

BeanDevice® 2.4GHz AN-420

Wireless IIOT Data Acquisition (DAQ) | 4-20mA (current loop) inputs

PRODUCT VIDEO



USER GUIDE



QUICK START



MECHANICAL DRAWING



STEP FILE



ProcessSensor



MADE IN GERMANY



MAIN FEATURES



• Embedded data logger up to 1 million data points



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



• Wireless transmission IEEE 802.15.4 with antenna diversity



• Integrated rechargeable Lithium-Ion battery



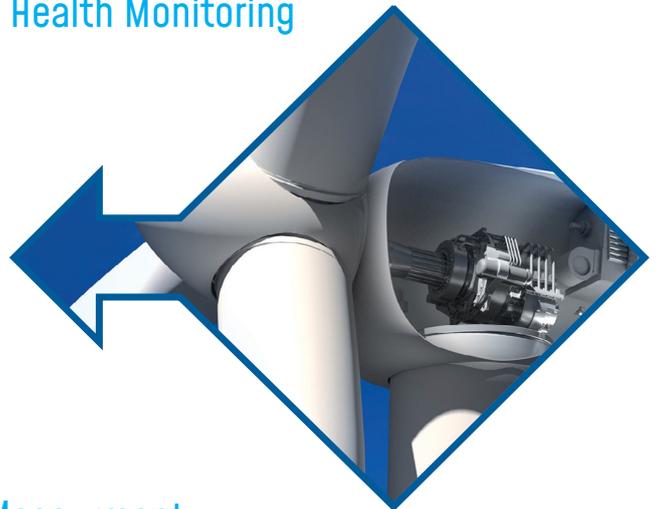
• Integrated sensor power supply, software configurable 4.5V to 20V

APPLICATIONS



Structural Health Monitoring

Condition monitoring



Test and Measurement

EMBEDDED DATA LOGGER UP TO 1 MILLION DATA POINTS

The [BeanDevice® 2.4GHz AN-420](#) 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-420](#) :

- [LowDutyCycle Data Acquisition](#)
- [Survey](#)
- [Streaming packet](#)

## BeanDevice® 2.4GHz AN-420

### EXAMPLE : DATA ACQUISITION SYSTEM FOR TECHNICAL BUILDING MANAGEMENT

- The **BeanDevice® 2.4GHz AN-420** is configured with its Datalogger feature. A standalone installation of the **BeanDevice® 2.4GHz AN-420** 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-420** 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 ”

## BeanDevice® 2.4GHz AN-420

### 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-420**. With the OTAC (Over-the-Air configuration) feature, the user can remotely configure the **BeanDevice® 2.4GHz AN-420**

SEVERAL DATA ACQUISITION MODES ARE AVAILABLE ON THE BEANDEVICE® 2.4GHz AN-420 :

- **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-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)	< 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® software
Power Supply precision (full scale, @25°C)	±0.18%
Maximum Output Power (@25°C)	1 Watts

### CONFIGURABLE SETTINGS FROM THE BEANSCAPE® 2.4GHZ SOFTWARE

Data Acquisition mode	<b>Static Data Acquisition:</b> Low Duty Cycle Data Acquisition (LDCDA) and Survey (based on alarm thresholds) Mode. Measurement heartbeat 1s to 24 hour <b>Dynamic data acquisition (not available on devices with ref. extension XT ):</b> 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
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 sleeping: &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**

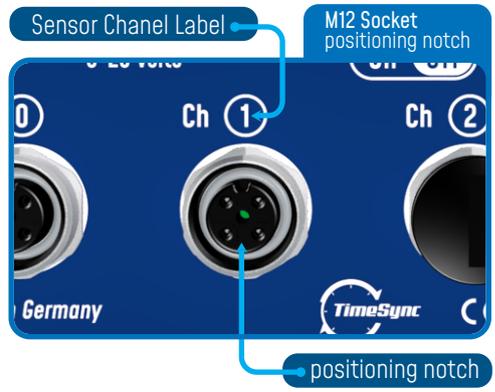
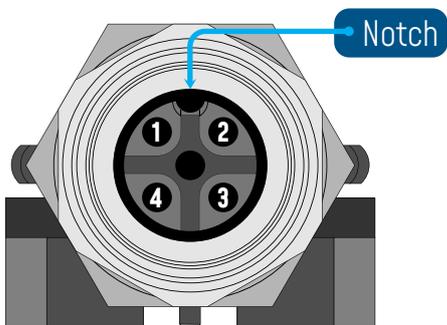
4 x M12 Cap  
1 x M8 Cap  
2 x High gain antenna 5.5 dBi / V.S.W.R : 1.5 :1  
/ Waterproof IP67

