BeanAir
WIRELESS IIOT SENSORS

2.4 GHz

BeanDevice® 2.4GHz AN-mV

Wireless IOT Data Acquisition (DAQ) Instrument

low voltage inputs (±20mV) | built-in datalogger

PRODUCT VIDEO

USER GUIDE

QUICK START

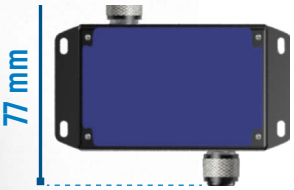
MECHANICAL DRAWING

STEP FILE

MADE IN GERMANY

001A-08148

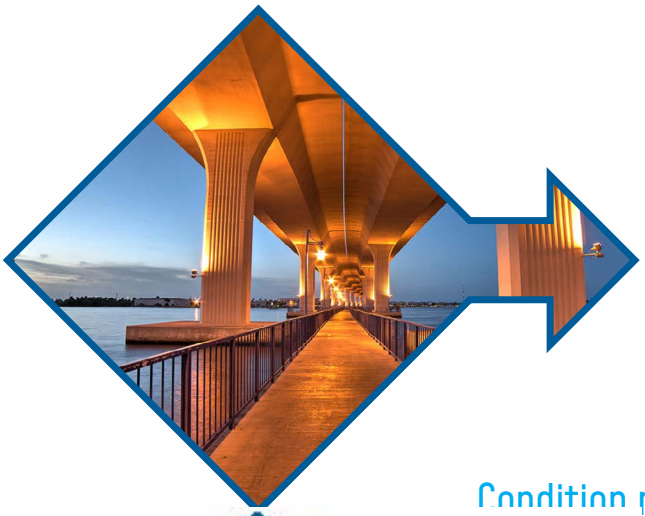
2year Warranty



MAIN FEATURES

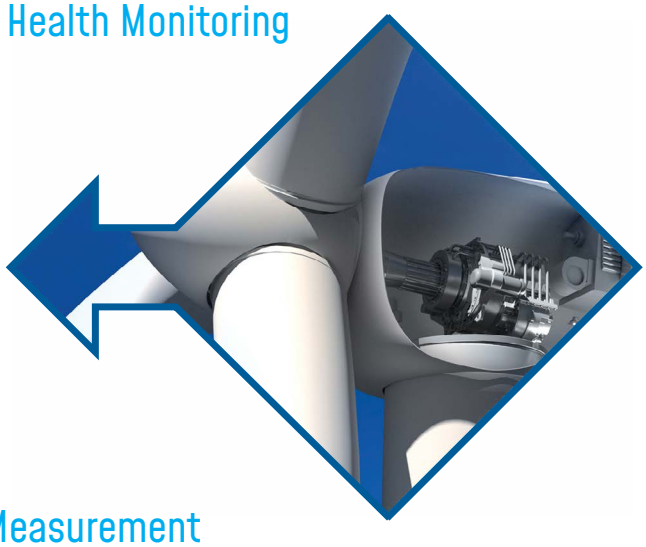
- Analog inputs ±20 mV (4 channels)
- Embedded data logger up to 1 million data points
- Wireless transmission IEEE 802.15.4 with antenna diversity
- Integrated rechargeable Lithium-Ion battery
- Integrated sensor power supply, software configurable 4.5V to 20V
- Measurement repeatability less than ± 0.025% on the full scale

APPLICATIONS



Structural Health Monitoring

Condition monitoring



Test and Measurement

BeanDevice® 2.4GHz AN-mV

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 Network can not be easily deployed on your site. All the data acquisitions are stored on the embedded flash and then transmitted to the Wireless receiver (BeanGateway® 2.4GHz) whenever a Wireless Networks is established.
The datalogger function is compatible with all the data acquisition mode available on your BeanDevice® 2.4GHz AN-mV

- Low Duty Cycle data acquisition with a measurement heartbeat from 1s to 24h
- Alarm data acquisition with three levels of Alarms (Alert/Action/Alarm)
- Streaming measurement up to 400 samples per second

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

BeanDevice® 2.4GHz AN-mV

REMOTE CONFIGURATION & MONITORING

The BeanScape® 2.4GHz software helps the user to view all the data measurements transmitted by the BeanDevice® 2.4GHz AN-mV.

