



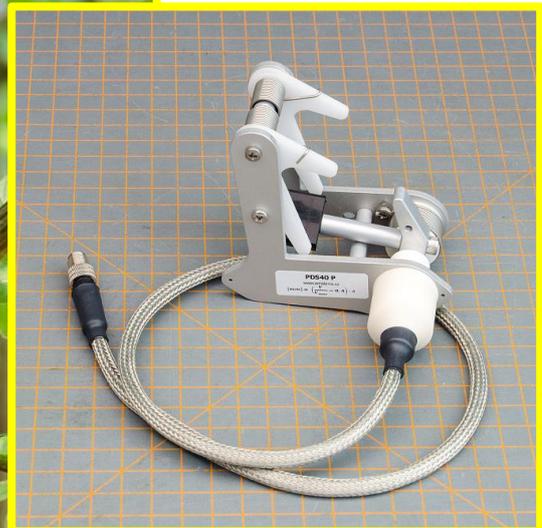
EMS Brno

Data Acquisition Environment  
Hardware – Software – Cloud application  
[www.emsbrno.cz](http://www.emsbrno.cz)

## Stem diameter sensor PDS40P

### Main features:

- Pivot design
- Step-less reading
- Easy and fast non-invasive fixing
- Voltage divider
- Manufactured by EMS



### Specifications:

- Working range 5 to 40 mm
- Accuracy  $\pm 2$  % of full scale
- Tightening strength up to 3 N

## General description:

PDS40P is designed for the measurement of diameters of small stems or branches in the range between 5 and 40 mm. Sensor output is ratiometric, directly proportional to stem diameter and the powering voltage (Eq.1).

The sensor is designed with respect to easy and fast installation. It is fastened on the measured object by means of three pressure levers; the central jib turns the rotary position sensor proportionally to the object diameter.

Adherence pressure is set as a compromise between the influence on plant tissues and stability of position. The bearing of position sensor is carefully shaped for minimal effect of temperature and axial forces.

## Installation notes:

Sensor should be placed on a relatively straight and regularly shaped stem or branch. The cable must be fastened to the stem in order to avoid influence of datalogger weight on the sensor position. The label on the black plate on the jib must be visible - it must point outwards of the stem.



## Specification

|                           |   |
|---------------------------|---|
| Measuring range           | 5 to 40 mm  |
| Output                    | ratiometric   |
| Accuracy                  | $\pm 2$ % full scale                                    |
| Resolution                | step-less reading                                       |
| Rotary position sensor    | 4.7 kOhm $\pm 20$ %                                     |
| Max power voltage         | 16 V  |
| Tightening strength       | 1.5 to 2 N lateral levers, 2 to 3 N central sensing jib |
| Temperature dependence    | better than $\pm 3$ $\mu\text{m}/\text{K}$              |
| Weight of sensor          | 160 g   |
| Connection                | 3-pin M8 connector male                                 |
| Protection                | IP 67   |
| Temperature working range | -40 to 60 °C  |

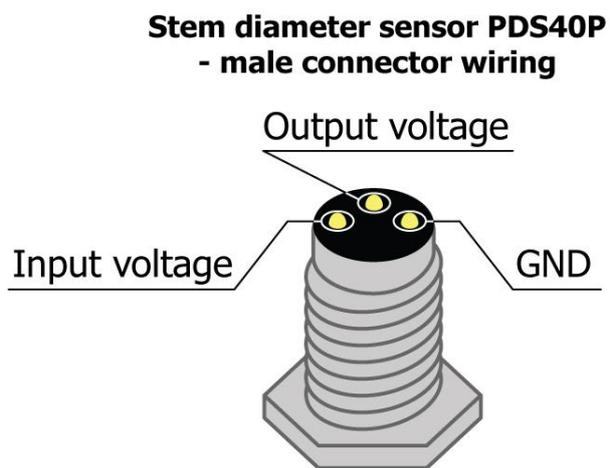
## Calculation equation

Sensor uses the most linear part of sensing potentiometer close to the middle of its range.

The conversion formula for sensors (Eq. 1):

$$Diameter [mm] = \left( \frac{V}{V_{max}} - 0.4 \right) * A$$

where A = parameter valid for the certain manufacturing batch is written on the jib of the sensor



## Standard M8 female connector cable wiring



Brown - Input voltage  
Black - Output voltage  
Blue - GND

**Two-year full warranty.**