



### Special features

- Mechanical design identical to **EMS40** type
- Built-in signal conditioner, model of sensor:
  - **EMS41-U** – with voltage output
  - **EMS41-I** – with current output
- Power supply: **+24 VDC**
- Application:
  - Industry
  - Testing machines
  - Laboratory

### Specifications

| Rated capacity (F <sub>n</sub> )                    | 1, 2, 5    | 10, 20, 50 | kN               |
|---|------------|------------|------------------|
| Overload  |            |            |                  |
| - Safe  | 130        |            | % F <sub>n</sub> |
| - Ultimate  | 150        |            | % F <sub>n</sub> |
| - Permanent static load <sup>1</sup>                | 75         |            | % F <sub>n</sub> |
| - Dynamic load <sup>1</sup>                         | 50         |            | % F <sub>n</sub> |
| Voltage output (model <b>EMS41-U</b> ) <sup>2</sup> |            |            |                  |
| - Standard  | 2 ... 10   |            | V                |
| - With zero offset                                  | 6 ... ± 4  |            | V                |
| - Customer design <sup>3</sup>                      | 0.5 ... 10 |            | V                |
| Min. load impedance                                 | 2          |            | kΩ               |
| Current output (model <b>EMS41-I</b> ) <sup>2</sup> |            |            |                  |
| - Standard  | 4 ... 20   |            | mA               |
| - With zero offset                                  | 12 ... ± 8 |            | mA               |
| - Customer design <sup>3</sup>                      | 1 ... 20   |            | mA               |
| Max. load impedance                                 | 500        |            | Ω                |
| Power Supply  |            |            |                  |
| - Range   | 24 ± 10 %  |            | VDC              |
| - Current consumption (Max)                         | 40         |            | mA               |
| Max error   |            |            |                  |
| - Non-linearity                                     | 0.25       | 0.5        | % F.S.           |
| - Hysteresis  | 0.25       | 0.5        | % F.S.           |
| - Creep (30 min)                                    | 0.1        | 0.1        | % F.S.           |
| Temperature effect                                  |            |            |                  |
| - On zero   | 0.15       |            | % F.S./10 °C     |
| - On output   | 0.15       |            | % F.S./10 °C     |

Notes:

- 1 Recommended value
- 2 The sensor has only voltage or current output
- 3 After agreement with the manufacturer, it is possible to set another output in the specified range

## Operating conditions and design

|   |                             |          |
|---|-----------------------------|----------|
| Temperature range<br>- Nominal<br>- Operating | 0 ... + 50<br>- 10 ... + 50 | °C<br>°C |
| Protection                                    | IP54                        |          |
| Body material                                 | Stainless steel             |          |
| Cable <sup>4</sup><br>- Type<br>- Length      | LifYDY 7 x 0.05<br>2        | m        |

Notes:

4 Only 3 wires are accessible, the others are for factory settings used

## How to order

Common formula for ordering: **EMS41-U/I(signal conditioner output range) – force range**

- Sensor type with type of output:
  - **EMS41-U** – voltage output
  - **EMS41-I** – current output
  
- Signal conditioner voltage output types:
  - 2 – 10 V
  - 2 – 6 – 10 V (zero shifted to 6 V)
  - Custom – define desired voltage output
  
- Signal conditioner current output types:
  - 4 – 20 mA
  - 4 – 12 – 20 mA (zero shifted to 12 mA)
  - Custom – define desired current output
  
- Measured force range (kN): 1, 2, 5, 10, 20, 50

2 kN sensor with voltage output 2 – 10V example:

**EMS41-U (2 – 10V) – 2kN**

5 kN sensor with current output with shifted zero example:

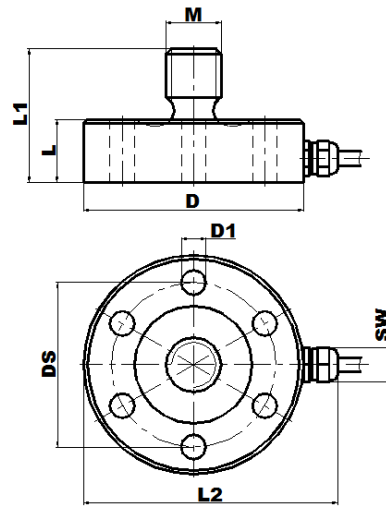
**EMS41-I (4 – 12 – 20mA) – 5kN**

10 kN sensor with custom voltage output. Output description: 3V output when the sensor is unloaded, 5V output at full force in the force direction of compression and 1V output at full force in the force direction of tension.