Different data acquisition modes can be remotely configured from the software:

- 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.
- Alarm Mode : the measured value is transmitted by radio whenever an alarm threshold (fixed by the user) is detected
  (3 alarms threshold levels are available Alert-Action-Alarm).
  The device sends frequently a beacon frame informing its current status.
- Streaming : All measured values are transmitted by packet within a continuous flow at 400 samples per second

An easy integration into a third-party software thanks to our OPC DA server

The BeanScape® 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 client

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

BeanDevice® 2.4GHz AN-mV

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 STARTED WITH A WIRELESS IOT 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

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

TECHNICAL SPECIFICATIONS

PRODUCT REFERENCE

BND-2.4GHZ-AN-MV-4CH

ANALOG DATA ACQUISITION SPECIFICATIONS	
Signal Conditionning	Analog low voltage mV, suitable for Strain Gage based sensors
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
Repeatability (full scale, @ 25°C, Static Measurement Mode every 2s)	less than ± 0.025%
Repeatability (full scale, @ 25°C, Dynamic Measurement Mode 10Hz)	less than ± 0.35%
Sensor Connector	M12-4Pins , A-Coding, Waterproof IP67

SENSOR POWER SUPPLY SPECIFICATIONS	
Power Supply	4.5 Volts to 20Volts , dynamically configurable from the BeanScape® 2.4GHz software
Power Supply precision (full scale, @25°C)	±0.18%
Maximum Output Power (@25°C)	1 Watts

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

CONFIGURABLE SETTINGS FROM THE BEANSCAPE® 2.4GHZ SOFTWARE	
Data Acquisition mode	Static Data Acquisition : Low Duty Cycle Data Acquisition (LDCDA) and Alarm Mode (based on alarm thresholds) . Measurement heartbeat 1s to 24 hour Dynamic data acquisition (not available on devices with ref. extension XT) Streaming and S.E.T. (Streaming with Event Trigger) Mode
Sampling Rate (SPS = samples per second)	Minimum: 1 SPS Maximum: 400 SPS maximum per channel
Alarm Threshold	3 levels of Alarm Threshold Alert-Action-Alarm
Sensor power supply	4.5 to 20 Volts
Power Mode	Battery saver mode & Active power mode

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 5.5 dBi • Waterproof IP67

TIMESYNC FUNCTION : CLOCK SYNCHRONIZATION OVER THE WIRELESS IOT SENSOR	
Clock synchronization accuracy	±2.5 ms (at 25°C)
Crystal specifications	Tolerance ±10ppm, stability ±10ppm

ENVIRONMENTAL AND MECHANICAL	
Casing	Aluminum, Waterproof IP67 – Fire Protection : ULV94/Getex casing dimensions (w/o antenna, w eyelets) L x l x h : 156mm x 82mm x 57mm / Weight : 760g
Shocks resistance	50g during 50 ms
Operating Temperature	-40 °C to +60 °C
Norms	• CE Labelling Directive R&TTE (Radio) ETSI EN 300 328 • FCC (North America) • ARIB STD-T66 Ver 3.6 ROHS - Directive 2002/95/EC

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 : +8-28 VDC with polarity inversion protection
Rechargeable battery	High density Lithium-Ion rechargeable battery with a capacity of 2.2Ah with polyswitch protection

