

# **EMS 600**

Service instructions



## 1. Device description

The EMS600 (fig. 1) is a hand-operated device for signals measurement from the force sensors, load cells and torque sensors. Signal from the sensor is amplified, converted to a number, calculated and then presented on a display. It is also possible to read the value via USB interface to a PC.

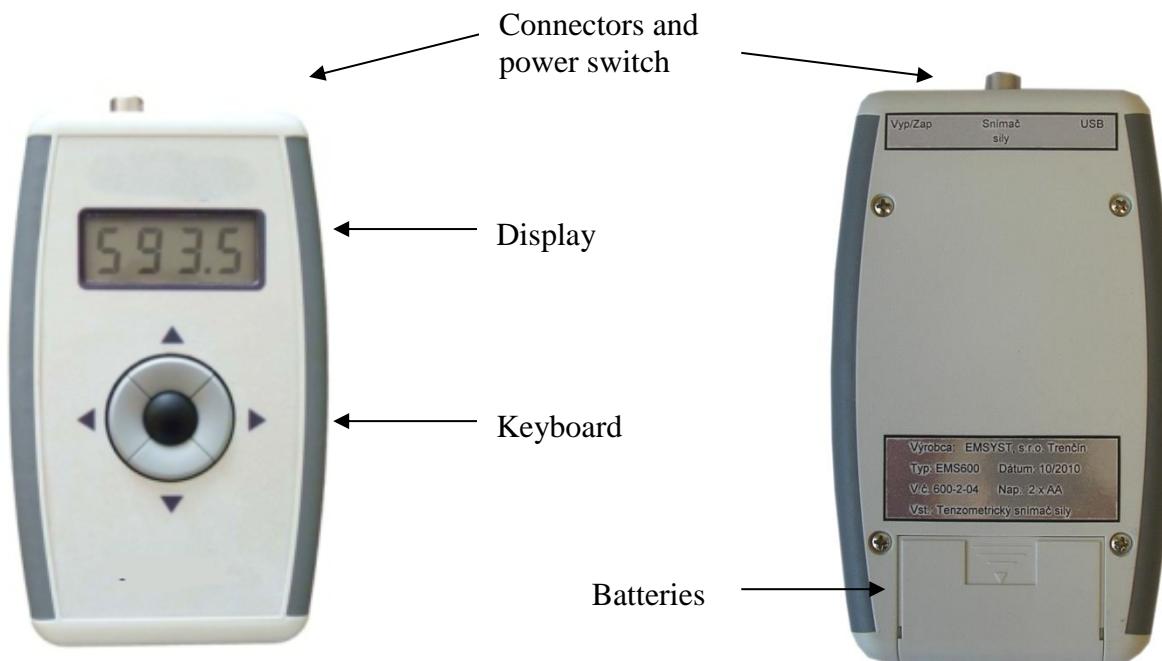


Fig. 1 EMS600

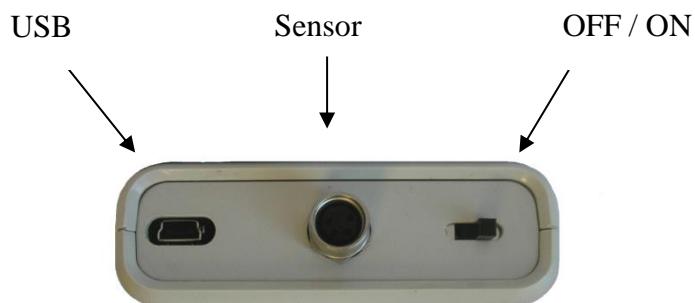


Fig. 2 EMS600, Connectors and Power switch

## 2. Connection

### Sensor connection

A sensor is connected through connector Binder, Series 768, Product No 99-3383-100-04, the wiring diagram is on the fig. 3. This is the front view on the cable-connector, colours of wires are only for specific sensors!

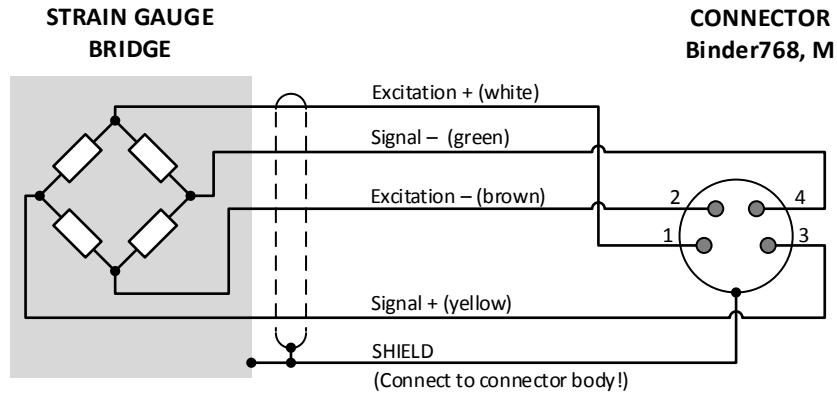


Fig. 3. Sensor connection.

