

BeanDevice® 2.4GHz AN-V

Wireless IIOT Data Acquisition (DAQ) | voltage inputs ($\pm 5V$ or $\pm 10V$)

PRODUCT VIDEO



USER GUIDE



QUICK START



MECHANICAL DRAWING



STEP FILE



2year
Warranty

MADE IN GERMANY

CE FC E R 207-132085



690gr

77 mm



149 mm

60 mm



MAIN FEATURES



• Analog inputs $\pm 5V$ or $\pm 10V$ (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



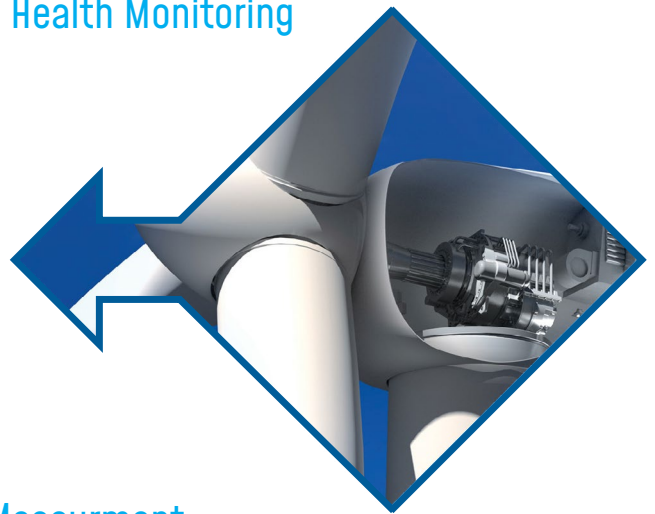
• Integrated sensor power supply, software configurable 4.5V to 20V

APPLICATIONS



Structural Health Monitoring

Condition monitoring



Test and Measurement

EMBEDDED DATA LOGGER UP TO 1 MILLION DATA POINTS

The [BeanDevice® 2.4GHz AN-V](#) 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-V](#)

- LowDutyCycle Data Acquisition
- Survey
- Streaming packet

EXAMPLE : DATA ACQUISITION SYSTEM FOR TECHNICAL BUILDING MANAGEMENT

- The [BeanDevice® 2.4GHz ANV](#) is configured with its Datalogger feature. A standalone installation of the [BeanDevice® 2.4GHz AN-V](#) 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-V](#) 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.



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

REMOTE CONFIGURATION & MONITORING

BeanScape® 2.4GHz Basic

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

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

- **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

BeanScape® 2.4GHz Premium+ Add-on

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 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-ANV-4CH -MR

MR-Measurement Range

5: ±5V measurement range , **10**: ±10V measurement range

Example: **BND-2.4GHZ-ANV-4CH-5**, BeanDevice® AN-V with four channels , measurement range: ±5V

ANALOG DATA ACQUISITION SPECIFICATIONS

Signal Conditioning	Analog voltage measurement
Number of channels	4 Channels
A/D Converter	16 bits - SAR Architecture (Successive Approximation Register) with temperature compensation
Measurement range (analog polarity is dynamically configurable from the BeanScape® 2.4GHz)	BND-2.4GHZ-ANV-4CH -5 : ±5V (bipolar) or 0-10 V (unipolar) BND-2.4GHZ-ANV-4CH -10 : ±10V (bipolar) or 0-20 V (unipolar)
Non-linearity error	± 0.5 LSB
Measurement accuracy @25°C	< 0,1% when plugged on external power supply < 0,08% when operating on battery power
Sensor Connector	M12-4Pins coming with an IP rating IP67

SENSOR POWER SUPPLY SPECIFICATIONS

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

TECHNICAL SPECIFICATIONS

CONFIGURABLE SETTINGS FROM THE BEANSCAPE® 2.4GHz SOFTWARE

Data Acquisition mode	-Static Data Acquisition: Low Duty Cycle Data Acquisition (LDCDA) and Survey (based on alarm thresholds) Mode. 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	2 high levels alarms & 2 low levels alarms
Sensor power supply	4.5 to 20 Volts
Analog Input polarity	Bipolar or Unipolar
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 IIOT SENSORS (WSN)

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

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 with polarity inversion protection
Rechargeable battery	High density Lithium-Ion rechargeable battery with a capacity of 2.2Ah with polyswitch protection

