

BeanDevice® 2.4GHz AN-mV

Wireless IIOT Data Acquisition (DAQ) | low voltage inputs ($\pm 20\text{mV}$) for load cell sensors

PRODUCT VIDEO



USER GUIDE



QUICK START



MECHANICAL DRAWING



STEP FILE



ProcessSensor



MADE IN GERMANY



207-132085



77 mm



149 mm



60 mm



MAIN FEATURES



• Analog inputs $\pm 20\text{ mV}$ (4 channels)



• Embedded data logger up to 1 million data points



• Wireless transmission IEEE 802.15.4 with antenna diversity



• Integrated rechargeable Lithium-Ion battery



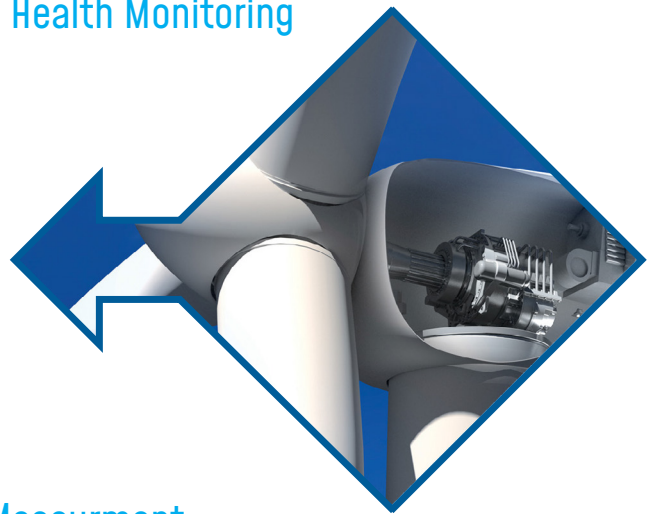
• Integrated sensor power supply, software configurable 4.5V to 20V

APPLICATIONS



Structural Health Monitoring

Condition monitoring



Test and Measurement

EMBEDDED DATA LOGGER UP TO 1 MILLION DATA POINTS

The **BeanDevice® 2.4GHz AN-mV** integrates an embedded data logger, which can be used to log data when a Wireless IIOT Sensors can not be easily deployed on your site. All the data acquisitions are stored on the embedded flash and then transmitted to the **BeanGateway® 2.4GHz** whenever a Wireless IIOT Sensors is established.

The Datalogger function is compatible with all the data acquisition mode available on your **BeanDevice® 2.4GHz AN-mV** :

- LowDutyCycle Data Acquisition
- Survey
- Streaming packet

EXAMPLE : DATA ACQUISITION SYSTEM FOR TECHNICAL BUILDING MANAGEMENT

- The **BeanDevice® 2.4GHz AN-mV** is configured with its Datalogger feature. A standalone installation of the **BeanDevice® 2.4GHz AN-mV** will be done (mounted on the walls), without the necessity for any connection to the **BeanGateway® 2.4GHz**.
- Once the sensors are connected, each data is recorded on the embedded flash.
- When needed a technician working on the site can send a request for a log transmission. Then the **BeanDevice® 2.4GHz AN-mV** starts sending all its logs. If all the logs are successfully transmitted to the **BeanGateway® 2.4GHz**, the flash memory is erased and new logs will be recorded.



BeanDevice
2.4 GHz AN-mV

The Datalogger
feature is activated
on the BeanDevice®



Transmits all the data logs

Request for Logs transmission



BeanAir



For further information about data logger, please read the following technical note :
TN-RF-007 – “BeanDevice® DataLogger User Guide ”

REMOTE CONFIGURATION & MONITORING

BeanScope® 2.4GHz Basic

The BeanScope® 2.4GHz application allows the user to view all the data measurements transmitted by the BeanDevice® 2.4GHz AN-mV. With the OTAC (Over-the-Air configuration) feature, the user can remotely configure the BeanDevice® 2.4GHz AN-mV.

SEVERAL DATA ACQUISITION MODES ARE AVAILABLE ON THE BEANDEVICE® 2.4GHz AN-mV :

- **Low Duty Cycle Data Acquisition mode (LDCDA)** : the data acquisition is immediately transmitted by radio. The transmission frequency can be configured from 1s to 24h.
- **Survey Mode** : the measured value is transmitted by radio whenever an alarm threshold (fixed by the user) is detected (4 alarms threshold levels High/Low). Meanwhile, the device sends frequently a beacon frame informing its current status.
- **Streaming Packet Mode** : All measured values are transmitted by packet within a continuous flow at 400 samples per second

BeanScope® 2.4GHz Premium+ Add-on

The BeanScope® 2.4GHz Premium+ integrates an OPC DA server (Data Access). OPC DA is particularly well suited for real time measurement and data sharing. Each data/measurement can be associated to a tag or its attributes and shared with one or many OPC clients



