



**Rethinking Sensing Technology**

***Displacement Sensor Integration (Potentiometer technology) with BeanDevice® AN-V***

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# ***Displacement Sensor Design and specifications***

***We are proposing two different design:***

***Sensor with spring return  
(integrated inside the sensor  
body for better  
waterproofness)***

***Sensor with ball joint***





## *Sensor with spring return specification*

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### Technical specifications

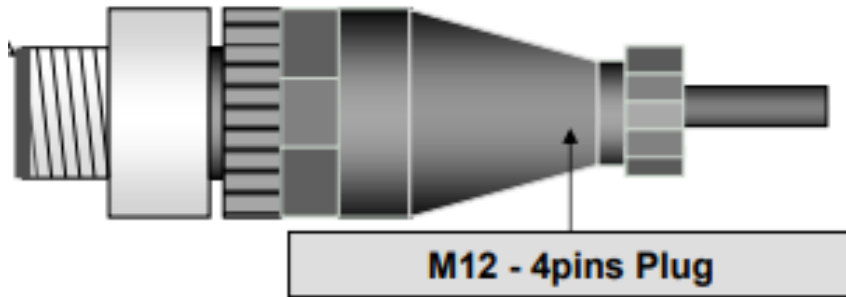
Measurement stroke	10 to 100 mm
Linearity	±%0,2 (75-100 mm), ±%0,5 (<75 mm)
Repeatability	< 0,01 mm
Resolution	Infinite
Resistance	2 kOhm: 10 ... 50 mm 5 kOhm: 75 ... 100 mm
Resistance tolerance	± %20
Recommended cursor current	<1 µA
Electrical connections	Connector or 1 m cable output
Displacement speed	< 5 m/s
Mechanical life	100 million movement
Case dimensions	Ø18 mm
Case material	Anodized aluminium
Rod material	Stainless steel
Rod diameter	Ø5 mm
Mechanical fixing	Variable brackets
IP degree	IP 65
Operating temperature	-20°C ... +80°C
Storage temperature	-30°C ... +90°C

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*The spring return is integrated inside the sensor body for better waterproofness)*

[Option for IP67 sensor](#)

# *Displacement Sensor Wiring code*



## M12-4 Plug Wiring code

**PIN1 (Pwr+ ):** Sensor power supply / Wire color Brown

**PIN2 (Sens-):** Do not connect / Wire color Yellow

**PIN3 (Gnd):** Electrical Ground / Wire color Blue

**PIN4 (Sens+):** Sensor signal + input / Wire color Yellow

# ***Sensor configuration from BeanScape® software***

*Potentiometer sensors comes with a signal output which is ratio-metric, i.e. for a sensor power supply of 10 VDC the signal output is 0 to 10VDC*

## **Summary of your configuration:**

### ***Recommended Sensor Power Supply :***

- 1. 5VDC (low power operation) or 10VDC ( more resolution)***
- 2. DAQ Polarity: Unipolar***
- 3. Sensor warm-up time : 40ms (default value)***
- 4. Conversion Assistant (if sensor powered with 5VDC) :***

***0V => 0mm***

***5V => Sensor\_Sroke mm***

### ***Conversion Assistant (if sensor powered with 10VDC) :***

***0V => 0mm***

***10V => Sensor\_Sroke mm***

# Sensor configuration from BeanScape® software

The screenshot displays the BeanDevice Dashboard with several sections:

- Identity:** Mac Id: 00158D00000E1106, Pan Id: 03F9, Net. Id: 0008, Label: MAC\_ID : 0 x 00158D0
- Version:** Hard. vers.: V1R8, Soft. vers.: V7R1
- BeanDevice Platform:** AN V
- Network Diagnostic:** Network quality: LQI (bar chart), PER: 0.00 %
- Power Supply Diagnostic:** Temperature: 26.500 °C, Power supply: Bat, Power mode: Bat Saver Disable, Battery Voltage: 4.133 V, Battery level: Good, DiagDate: 24/09/2020 17:09:21
- System:** Diagnostic cycle: 00:00:48 hh:mm:ss, Listening ratio: 00:00:30 hh:mm:ss
- Data Logger:** Status: Ready, Memory option: Stop DAQ recording, Memory used: 0 %
- Listening Mode Status:** Config. frame is: Waiting, Sent, Deleted
- Current data acquisition mode:** DAQ Status: Started, Data Acq. mode: LowDutyCycle, Data Acq. cycle: 00:00:06 ddd, hh:mm:ss, Sampling rate: NA Hz, Data Acq. duration: NA ddd, hh:mm:ss
- DAQ Config (highlighted):** Meas. Range: 0 / +10.000 V, Polarity: Unipolar mode, Sensor Voltage: 5.000 V, Wake up duration: 40 ms
- DAQ Config (expanded):** DAQ Polarity: Unipolar mode (selected), External sensor config: Unipolar mode, Bipolar mode, Excitation voltage (Volts), Warm up time (ms), Software Filters: Enable IIR Filter