**EMS41-U (1 – 3 – 5V) – 10kN**

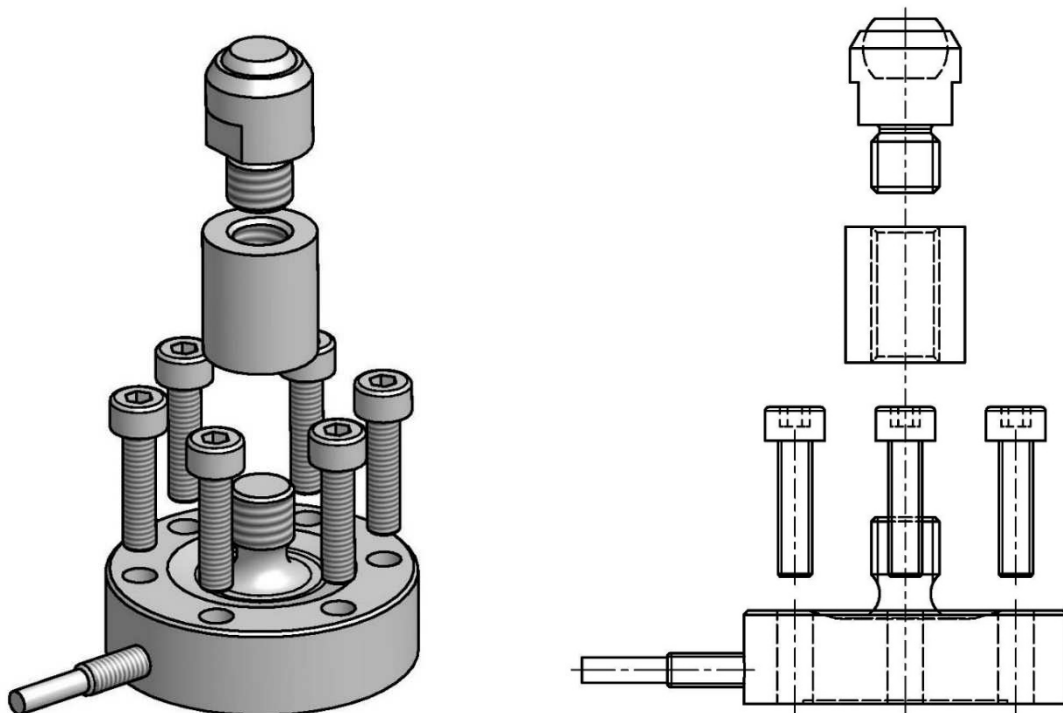
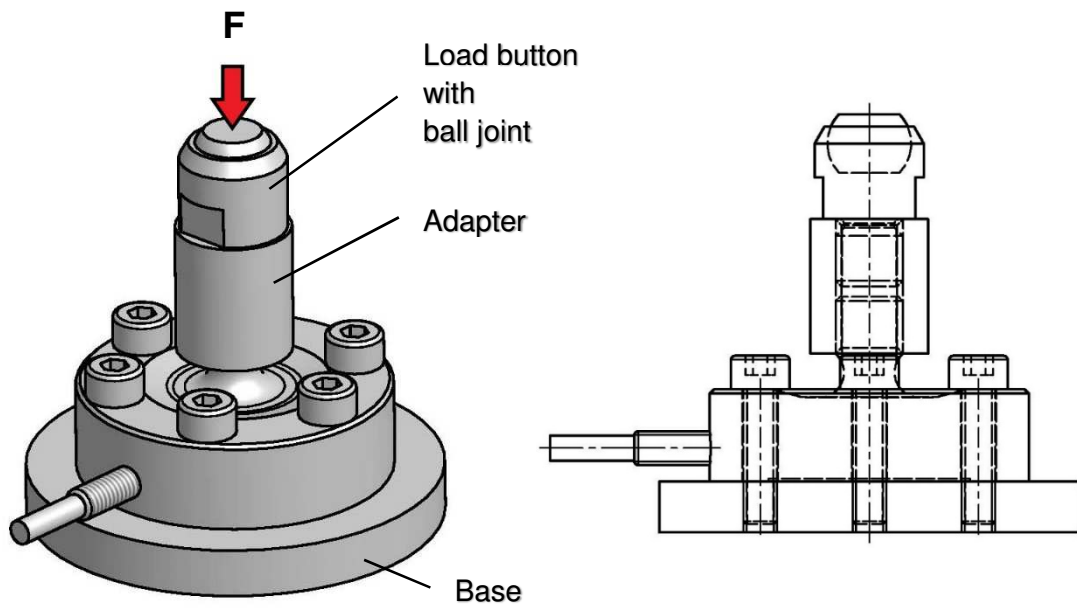
Note: Always consult your desired custom output range with the manufacturer.

