

BeanDevice® 2.4GHz AN-420

Wireless IOT Data Acquisition (DAQ) Instrument  
4-20mA (current loop) inputs | built-in datalogger

PRODUCT VIDEO



USER GUIDE



QUICK START



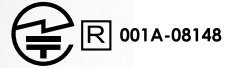
MECHANICAL DRAWING



STEP FILE



MADE IN GERMANY



2year  
Warranty



MAIN FEATURES



• Embedded data logger up to 1 million data points



• Wireless transmission IEEE 802.15.4 with antenna diversity



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



• Wireless data logger with 4-20mA current loop inputs (4 channels)



• Integrated rechargeable Lithium-Ion battery



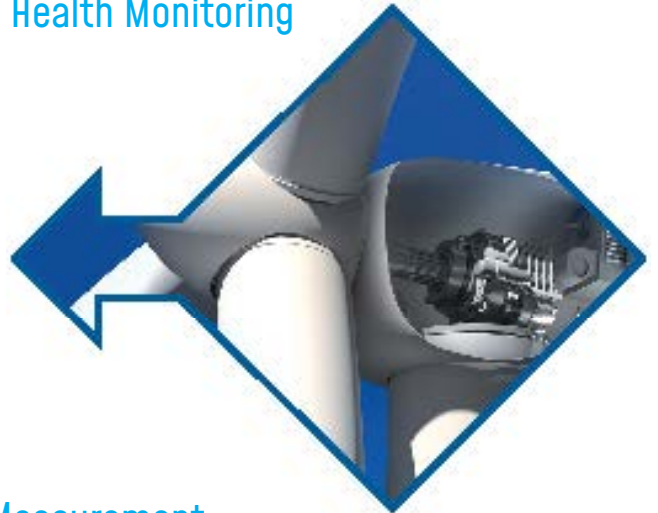
• Measurement repeatability less than  $\pm 0.01\%$  on the full scale

APPLICATIONS



Structural Health Monitoring

Condition monitoring



Test and Measurement

BeanDevice® 2.4GHz AN-420

EMBEDDED DATA LOGGER UP TO 1 MILLION DATA POINTS

The BeanDevice® 2.4GHz AN-420 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-420

- 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 ”

## REMOTE CONFIGURATION & MONITORING

The **BeanScape® 2.4GHz** software helps the user to view all the data measurements transmitted by the **BeanDevice® 2.4GHz AN-420**.

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

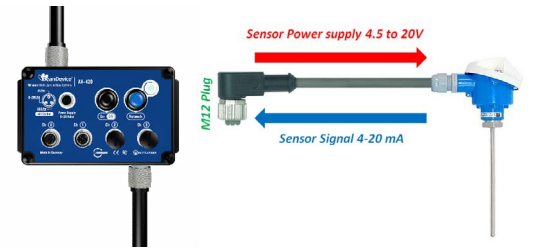


For further information about data logger, please read the following technical note :  
[TN-RF-008-Data-acquisition-modes-available-on-the-BeanDevice](#)

**BeanDevice® 2.4GHz AN-420**

**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 **BeanScope® 2.4GHz** (4.5 to 20V).



**GETTING STARTED WITH A WIRELESS IOT SENSORS**

The **BeanDevice® 2.4GHz AN-420** operates only on our Wireless IIOT Sensors , you will need the **BeanGateway® 2.4GHz** and the **BeanScope® 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-AN420-4CH**
**ANALOG DATA ACQUISITION SPECIFICATIONS**

Signal Conditioning	Analog current loop measurement
Number of channels	4 Channels
A/D Converter	16 bits - SAR Architecture (Successive Approximation Register) with temperature compensation
Measurement range	4-20 mA Current Loop measurement
Non-linearity error	± 0.5 LSB
Repeatability (full scale, @ 25°C, static Measurement Mode every 2s)	less than ± 0.01%
Repeatability (full scale, @ 25°C, Dynamic Measurement Mode 10Hz)	less than ± 0.01%
Sensor Connector	M12-4Pins , A-Coding, Waterproof IP67