For further information about data logger, please read the following technical note :
[TN-RF-008-Data-acquisition-modes-available-on-the-BeanDevice](#)

TECHNICAL SPECIFICATIONS

PRODUCT REFERENCE

BND-2.4GHZ-AN-mV-4CH

ANALOG DATA ACQUISITION SPECIFICATIONS

| | |
|-----------------------------|--|
| Signal Conditioning | Analog low voltage mV |
| Number of analog inputs | 4 Channels |
| A/D Converter | 16 bits - SAR Architecture (Successive Approximation Register) with temperature compensation |
| Measurement range | ±20 mV (bipolar) or 0-40 mV (unipolar) |
| Non-linearity error | ± 0.5 LSB |
| Measurement accuracy(@25°C) | < 0,2% when the BeanDevice® is connected to an external power supply |
| Sensor Connector | M12-4Pins coming with an IP rating IP67 |

SENSOR POWER SUPPLY SPECIFICATIONS

| | |
|--|--|
| Excitation voltage range | 4.5 Volts to 20Volts , configurable from the BeanScope® software |
| Excitation voltage accuracy on full scale range(@25°C) | ±0.1% |
| Maximum Output Power (@25°C) | 1 Watts |

TECHNICAL SPECIFICATIONS

POWER SUPPLY

| | |
|----------------------------|--|
| Integrated battery charger | Integrated Lithium-ion battery charger with high precision battery monitoring : · Overvoltage Protection, Overcurrent/Short-Circuit Protection, Undervoltage Protection · Battery Temperature monitoring |
| Current consumption @ 3.3V | · During data acquisition : 70mA to 130 mA (depends on external sensor power supply) · During Radio transmission : 70 mA · During sleeping: < 35 µA |
| External power supply | External power supply : +8v to +28v |
| Rechargeable battery | Lithium-Ion high density rechargeable battery capacity of 950 mAh |

OVER-THE-AIR CONFIGURATION (OTAC) PARAMETERS

| | |
|---|---|
| Data Acquisition mode | Low Duty Cycle Data Acquisition (LDCDA) Mode: 1s to 24 hour Survey mode: 1s to 24 hour Streaming Mode: 400 SPS maximum |
| Sampling Rate (SPS = samples per second) | Minimum: 1 SPS Maximum: 400 SPS maximum per channel |
| Alarm Threshold | 2 high levels alarms & 2 low levels alarms |
| Sensor power supply | 4.5 to 20 Volts |
| Analog Input polarity | Bipolar or Unipolar |
| Power Mode | Sleep & Active |

RF SPECIFICATIONS

| | |
|-------------------------|---|
| Wireless Protocol Stack | Ultra-Power and license-free 2.4Ghz radio technology (IEEE 802.15.4E) |
| WSN Topology | Point-to-Point / Star |
| Data rate | 250 Kbits/s |
| RF Characteristics | ISM 2.4GHz – 16 Channels |
| TX Power | +18 dBm |
| Receiver Sensitivity | -104 dBm |
| Maximum Radio Range | 650m (Line of Sight) , 30-100m (Non Line of Sight) |
| Antenna diversity | · 2 omnidirectional N-Type antenna · Gain 5 dBi · Waterproof IP67 |

EMBEDDED DATA LOGGER

| | |
|---------------------------|--|
| Storage capacity | up to 1 million data points |
| Wireless data downloading | 3 minutes to download the full memory (average time) |

TECHNICAL SPECIFICATIONS

TIMESYNC FUNCTION : CLOCK SYNCHRONIZATION OVER THE WIRELESS SENSOR NETWORKS (WSN)

| | |
|--------------------------------|------------------------------------|
| Clock synchronization accuracy | ±2.5 ms (at 25°C) |
| Crystal specifications | Tolerance ±10ppm, stability ±10ppm |

ENVIRONMENTAL AND MECHANICAL

| | |
|-----------------------|--|
| Casing | Aluminum, Watertight IP65 – Fire Protection : ULV94/Getex casing dimensions (w/o antenna) L x l x h : 146.05mm x 65.5mm x 33.5mm / Weight : 550g |
| Shocks resistance | 50g during 50 ms |
| Operating Temperature | -20 °C to +65 °C during battery discharge 0 to 45°C during battery charge |
| Norms | · CE Labelling Directive R&TTE (Radio) ETSI EN 300 328 · FCC (North America) ROHS - Directive 2002/95/EC |