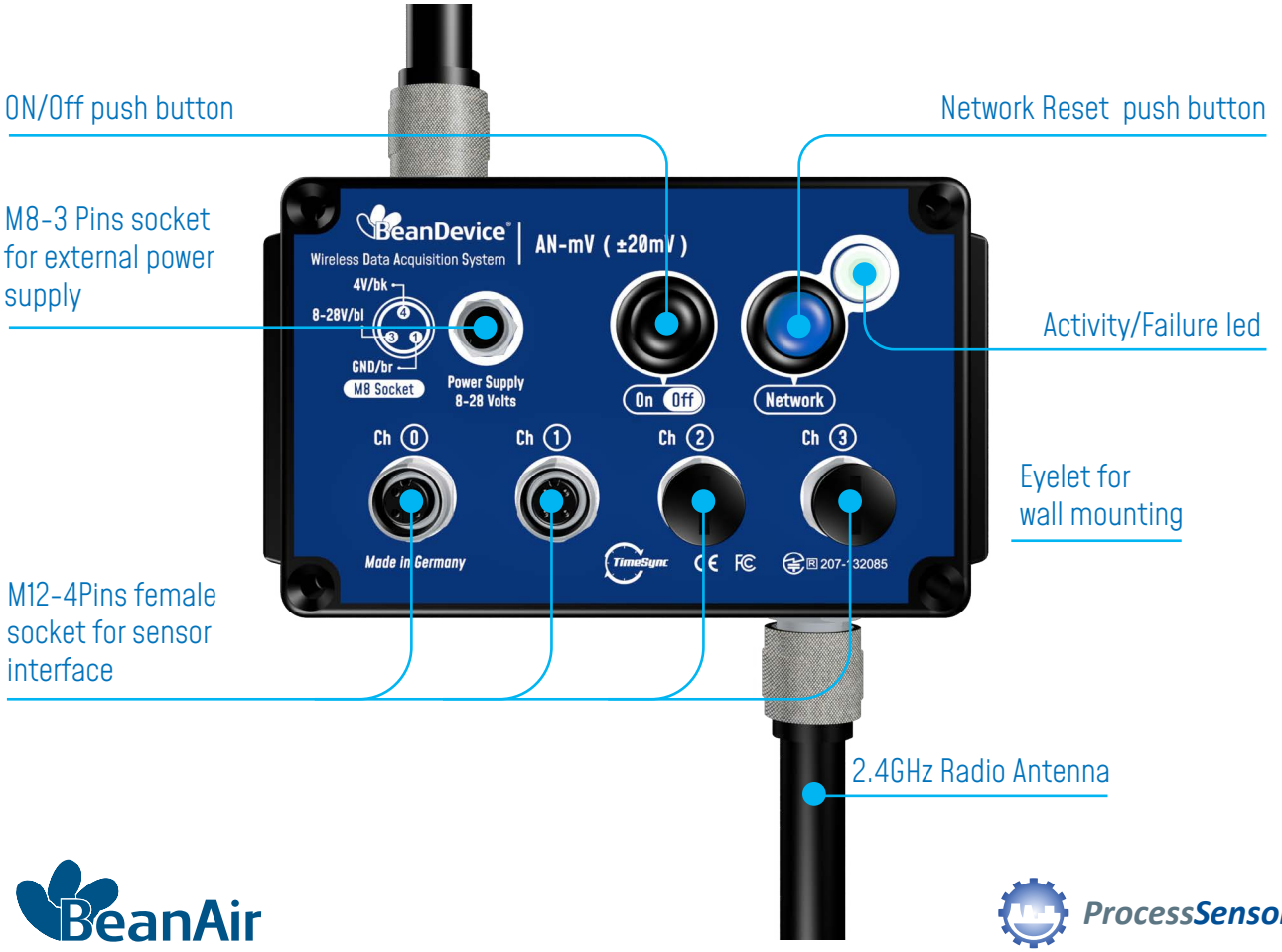
INCLUDED ACCESSORIES	
	4 x M12 Cap 1 x M8 Cap 2 x High gain antenna 5.5 dBi / V.S.W.R : 1.5 :1 / Waterproof IP67

OPTIONAL ACCESSORIES AND SERVICES	
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

BeanDevice® 2.4GHz AN-mV

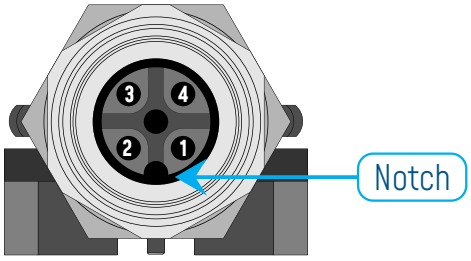
High Gain antenna option	High Gain Omnidirectional antenna Frequency range 2400-2500MHz VSWR < 1.4, Impedance 50 Ohm, Polarization Vertical Vertical plane 24°(7dBi Gain version) 16°(7dBi Gain version) 6°(12dBi Gain version), Horizontal plane 360° Connector N female, Wind load (170km/h) 7.3N Included: 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) REF: CERT-CAL-PROCESS