DAQ status is displayed here ( you can check it after validating your new configuration)

Choose Unipolar on DAQ Polarity then click on validate

# Sensor configuration from BeanScape® software

The screenshot displays the BeanDevice Dashboard with several key sections:

- Identity:** Mac Id: 00158D00000E1106, Pan Id: 03F9, Net. Id: 0008, Label: MAC\_ID : 0 x 00158D0
- Version:** Hard. vers.: V1R8, Soft. vers.: V7R1
- BeanDevice:** Platform: AN V
- Network Diagnostic:** Network quality: LQI (4 bars), PER: 0.00 %
- Power Supply Diagnostic:** Temperature: 26.500 °C, Power supply: Bat, Power mode: Bat Saver Disable, Battery Voltage: 4.133 V, Battery level: Good, DiagDate: 24/09/2020 17:09:21
- System:** Diagnostic cycle: 00:00:48 hh.mm.ss, Listening ratio: 00:00:30 hh.mm.ss
- Data Logger:** Status: Ready, Memory option: "Stop DAQ" recording, Memory used: 0 %
- Listening Mode Status:** Config. frame is: Waiting, Sent, Deleted (radio buttons)
- Current data acquisition mode:** DAQ Status: Started, Data Acq. mode: LowDutyCycle, Data Acq. cycle: 00:00:06 ddd, hh. mm. ss, Sampling rate: NA Hz, Data Acq. duration: NA ddd, hh. mm. ss
- DAQ Config Panel (bottom right):** Includes tabs for Custom display, Notes, Data Acq. config., DAQ Config, Online Data Analysis, DataLogger, and Sys. It features fields for DAQ Polarity, External sensor configuration (Excitation voltage (Volts) set to 5), Warm up time (ms), and Software Filters (Enable IIR Filter checkbox).

DAQ status is displayed here ( you can check it after validating your new configuration)

Enter an excitation Voltage of 5VDC for your sensor



# Sensor configuration from BeanScape® software

Use the conversion Assistant.

if sensor stroke is 100mm and sensor power supply 5VDC):

0 V => 0 mm (sensor probe fully out)

5 V => 100 mm (sensor probe fully in)

Click on conversion assistant

The screenshot shows the BeanScape 2.4GHz software interface. On the left, a tree view displays various channels, including Ch\_V\_0 through Ch\_V\_3. A 'Unit Conversion Assistant' dialog box is open, showing a 'Linear Conversion' table with two rows. The first row has 'Value 1' set to 0 V and 'Output' as 'not defined'. The second row has 'Value 2' set to 5 V and 'Output' as 100 mm. The 'Target Unit' is set to 'mm'. In the background, the 'Sensor profile' window is visible, showing general information for 'Ch\_V\_3' with a technology of 'AN V'. The 'Conversion' button is highlighted with a blue arrow pointing to it from the text 'Click on conversion assistant'.

Value	Input	Output
Value 1	0 V	not defined
Value 2	5 V	100 mm

if sensor stroke is 100mm and sensor power supply 10VDC):