OPTION(S)

| | |
|--|--|
| External Power Supply | Wall plug-in, Switchmode power Supply 12V @ 1,25A with sealed M8 Plug (IP67/Nema 6) Ref: M8-PWR-12V |
| M8 extension cable for external power supply | Molded cable with M8-3pins male plug Material : PVC with shield protection IP Rating : IP67 Nema 6 Cable length: 2 meters , Ref: CBL-M8-2M Cable length : 5 meters, Ref: CBL-M8-5M Cable length: 10 meters, Ref: CBL-M8-10M |
| M12 Plastic ABS plug for sensors | M12-4 Pins Male plug for sensor interface Coding : A , Locking type: Fix screw, Material: Plastic ABS IP Rating: IP67 in locked condition Ref: M12-PL-SENSOR |
| M12 Aluminum plug for sensors | M12-4 Pins Male plug for sensor interface Coding : A , Locking type: Fix screw, Material: Aluminum IP Rating: IP67 in locked condition Ref: M12-AL-SENSOR |
| Antenna cable | N-Type cable (Male/Male), Cable type: RF-5/H155 Cable length: 1 meter, Ref: CBL-ANT-1M Cable length: 2 meters, Ref: CBL-ANT-2M Cable length: 3 meters, Ref: CBL-ANT-3M Cable length: 5 meters, Ref: CBL-ANT-5M Cable length: 10 meters, Ref: CBL-ANT-10M |

TECHNICAL SPECIFICATIONS

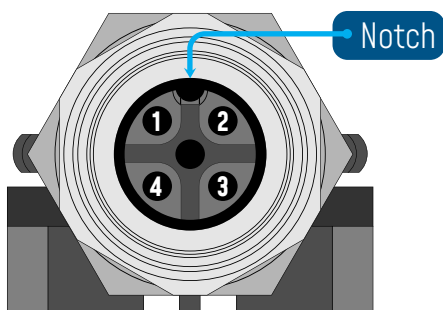
High Gain antenna option

High Gain Omnidirectional antenna
Frequency range 2400-2500MHz
VSWR < 1.4, Impedance 50 Ohm, Polarization Vertical
Vertical plane 24°(7dBi Gain version) 16°(7dBi Gain version)
6°(12dBi Gain version), Horizontal plane 360°
Connector N female, Wind load (170km/h) 7.3N
Included: N-Type cable (Male/Male), length: 1 meter
Gain: 7dBi, Dimensions 360mm x 23mm, Weight 0.44 kg
[Ref: HG-OMNI-OUT-7DBI](#)
Gain: 9dBi, Dimensions 540x23 mm, Weight 0.61 kg
[Ref: HG-OMNI-OUT-9DBI](#)
Gain: 12dBi, Dimensions: 1125mm x 19 mm, Weight 1.06 kg
[Ref: HG-OMNI-OUT-12DBI](#)

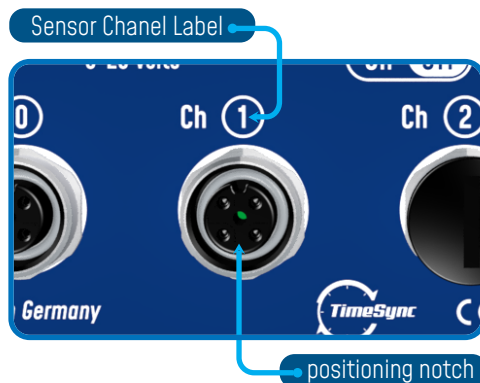
Calibration certificate

Calibration certificate linked to German Accreditation
Body (DAkkS)

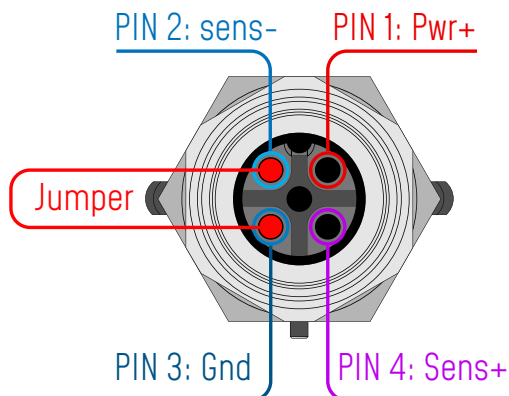
M 12 Socket Pin assignation



M 12 Socket Positioning Notch



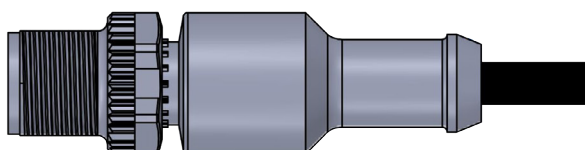
Wiring Code (Sensor Side)-Sensor with Analog Unipolar Output



Sensor Wiring Code

CAPTION

PIN1 [Pwr+] : Sensor power supply
PIN 4 [Sens +] : Sensor Signal + input
PIN 2 : Connected to Electrical Ground
PIN 3 [Gnd] : Electrical Ground



