BeanAir
WIRELESS IIOT SENSORS

2.4 GHz

BeanDevice® 2.4GHz AN-420

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

ProcessSensor

2year Warranty

MADE IN GERMANY

CE FC Ⓡ 207-132085

PRODUCT VIDEO

USER GUIDE

QUICK START

MECHANICAL DRAWING

STEP FILE

BeanDevice® | AN-420
Wireless Data Acquisition System

4V/bk
8-28V/bl
GND/br
M8 Socket
Power Supply 8-28 Volts
On Off
Network

Ch ⓪ Ch ① Ch ② Ch ③

Made in Germany
TimeSync CE FC Ⓡ 207-132085

690gr
77 mm
149 mm
60 mm

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

APPLICATIONS

Structural Health Monitoring

Condition monitoring
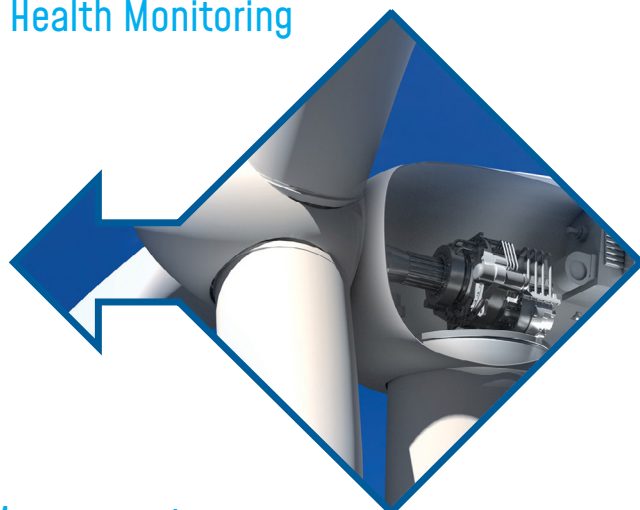
Test and Measurment

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

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 sucessfully transmitted to the BeanGateway® 2.4GHz, the flash memory is erased and new logs will be recorded.

BeanDevice
2.4GHz AN-420

The Datalogger feature is activated on the BeanDevice®

BeanGateway
Wirelless IIOT Sensors Coordinator

Transmits all the data logs

Request for Logs transmission

BeanAir

i 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 Conditionning	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
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
Calibration certificate	Calibration certificate linked to German Accreditation Body (DAkkS)

SENSOR POWER SUPPLY SPECIFICATIONS	
Excitation voltage range	4.5 Volts to 20Volts , configurable from the BeanScape® software
Excitation voltage accuracy on full scale range(@25°C)	±0.1%
Maximum Output Power (@25°C)	1 Watts

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

BeanDevice® 2.4GHz AN-420

TECHNICAL SPECIFICATIONS

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
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)

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

TECHNICAL SPECIFICATIONS

| 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

| 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

OPTION(S)	
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 Wiring Code (BeanDevice 2.4GHz AN-420 side)

Notch

Sensor Chanel Label

M12 Socket positioning notch

positioning notch
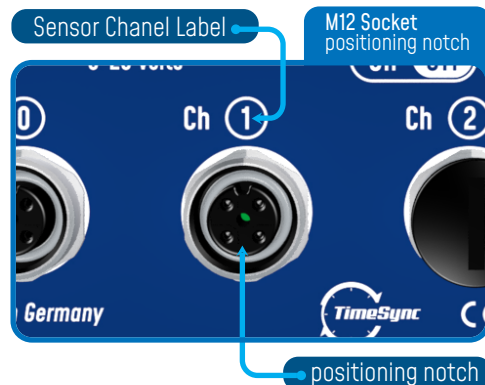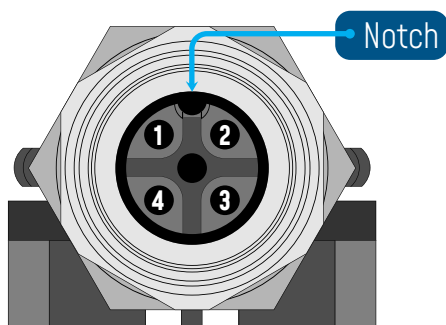
M12-5 Pins Socket