**SENSOR POWER SUPPLY SPECIFICATIONS**

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

**CONFIGURABLE SETTINGS FROM THE BEANSCOPE® 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 <b>Alert-Action-Alarm</b>
Sensor power supply	4.5 to 20 Volts
Power Mode	Battery saver mode & Active power mode

**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**

**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	<ul style="list-style-type: none"> <li>• 2 omnidirectional N-Type antenna</li> <li>• Gain 5.5 dBi</li> <li>• Waterproof IP67</li> </ul>

**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, 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 resistancet	50g during 50 ms
Operating Temperature	-40 °C to +60 °C
Norms	<ul style="list-style-type: none"> <li>• CE Labelling Directive R&amp;TTE (Radio) ETSI EN 300 328</li> <li>• FCC (North America)</li> <li>• ARIB STD-T66 Ver 3.6</li> <li>• ROHS - Directive 2002/95/EC</li> </ul>

**POWER SUPPLY**

Integrated battery charger	Integrated Lithium-ion battery charger with high precision battery monitoring : <ul style="list-style-type: none"> <li>• Overvoltage Protection, Overcurrent/Short-Circuit Protection, Undervoltage Protection</li> <li>• Battery Temperature monitoring</li> </ul>
Current consumption @ 3.3V	<ul style="list-style-type: none"> <li>• During data acquisition : 70mA to 130 mA (depends on external sensor power supply)</li> <li>• During Radio transmission : 70 mA</li> <li>• During Battery Saver Mode: &lt; 35 µA</li> </ul>
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

**TECHNICAL SPECIFICATIONS**

**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) <a href="#">Ref: M8-PWR-12V</a>
M8 extension cable for external power supply	Molded cable with M8-3pins male plug <b>Material:</b> PVC with shield protection <b>IP Rating :</b> IP67   Nema 6 Cable length: 2 meters , <a href="#">Ref: CBL-M8-2M</a> Cable length : 5 meters, <a href="#">Ref: CBL-M8-5M</a> Cable length: 10 meters, <a href="#">Ref: CBL-M8-10M</a>
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 <a href="#">Ref: M12-PL-SENSOR</a>
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 <a href="#">Ref: M12-AL-SENSOR</a>
Antenna cable	N-Type cable (Male/Male), Cable type: RF-5/H155 Cable length: 1 meter, <a href="#">Ref: CBL-ANT-1M</a> Cable length: 2 meters, <a href="#">Ref: CBL-ANT-2M</a> Cable length: 3 meters, <a href="#">Ref: CBL-ANT-3M</a> Cable length: 5 meters, <a href="#">Ref: CBL-ANT-5M</a> Cable length: 10 meters, <a href="#">Ref: CBL-ANT-10M</a>
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 <a href="#">Ref: HG-OMNI-OUT-7DBI</a> Gain: 9dBi , Dimensions 540x23 mm, Weight 0.61 kg <a href="#">Ref: HG-OMNI-OUT-9DBI</a> Gain: 12dBi , Dimensions: 1125mm x 19 mm, Weight 1.06 kg <a href="#">Ref: HG-OMNI-OUT-12DBI</a>
Calibration certificate	Calibration certificate linked to German Accreditation Body (DAkkS) <a href="#">REF: CERT-CAL-PROCESS</a>



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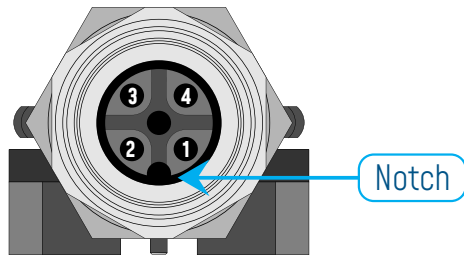
PRODUCT OVERVIEW