TECHNICAL SPECIFICATIONS

EMBEDDED DATA LOGGER

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

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 resistancet	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

OPTIONAL ACCESSORIES AND SERVICES

External Power Supply	Wall plug-in, Switchmode power Supply 12V @ 1.5A 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

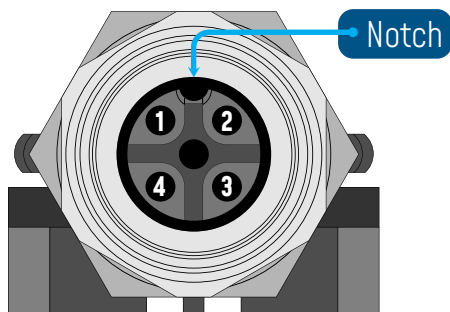
High Gain antenna option

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](#)

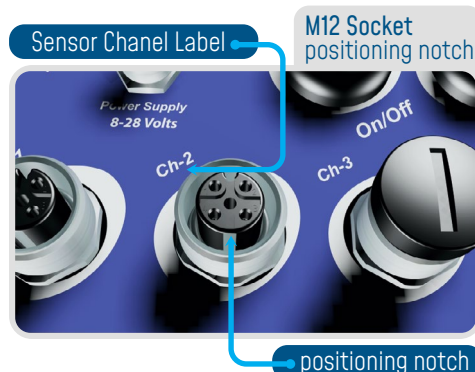
Calibration certificate

Calibration certificate linked to German Accreditation Body (DAkkS) REF: [CERT-CAL-PROCESS](#)

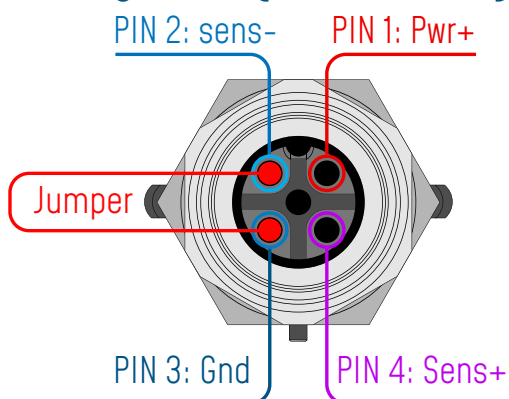
M 12 Socket Pin assignation



M 12 Socket Positioning Notch



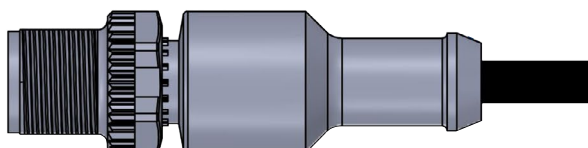
Wiring Code (Sensor Side)-Sensor with Analog Unipolar Output



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

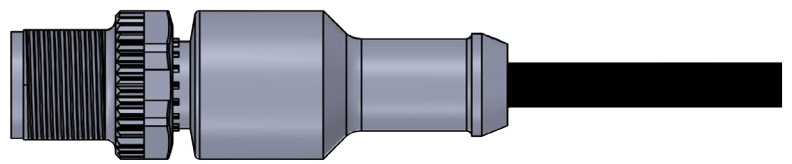
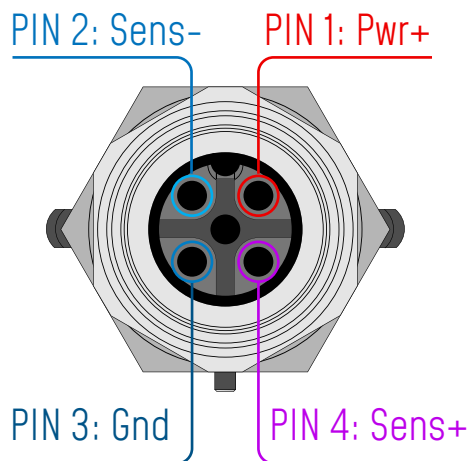
GETTING STARTING WITH A WIRELESS IIOT SENSORS

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 ANV** operates only on our Wireless IIOT Sensor, you will need the **BeanGateway® 2.4GHz** and the **BeanScape® 2.4GHz** for starting a wireless IIOT sensors



OR



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



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

M12-4 Pins female
socket for sensor
interface

Eyelet for
wall mounting

2.4GHz Radio Antenna



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



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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