**OPTIONAL ACCESSORIES AND SERVICES**

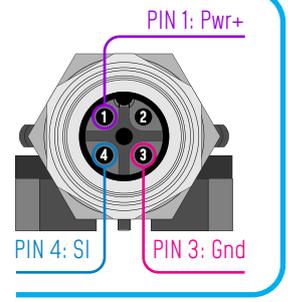
External Power Supply	Wall plug-in, Switchmode power Supply 12V @ 1.25A with sealed M8 Plug (IP67/Nema 6) <a href="#">Ref: M8-PWR-12V</a>
M8 extension cable for external power supply	Molded cable with M8-3pins male plug <b>Material:</b> PVC with shield protection <b>IP Rating :</b> IP67   Nema 6 Cable 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>

**BeanDevice® 2.4GHz AN-420**

**M 12 Socket Wiring Code (BeanDevice 2.4GHz AN-420 side)**



**CAPTION**  
 PIN1 [ Pwr+ ] : Sensor power supply  
 PIN 4 (SI) : Signal input  
 PIN 2 : Not used  
 PIN 3 (Gnd) : Electrical Ground



**M12-5 Pins Socket**



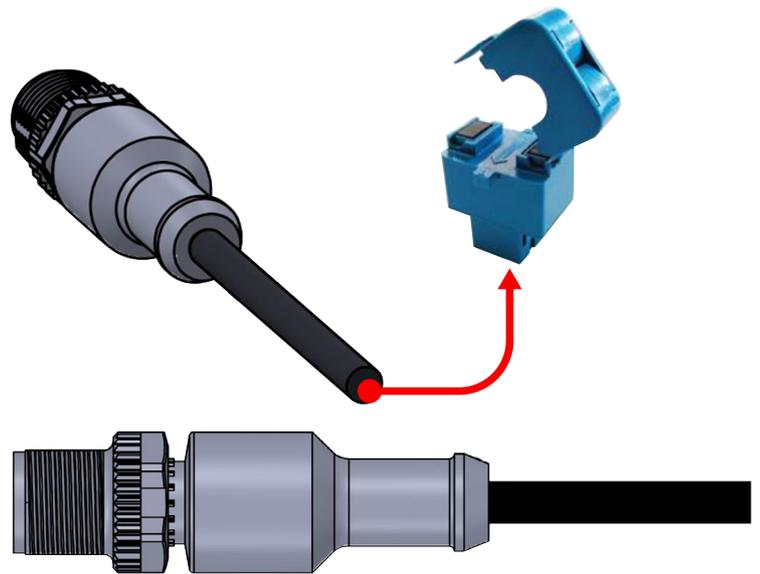
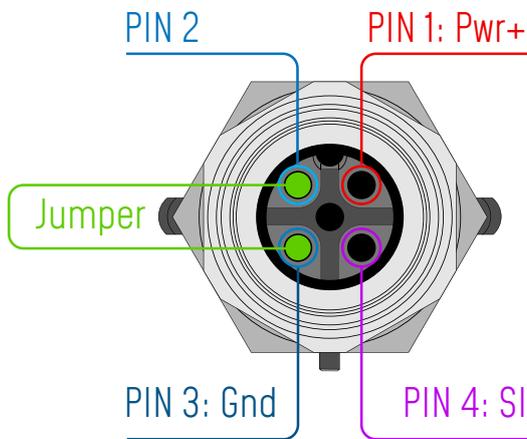
EXAMPLE OF SENSOR WIRING (CURRENT CLAMP SENSOR)

M12-4pins Plug Wiring Code (Sensor Side)

**CAPTION**

- PIN1 ( Pwr+ )** : Sensor power supply
- PIN 4 (SI)** : Sensor Signal + input
- PIN 2** : Not used. must be connected Gnd
- PIN 3 (Gnd)** : Electrical Ground

**Sensor Wiring Code**



**M12-4 Pins Plug**

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**

**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 STARTING WITH A WIRELESS IIOT 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



**BeanDevice**  
**AN-420**



**BeanGateway**



**OR**



**BeanGateway**



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



**BeanScope**  
Wireless IIOT Sensors Supervision software

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

**BeanDevice® 2.4GHz AN-420**

**PRODUCT OVERVIEW**



**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 / 10 meters
  - . Cable type: RF-5/H155



**Omnidirectional antenna 5dBi for outdoor use**

- 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**

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



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