### Connection to computer

Connect the device to computer with standard USB cable. There is USB Mini – B connector on the device. The connector layout is on the figure 4.



Pin	Názov	Popis
1	VCC	+ 5 VDC
2	D-	Data -
3	D+	Data +
x	NC	No connect
4	GND	0 V

Fig. 4 USB interface

## 3. Operating

Connect a sensor and switch-on the device. After switching-on the number of the last connected sensor appears on the display (e. g. **Sn1** ), then type of the device (**EMS600** ) and then a measured value. At the same time the batteries are checked. If the batteries are discharged (the LO BAT is displayed), you can't use the device. Please replace the batteries.

In the ordinary way the value of the measured signal is presented immediately on the display. If the signal is too high, the range is overflowed and “oooo” is displayed. If the signal is too low then “uuuu” is displayed. Please, change the load of the sensor or set-up again the device.

EMS600 can be set-up through the keyboard



Functions of the keyboard:

- ▲ display of max value (see part 4 : Menu / KEYb / doVn)
- ▼ display of min value or function HOLD (see part 4 : Menu / KEYb / doVn)
- ◀ Menu input
- ▶ no function
- zero setting (max. till 50 % of the range)

#### 4. Set-up

The device EMS600 can work with 4 various force sensors. Each sensor has its own number from 1 to 4 in the device and each number has own parameter set. After switching-on the device displays the number of the last used sensor (e.g. ***Sn1***). Immediately after switching-on the number can be changed and then the device operates with this new sensor (with new parameter set). Of course, it is not necessary to change the number and then the device operates with the last set sensor.

To enter the menu press the key ▲, the device displays ***rnG*** (see Fig. 5). To move between items of the menu use the keys ▼ or ▲, to change the item press the key ●. After pressing ● change the value of item with ▼ or ▲. To save the set-up value press again ●, for leaving without saving press ▲. The values are saved even after power is turned off.

Menu description (there are default values in brackets)

***rnG*** (9999) Range of the display. The range can be set from -9999 to 9999, after overload max value the device displays ***oooo***. Min value can't be set, it is automatically negative value of the range. For example if the max value is 1000, then the min value is -1000. By overload of min value the ***uuuu*** will be displayed.

***dP*** (0.0) Position of decimal point. It is possible to set-up one, two, three or no decimal places.

***dIV*** (1) Division. It is possible to set-up division 1, 2, 5 or 10.

***Mr*** (5) Measurement rate. Possible values: 1/s, 5/s or 20/s.

***CAL*** Calibration. The device can be calibrated in 2 points.

Procedure of calibration: Unload the sensor and choose ***CAL*** in the device menu. Then press ●. The device displays ***CAL1*** and then ***0.0***. Now set-up the requested value and then again press ●. The first point is calibrated. After some seconds the ***CAL2*** and then value which was in ***rnG*** setting will be displayed. Load the sensor (it is recommended 50% of nominal value at least) and change the value on the display. The display value should be the same as the load of the sensor. Then press again ●. If procedure of calibration was regular, the ***ok*** will be

displayed and new calibration is saved. Otherwise the device displays ***Err*** and the last valid calibration is active.

***KEYb - doVn*** (1) Keyboard. There is submenu ***doVn*** in the item ***KEYb***. By the ***doVn*** it is possible to assign a function for the key **▼**. Functions for variuos values of ***doVn*** are in the table below.

Value of <b><i>doVn</i></b>	Function
1	Pressing <b>▼</b> displays min value for 3 seconds Pressing <b>▲</b> displays max value for 3 seconds
2	Pressing <b>▼</b> holds the display for 6 seconds
3	Pressing <b>▼</b> holds the display permanent. Subsequent pressing <b>▼</b> abort the hold function (after the lapse of 6 seconds).

Note. The min a max values are not saved in a FLASH memory, after switching-off they are lost. It is possible to clear the both values manually too. During display max (or min) value press the key **•** until the display turn off. The new values (max or min) are noticed immediately.

***rES*** Reset of the device. After confirm ***rES*** it will be ***A*** displayed and after repeated confirm the factory values (the values in brackets) will be active.