CAPTION
PIN1 (Pwr+) : Sensor power supply
PIN 4 (SI) : Signal input
PIN 2 : Not used
PIN 3 (Gnd) : Electrical Ground
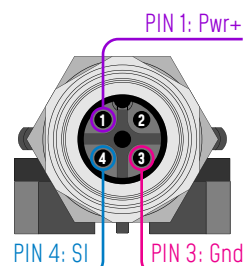
PIN 1: Pwr+
PIN 4: SI
PIN 3: Gnd

EXAMPLE OF SENSOR WIRING (CURRENT CLAMP SENSOR)
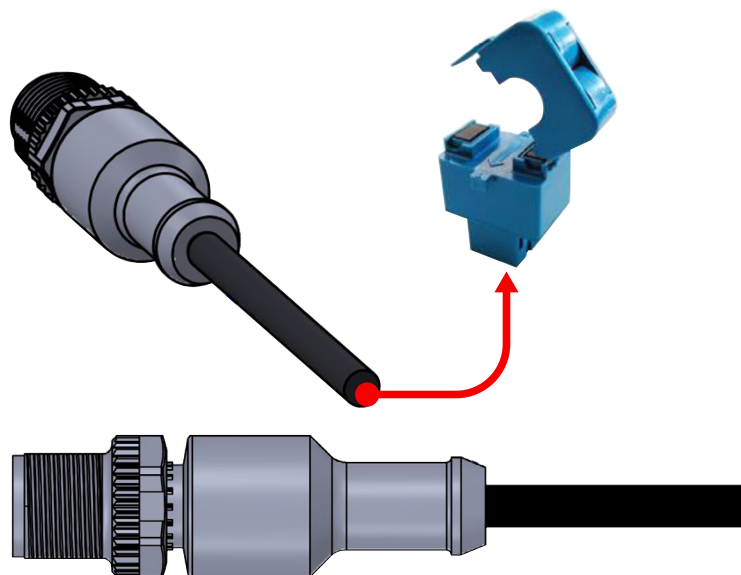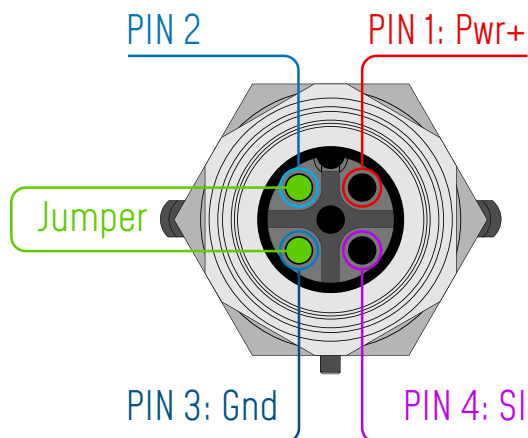
M12-4pins Plug Wiring Code (Sensor Side)

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

PIN 2
PIN 1: Pwr+
Jumper
PIN 3: Gnd
PIN 4: SI

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 BeanScape® 2.4GHz (4.5 to 20V).

Sensor Power supply 4.5 to 20V
M12 Plug
Sensor Signal 4-20 mA
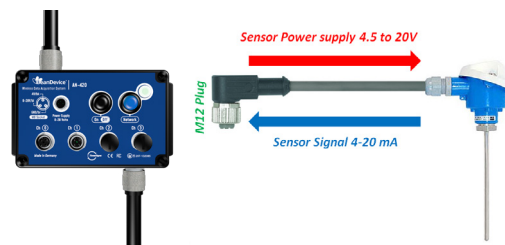
GETTING STARTING WITH A WIRELESS IIOT SENSORS

The BeanDevice® 2.4GHz AN-420 operates only on our Wireless IIOT Sensors , you will need the BeanGateway® 2.4GHz and the BeanScape® 2.4GHz for starting a Wireless IIOT Sensors