PRODUCT OVERVIEW

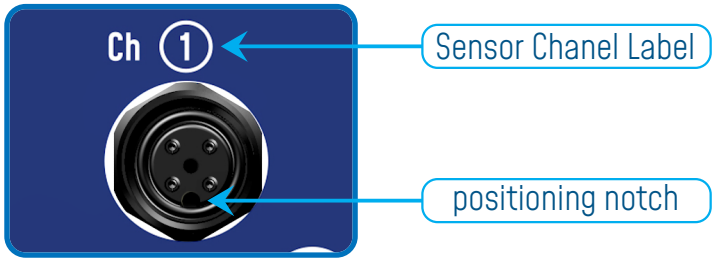


SENSOR WIRING CODE

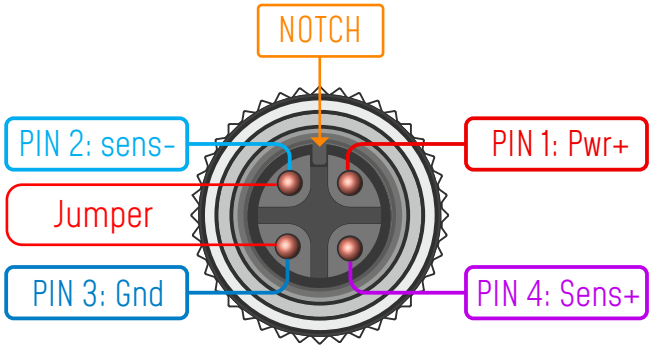
M12 Socket Pin assignation

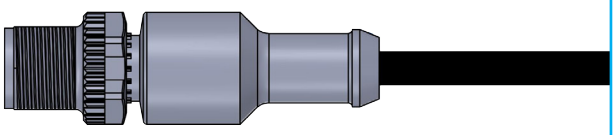


M12 Socket Positioning Notch



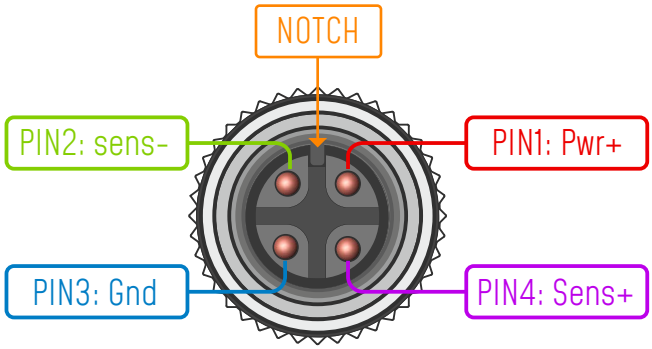
Wiring Code (Sensor Side)-Sensor with Analog **Unipolar** Output

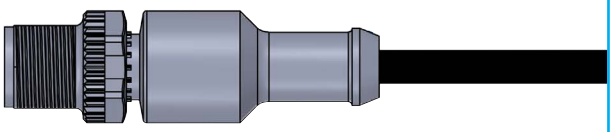




M12-4Pins Plug

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





M12-4Pins Plug

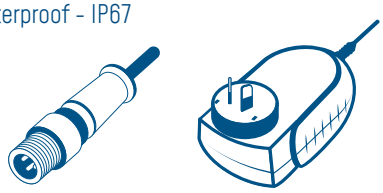
If you use a unipolar analog sensor, Sens- pin must be connected to the electrical ground

You can damage your sensor and/or your BeanDevice® if you don't respect the wiring code.

ACCESSORIES

AC/DC Power supply with M8 Plug

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
. Cable type: RF-5/H155

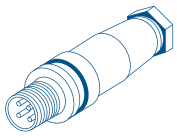
Omnidirectiona antenna 5dBi for outdoor use

Ref: HG_OMNI_5_OUT_DBI
- Waterproof design
- Outoor 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)

M12-4 Pins plug for sensor interface



M12-5 Pins plug for sensor interface
Ref: M12-PL-SENSOR
watertight IP67 - Material: Plastic ABS
M12-4 Pins plug for sensor interface
Ref: M12-AL-SENSOR
watertight IP67 - Material: Aluminum case

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