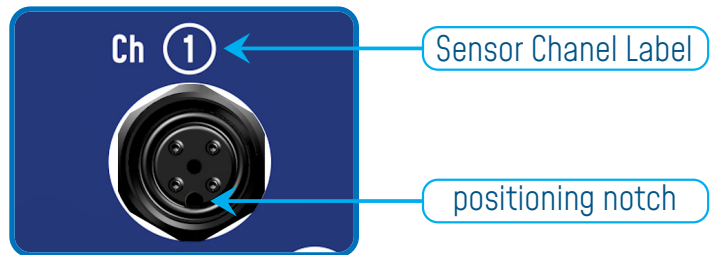
BeanDevice® 2.4GHz AN-420

SENSOR WIRING CODE

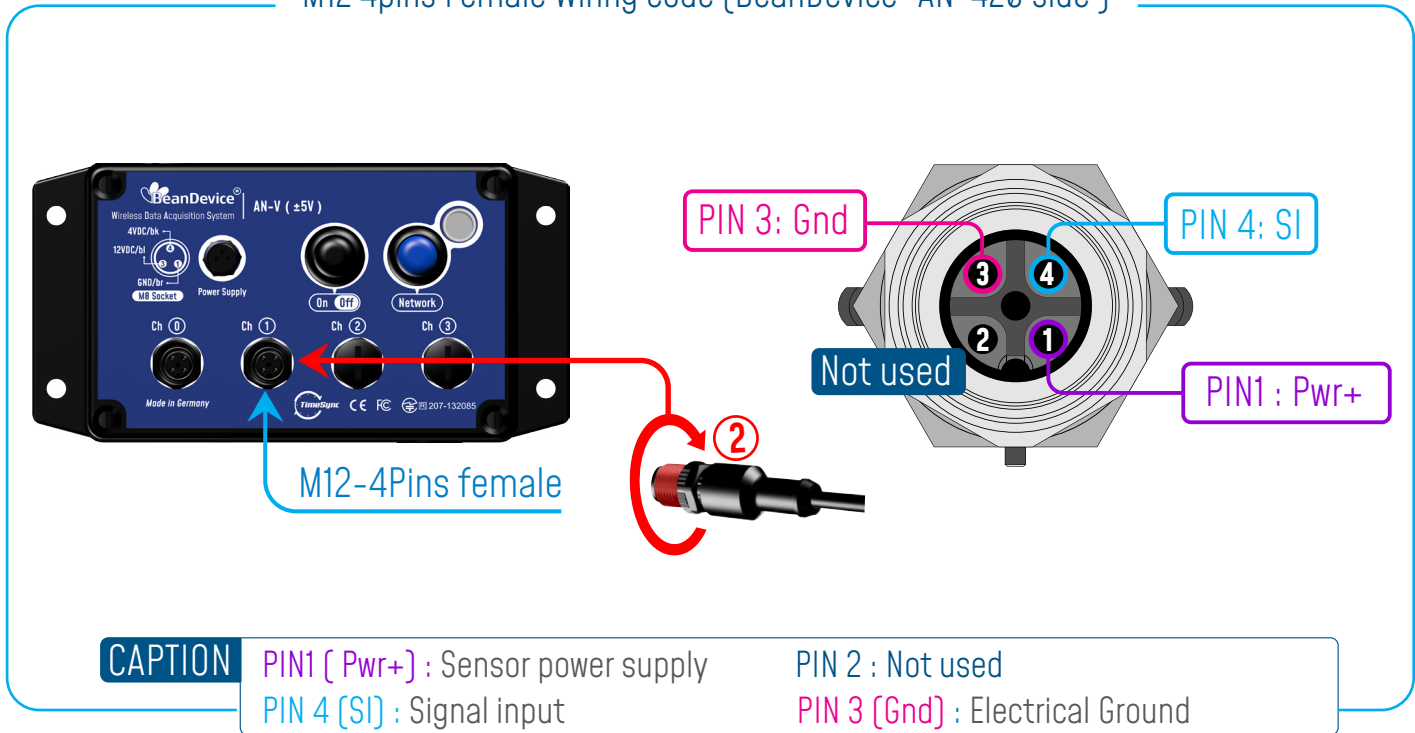
M12 Socket Pin assignation



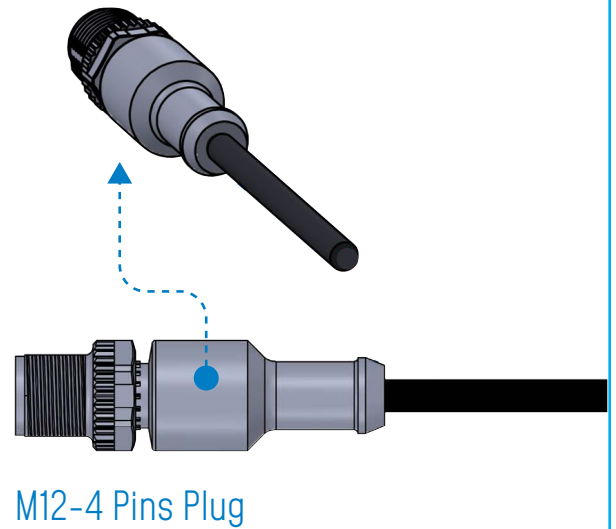
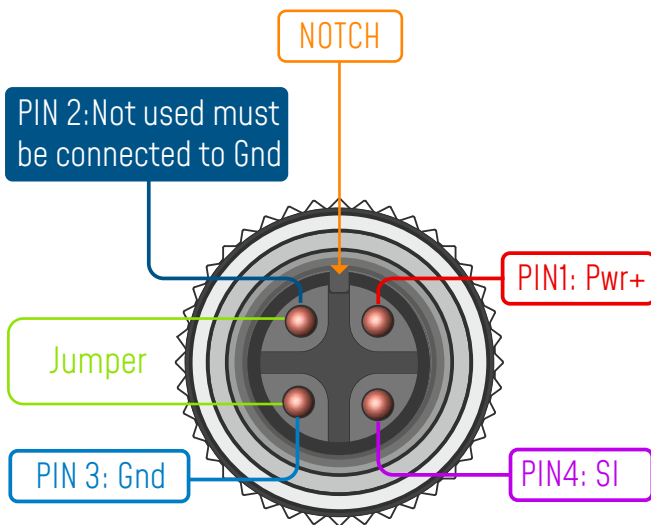
M12 Socket Positioning Notch



M12 4pins Female Wiring code (BeanDevice® AN-420 side )



M12-4pins Male Plug Wiring code (sensor side)



**CAPTION** PIN1 [ Pwr+ ] : Sensor power supply      PIN2 : Not used must be connected to Gnd  
 PIN4 [ SI ] : Signal input      PIN3 [ Gnd ] : Electrical Ground

Instructions for connecting a 2-wire sensor :

- Connect the sensor wire "Loop Supply" to PIN1 (Pwr+)
- Connect the sensor wire "Current output" 4-20mA to PIN4 (SI)
- Use a jumper cable to connect PIN3(Gnd) to PIN2

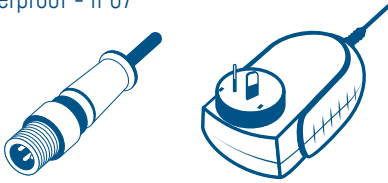
**BeanDevice® 2.4GHz AN-420**

**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]



**M12-4 Pins plug for sensor interface**

M12-5 Pins plug for sensor interface

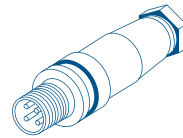
Ref: M12-PL-SENSOR

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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