## Outline dimensions

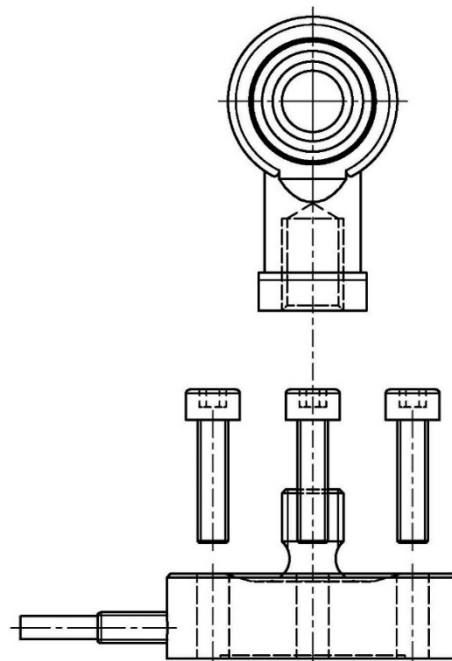
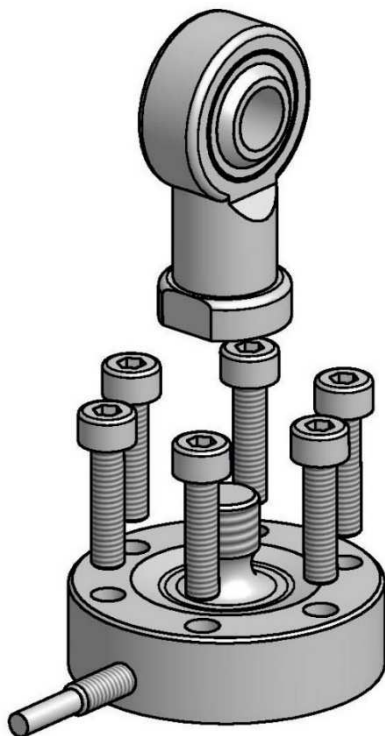
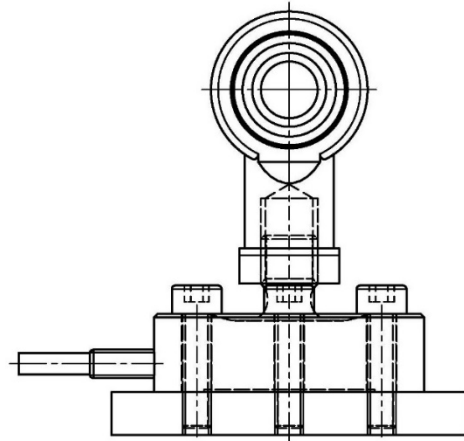
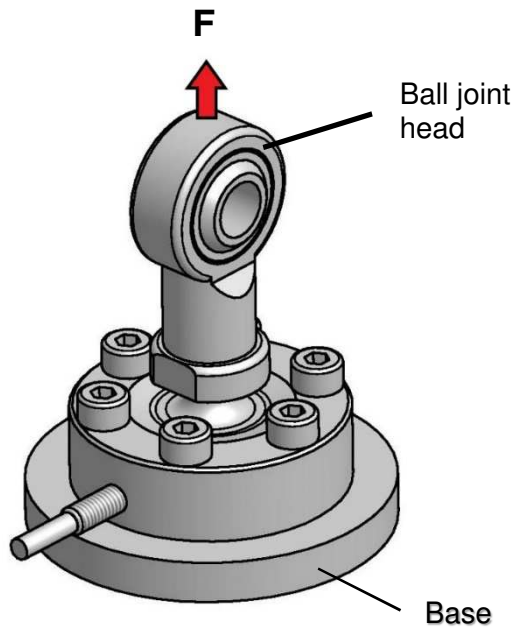