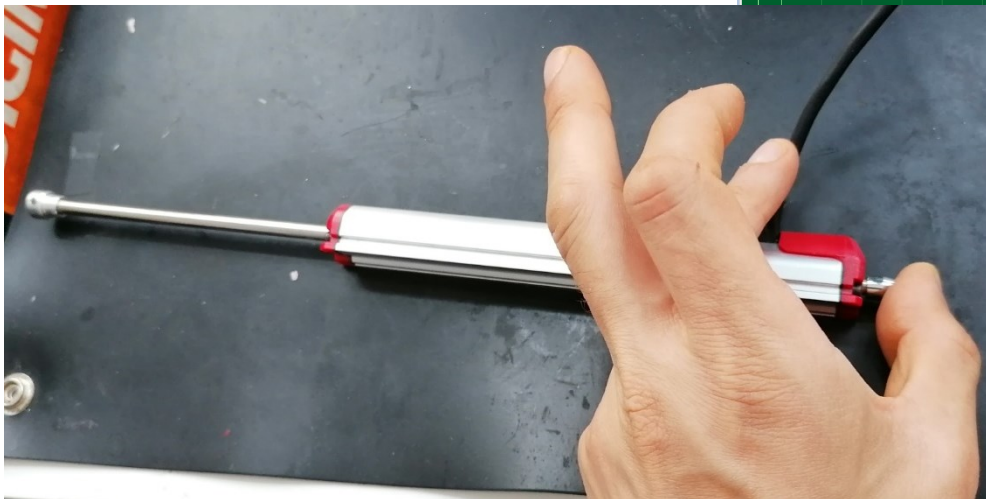
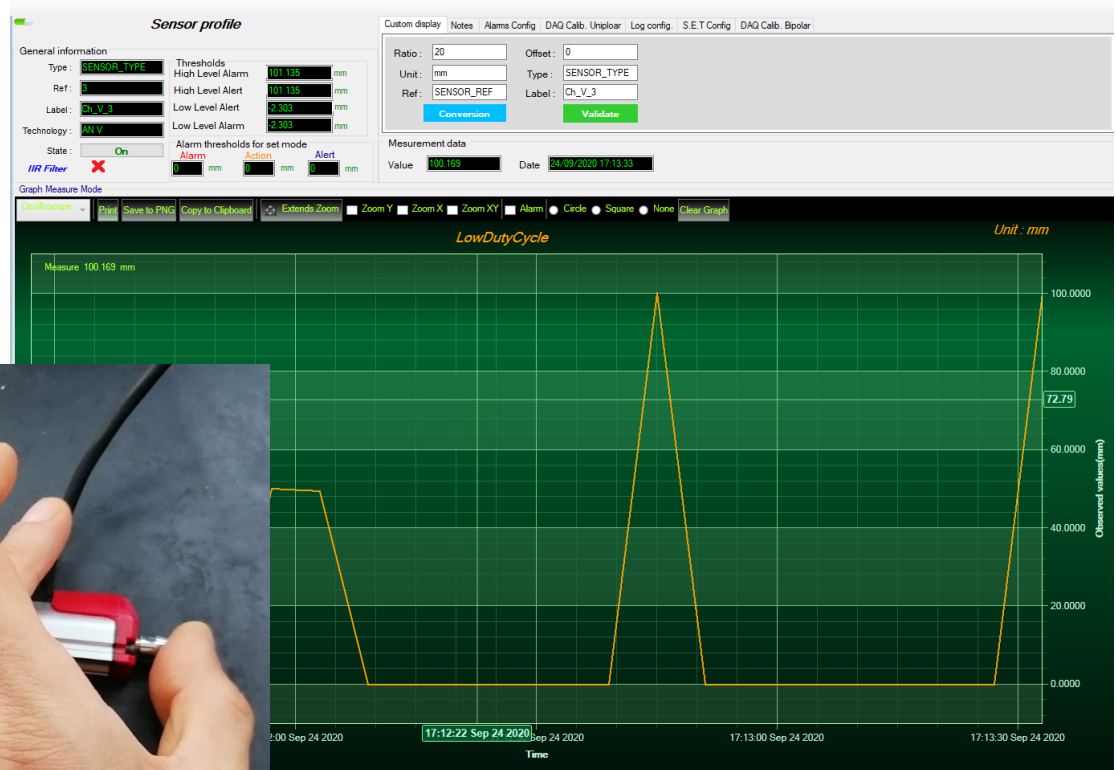
0 V => 0 mm (sensor probe fully out)

10 V => 100 mm (sensor probe fully in)



# Check your settings

**Example of a 100 mm stroke sensor :** When the sensor probe is fully in, you should have approx. 100 mm. To provide a good reading on the sensor full scale, the real stroke can be a bit higher than the stroke displayed on the datasheet. In our example we can go up to 100.169 mm but only the measurements between [0mm and 100 mm] are tested, calibrated and warranted.



## Integration of ball joint sensor





**BeanAir**

## *Sensor Installation on the field*

*Sensor with spring return:*