BeanAir
BeanDevice
AN-420

BeanGateway

OR

OPC FOUNDATION ®

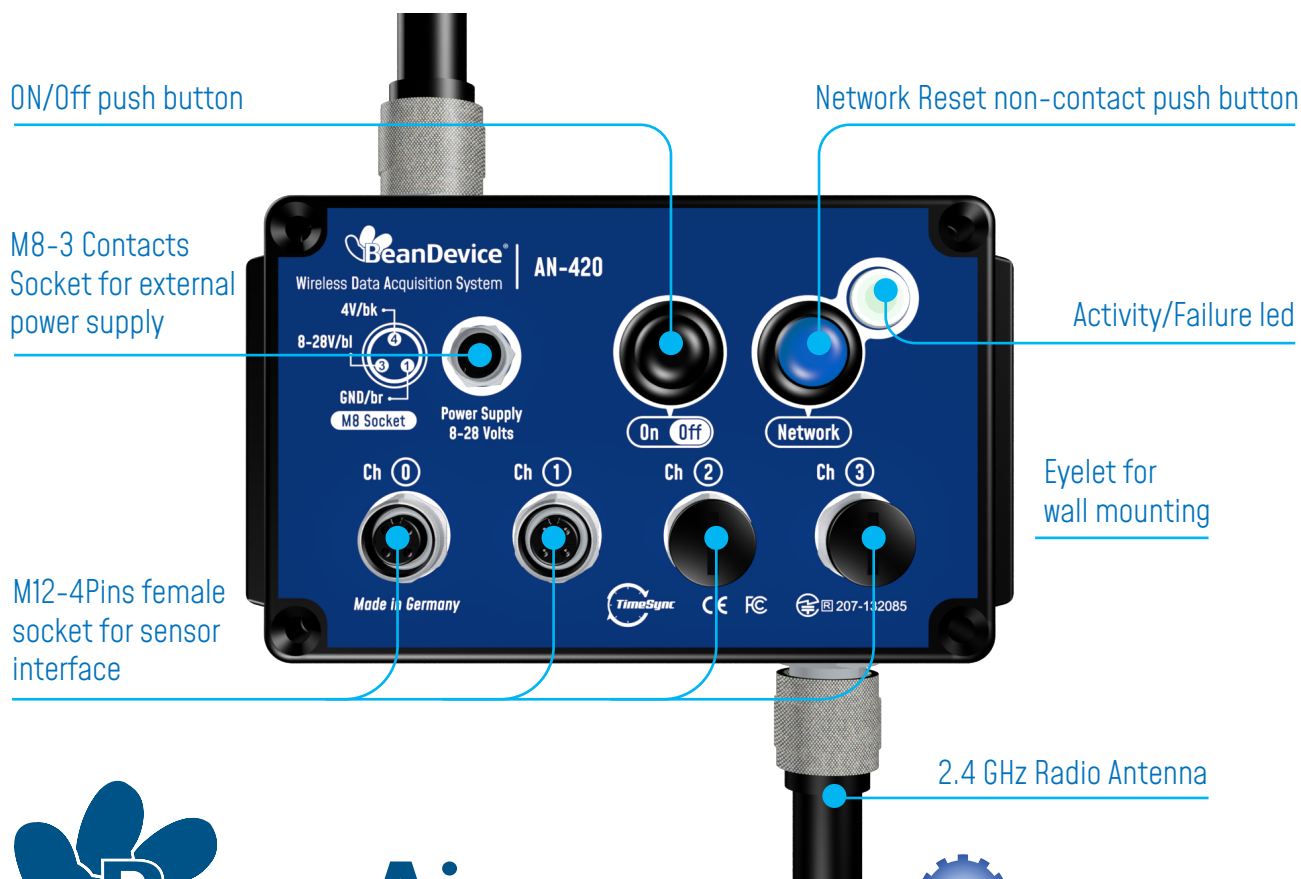OPC server is only available on the Beanscape® 2.4GHz Premium +

BeanScape
Wireless IIOT Sensors Supervision software

BeanGateway

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

BeanAir
WIRELESS IIOT SENSORS

BeanDevice® 2.4GHz AN-420

2.4 GHz

ON/Off push button

Network Reset non-contact push button

M8-3 Contacts Socket for external power supply

Activity/Failure led

BeanDevice® | AN-420
Wireless Data Acquisition System
4V/bk
8-28V/bl
GND/br
M8 Socket
Power Supply 8-28 Volts
On Off
Network
Ch ⓪   Ch ①   Ch ②   Ch ③
Made in Germany
TimeSync CE FC 207-132085

Eyelet for wall mounting

M12-4Pins female socket for sensor interface

2.4 GHz Radio Antenna

BeanAir

ProcessSensor

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
- 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)

M12-5 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

BeanDevice® 2.4GHz AN-420

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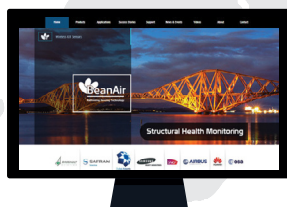
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