| Rated capacity<br>$F_n$ (kN) | D<br>mm | D1<br>mm | L<br>mm | L1<br>mm | L2<br>mm | M<br>mm | SW<br>mm | DS<br>mm | Mass<br>kg | Deflection,<br>@ $F_n$ ( $\mu\text{m}$ ) |
|------------------------------|---------|----------|---------|----------|----------|---------|----------|----------|------------|--|
| 1                            | 38      | 6x4.2    | 11      | 22       | 46       | M8      | $\Phi$ 4 | 30       | 0.07       | 30                                       |
| 2                            | 38      | 6x4.2    | 11      | 22       | 46       | M8      | $\Phi$ 4 | 30       | 0.07       | 30                                       |
| 5                            | 38      | 6x4.2    | 11      | 22       | 46       | M8      | $\Phi$ 4 | 30       | 0.08       | 35                                       |
| 10                           | 50      | 6x5.2    | 14      | 29       | 58       | M10     | 8        | 38       | 0.18       | 45                                       |
| 20                           | 56      | 6x6.3    | 16      | 34       | 64       | M14     | 8        | 42       | 0.27       | 50                                       |
| 50                           | 68      | 6x8.4    | 19      | 42       | 76       | M20     | 8        | 50       | 0.50       | 65                                       |

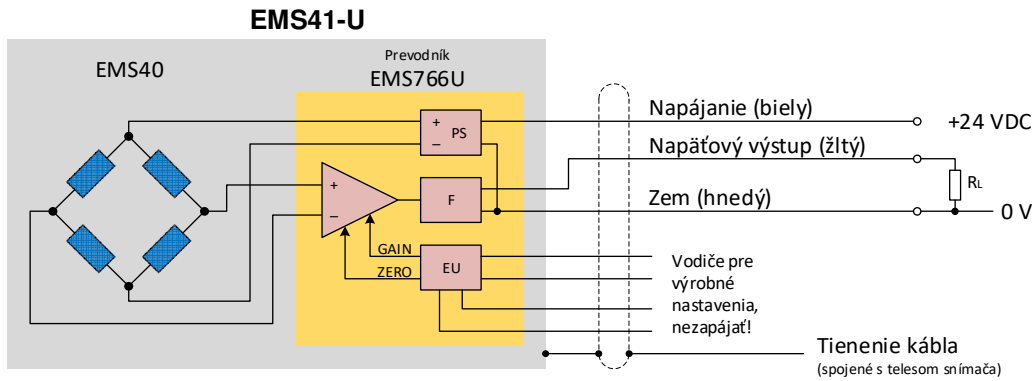
## Recommended installation, direction of load COPRESSION



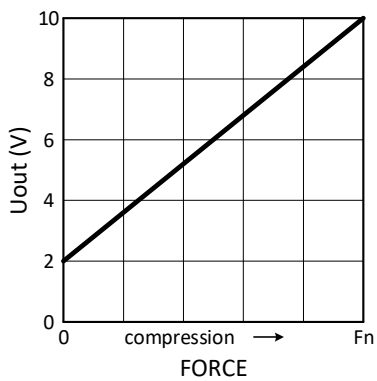
## Recommended installation, direction of load TENSION



