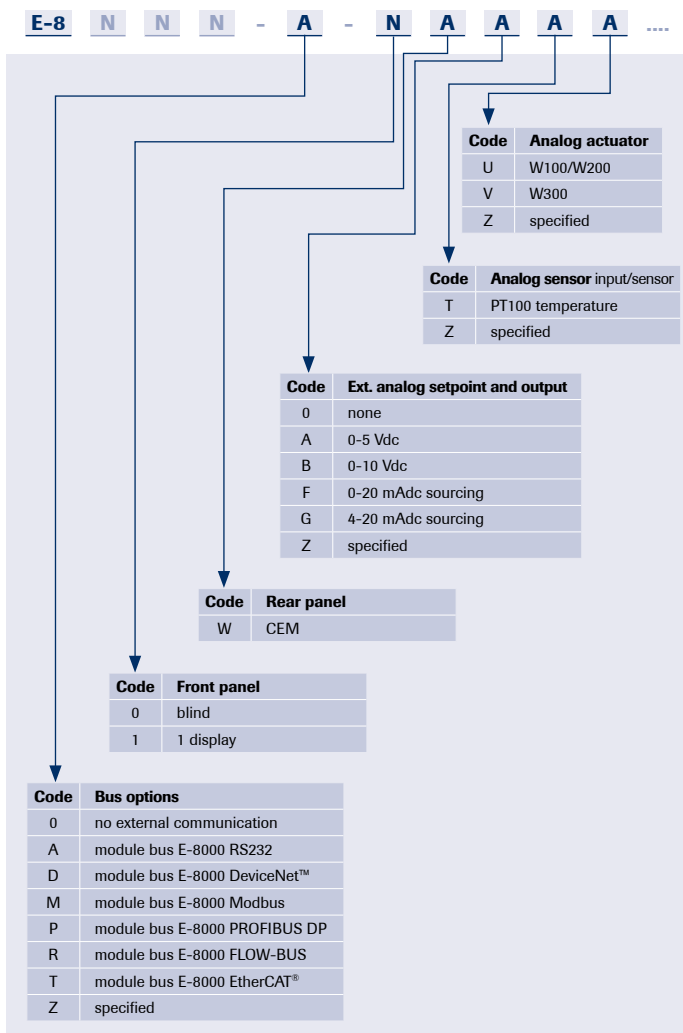
The model key for this example is **E-8101-R-20-20-20**



Alternatively only one display can be used to readout these instruments sequentially; model key for this option is **E-8101-R-10-00-00**

## > Model number identification

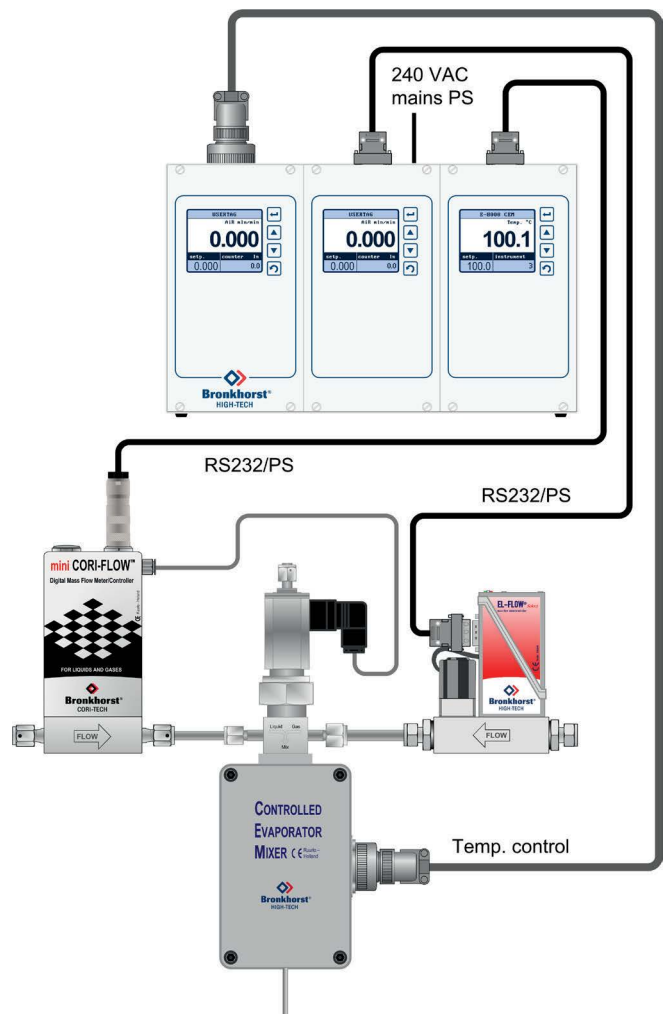
### IV) Model key CEM (Controlled Evaporation Mixing) modules