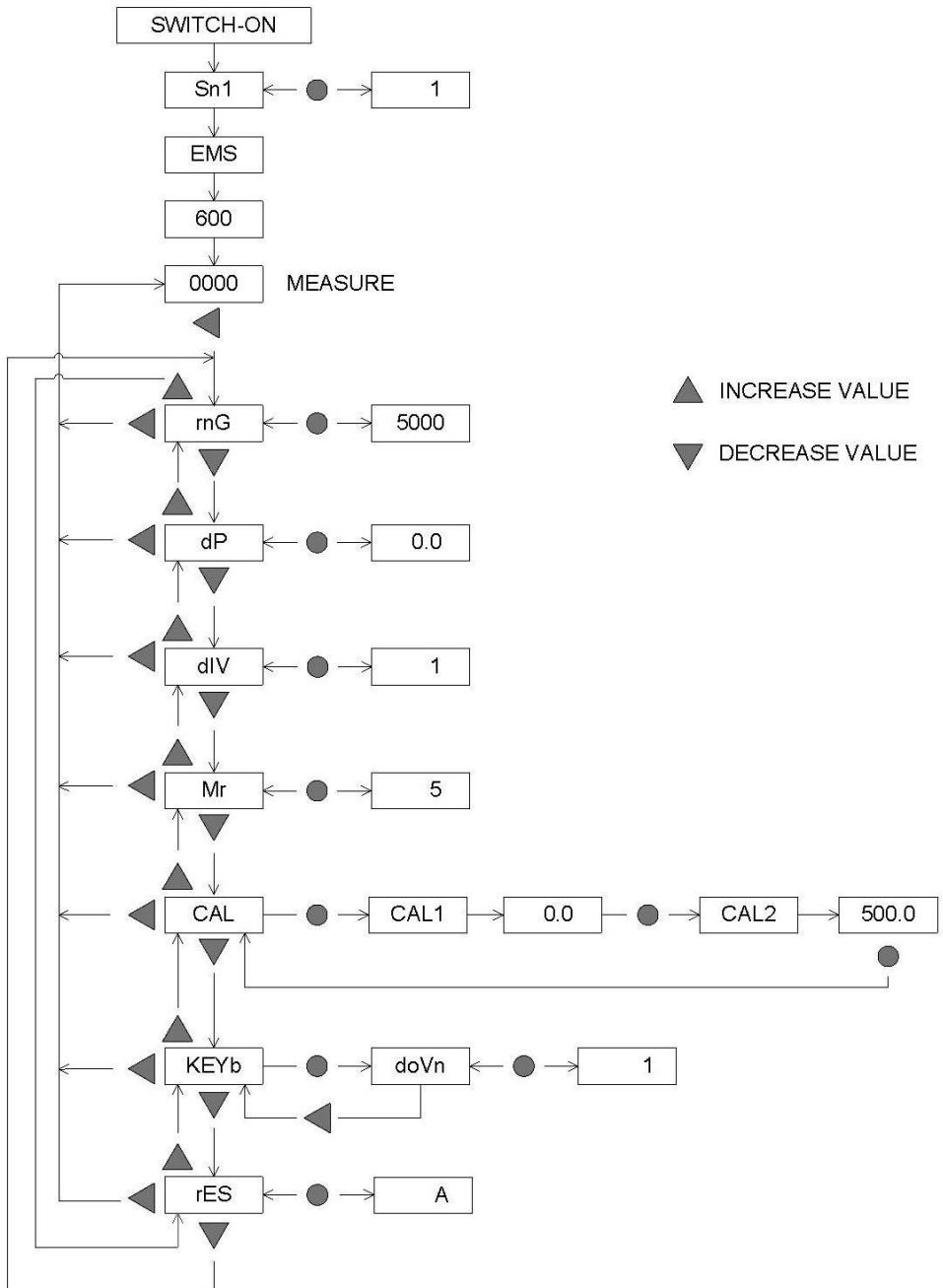


Fig. 5 Menu of the device

## 5. USB interface

For communication with computer connect both devices with USB cable. In case this is the first connection, the communication - driver will be installed on the computer automatically. Then operating system assigns a free COM-port to the device (e.g. COM5). Via this virtual COM-port device communicates. For communication, use the software EMS Center on the producer's home page. EMS Center software is used for communication with the device. It is available for free on producer's home page

Parameter of communication:

- Baud rate: 38400, 8 bit, without parity, 1 stop bit.
- Command for request of a measurement value (ASCII characters): **M?**
- Answer from the device: value in ASCII characters e.g. **14,8**
- Answer by incorrect command: **?**
- Terminal characters: **CR, LF** (obligatory)

## 6. Maintenance

No maintenance is necessary, only to replace batteries regularly. If the device has not been used for a long time, put out the batteries.

## 7. Technical parameter

Power supply	2 x alkaline battery 1,5V, size AA
Battery current	approx. 20 mA
Operating time	min 40 hours
Power supply of sensor	3 VDC
Resistance of sensor	min 300 Ω
Sensitivity of sensor	1 ... 2.5 mV/V
Display accuracy	4 digit (-9999 ... 9999)
Communication	USB 2.0
Working temperature	0° ... 60° C
Covering	IP40
Housing material	ABS
Dimensions	154 x 88 x 28 mm
Weight	230 g

## 8. Manufacturer and service

Manufacturer provides a warranty on this device 24 month. For warranty service contact the supplier:

MEGATRON, s.r.o.  
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