M12-4 Pins Plug

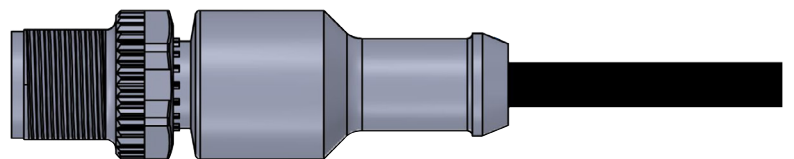
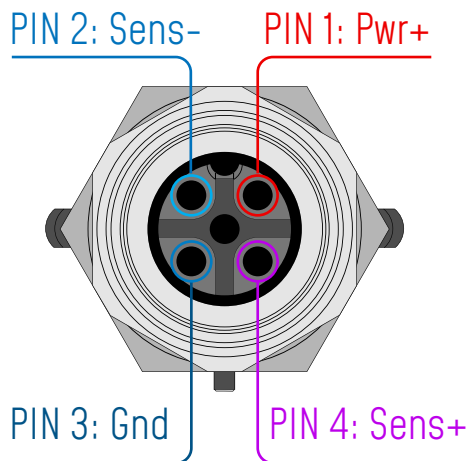
GETTING STARTING WITH A WIRELESS IIOT SENSORS

Wiring Code (Sensor Side)-Sensor with Analog Bipolar Output

CAPTION

- PIN1 [Pwr+]** : Sensor power supply
- PIN 4 [Sens +]** : Sensor Signal + input
- PIN 2** : Sensor signal - input
- PIN 3 [Gnd]** : Electrical Ground

Sensor Wiring Code

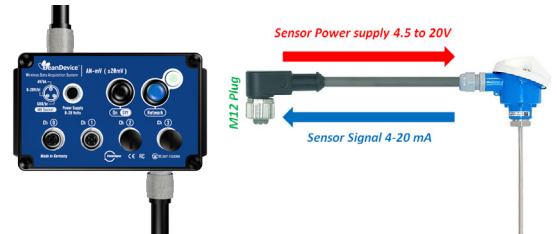


M12-4 Pins Plug

- If you use a unipolar analog sensor, Sens- pin must be connected to the electrical ground

CONFIGURABLE SENSOR POWER SUPPLY

The sensor is directly powered by a high accuracy and adjustable DC/DC converter integrated inside the device. The excitation voltage is remotely configurable through the **BeanScape® 2.4GHz** (4.5 to 20V).



GETTING STARTING WITH A WIRELESS IIOT SENSORS

The **BeanDevice® 2.4GHz AN-mV** operates only on our Wireless IIOT Sensors , you will need the **BeanGateway® 2.4GHz** and the **BeanScape® 2.4GHz** for starting a wireless IIOT sensors



BeanDevice
AN-mV



BeanGateway



OR



BeanGateway



OPC server is only available on the Beanscape®
2.4GHz Premium +



BeanScape

Wireless IIOT Sensors Supervision software

Product specifications are subject to change without notice.
Contact Beanair for latest specifications.

PRODUCT OVERVIEW

ON/Off push button

Network Reset non-contact push button

M8-3 Contacts
Socket for external
power supply

Activity/Failure led

M12-4Pins female
socket for sensor
interface

Eyelet for
wall mounting

2.4GHz Radio Antenna



ProcessSensor

ACCESSORIES

AC/DC Power supply

Ref: M8-PWR-12V

- Wall plug-in power supply,
Output: 12VDC, M8-3Pins plug
- AC Power plug: Europe/UK
Northamerica /China/Australia
- Waterproof - IP67



N-Type cable (Male/Male)

Ref: CBL_ANT_XXM

- . length: 1 meter / 2 meters / 5 meters
10 meters
- . Cable type: RF-5/H155



Omnidirectional antenna 5dBi for outdoor use

Ref: HG_OMNI_5_OUT_DBI

- Waterproof design
- Outdoor use
- Professional N-type design
reduces stress
- N-type, Male, Reverse Polarity,
- VSWR < 2.0 / Length=95mm
- Wind survival: up to 180Mph
- Watertight IP65
- Waterproof - IP67



Molded Cable with M8 plug

Ref: CBL-M8-2M

[cable length : 2 meters]

- CBL-M8-5M

[cable length : 5 meters]

- CBL-M8-10M

[cable length : 10 meters]



M12-5 Pins plug for sensor interface

M12-5 Pins plug for sensor interface

Ref: M12-PL-SENSOR

watertight IP67 - Material: Plastic ABS

M12-5 Pins plug for sensor interface

Ref: M12-AL-SENSOR

watertight IP67 - Material: Aluminum case



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