## > Examples of typical configurations

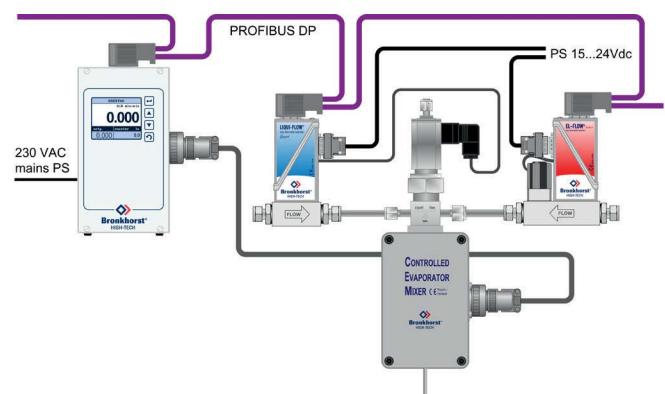
### CEM-System, RS232 set-up

The following hook-up drawing illustrates a typical example of a stand-alone Controlled Evaporation Mixing (CEM) system, consisting of a Mass Flow Meter for liquid (e.g. a precursor or water used for humidification purposes), a Mass Flow Controller for carrier gas and a mixing device with subsequent heater element. The E-8000 unit powers the three devices and communicates via RS232. Model number for this example is **E-8103-0-1WATU-10-10**



### CEM-System, fieldbus set-up

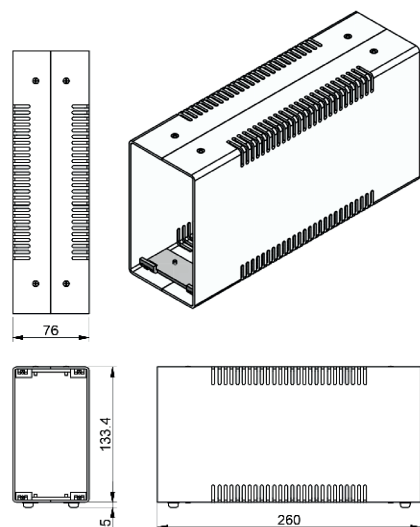
When the Controlled Evaporation Mixing (CEM) system should be part of a fieldbus system, the set-up may be arranged as in below drawing, where the devices are hook-up to a PROFIBUS network. Model number for the PS/Readout in this illustration is **E-8503-P-1WATU**