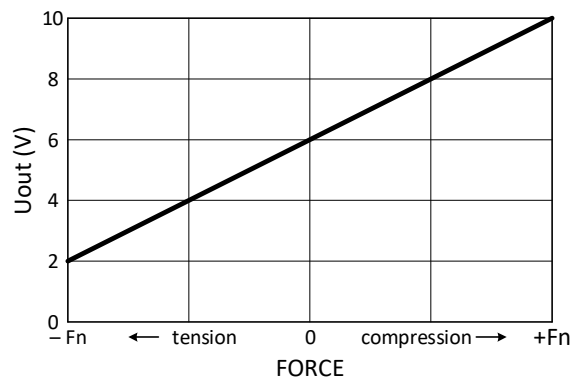
## Wiring diagram, EMS41-U (voltage output)



## Output characteristics

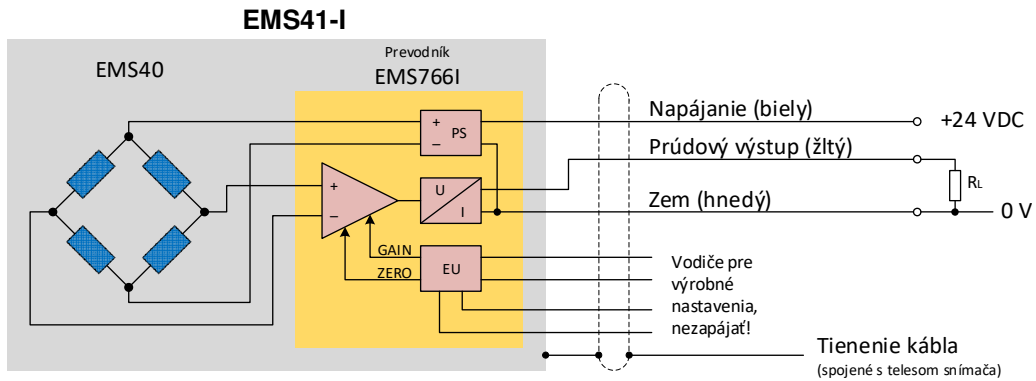


Unipolar load, unipolar output  
(2 ... 10 V)

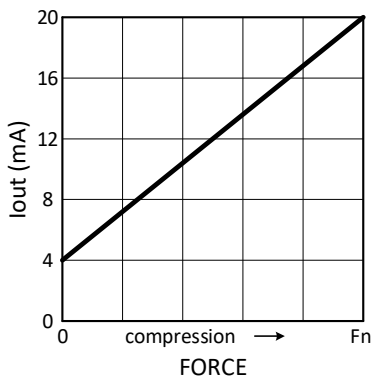


Bipolar load, unipolar output  
(6V ± 4 V, with zero offset)

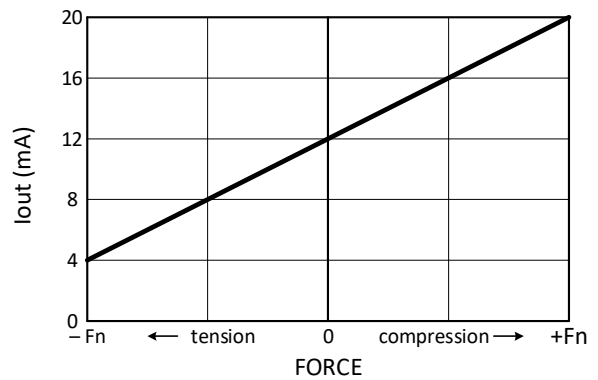
## Wiring diagram, EMS41-I (current output)



## Output characteristics



Unipolar load, unipolar output  
(4 ... 20 mA)



Bipolar load, unipolar output  
(12 mA  $\pm$  8 mA, with zero offset)