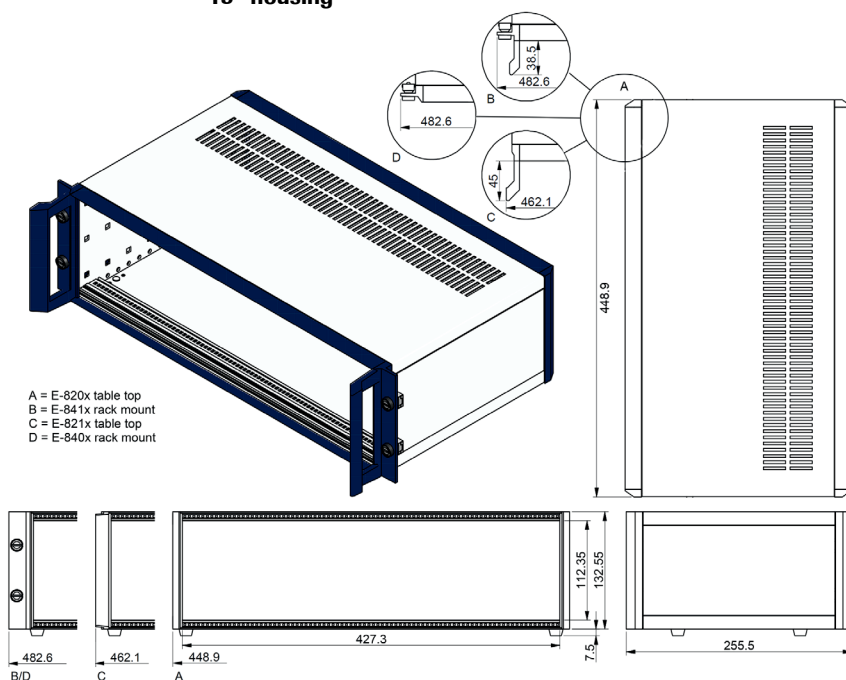
Fieldbus connections for CEM temperature control

## > Dimensions

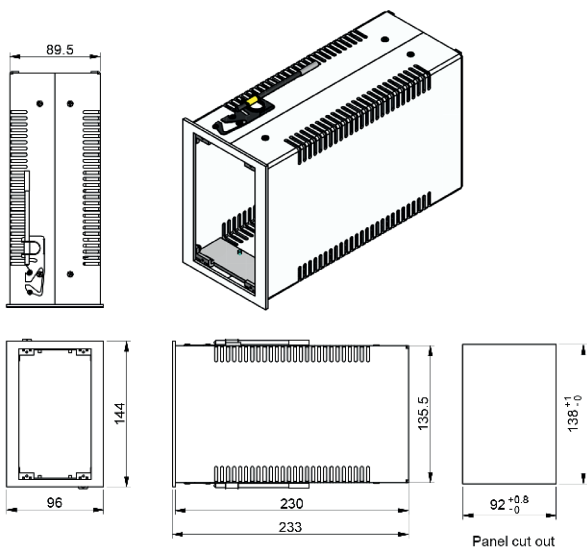
### 14TE Cassette table top housing



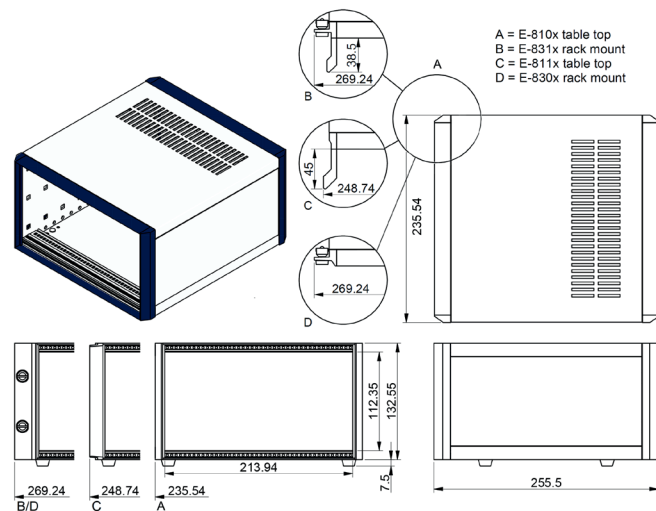
### 19" housing



### 14TE Cassette rack mount housing



### 1/2 19" housing



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