



# Wireless Data logger with 4-20 mA current loop inputs



Wireless data logger with 4-20mA current loop inputs



Wireless Transmission IEEE 802.15.4 with antenna diversity



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



Integrated Rechargeable Lithium-Ion battery



Embedded data logger up to 1 000 000 data acquisition records



 [BeanDevice® AN-420 Main presentation Video](#)

 [BeanDevice® AN-420 configuration Video](#)

 [BeanDevice® AN-420 Wireless Range Video](#)

## Main features

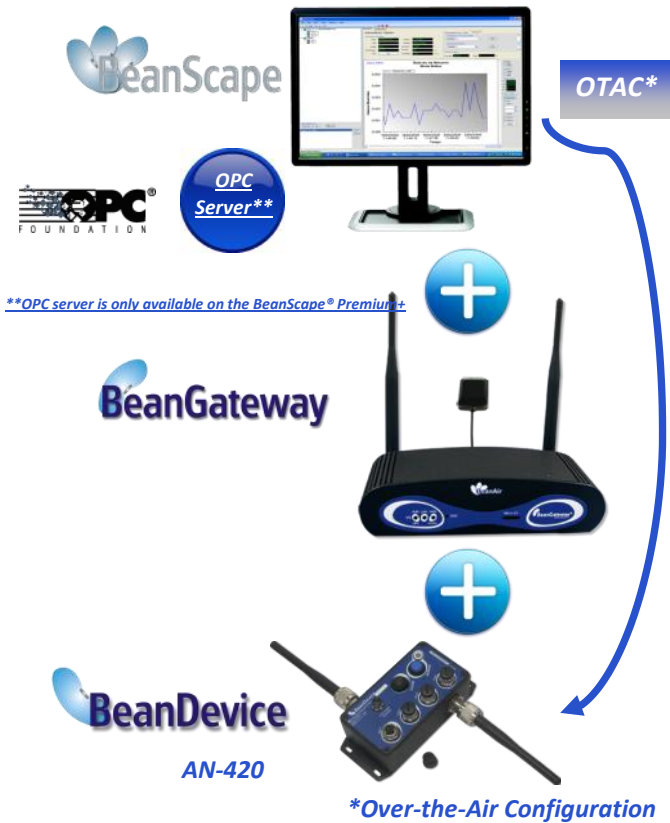


- Wireless data logger with 4-20 mA current loop inputs
- 100% Wireless Technology : the sensor power supply is provided by the BeanDevice® (4.5V to 20V)
- Excellent radio link budget due to the antenna diversity & a high power RF front-End designed by BeanAir
- Current consumption in sleeping mode : < 30 µA whatever the sensor technology
- Number of Input Channels : 4 or 2 channels
- High measurement accuracy: < 0.08%
- Maximum Radio Range : 1000m (L.O.S)
- Streaming Packet Mode : 400 SPS (samples per second)
- **Embedded Datalogger** : up to 1 000 000 data acquisition records (with events dating)
- OPC server allowing real time access from your IT system to the BeanScope® (available on [BeanScope® Premium+](#) )
- Entirely autonomous system with an integrated Lithium-Ion battery charger
- « Plug and Play » installation : requires no knowledge of wireless technology
- IP65 Watertight aluminium enclosure suitable for harsh industrial environment
- M12 Sensor connector with IP67 degree of protection
- **Option**: Calibration certificate linked to national and international standards (COFRAC)





## Remote configuration and monitoring



The **BeanScope®** application allows the user to view all the data measurements transmitted by the **BeanDevice® AN-420**.

With the OTAC (Over-the-Air configuration) feature, the user can remotely configure the **BeanDevice® AN-420**. Several Data acquisition modes are available on the **BeanDevice® 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.
- **Alarm Mode** : the measured value is transmitted by radio whenever an alarm threshold (fixed by the user) is detected (4 alarms threshold levels High/Low).
- **Survey Mode** : operates like the Alarm mode but 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 maximum
- **Streaming Mode**: all measured values are transmitted in real-time within a continuous flow at 100 samples per second maximum

The **BeanScope® 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. measurement can be associated to a tag or its attributes and shared with one or many OPC clients.

**i** For further informations about the data acquisition modes, please read the following technical note: [TN RF 008 – “Data acquisition modes available on the BeanDevice®”](#)

## 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®** (4.5 to 20V).









## Embedded data logger up to 1 000 000 data acquisition records

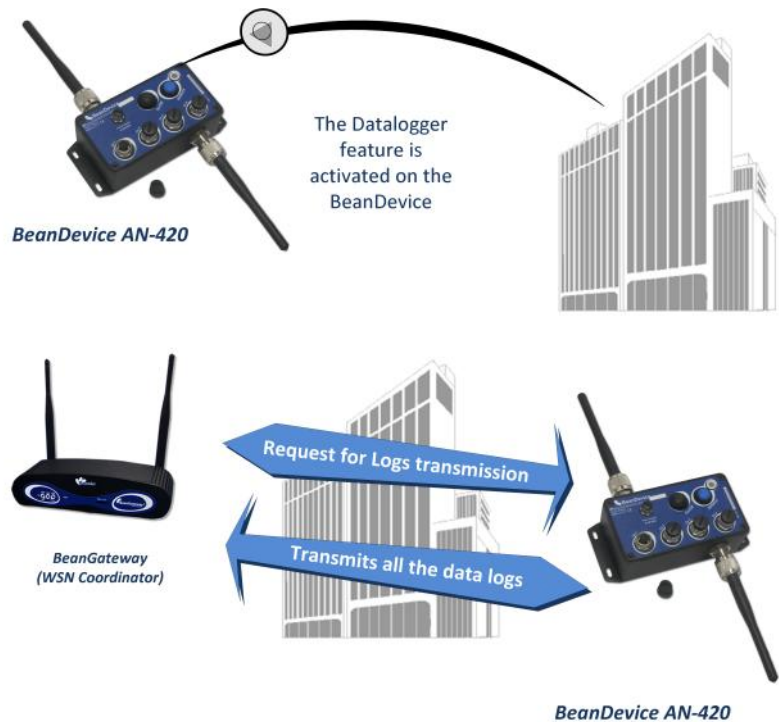


The **BeanDevice® AN-420** integrates an embedded data logger, which can be used to log data when a Wireless Sensor Networks can not be easily deployed on your site. All the data acquisitions are stored on the embedded flash and then transmitted to the **BeanGateway®** whenever a Wireless Sensor Network is established. The Datalogger function is compatible with all the data acquisition mode available on your **BeanDevice® AN-420**:

-  **LowDutyCycle Data Acquisition**
-  **Alarm**
-  **Survey**
-  **Streaming & Streaming packet**

### Example: Data acquisition system for technical building management

- The **BeanDevice® AN-420** is configured with its Datalogger feature. A standalone installation of the **BeanDevice® AN-420** will be done (mounted on the walls), without the necessity for any connection to the **BeanGateway®**.
- 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® AN-420** starts sending all its logs. If all the logs are successfully transmitted to the **BeanGateway®**, the flash memory is erased and new logs will be recorded .



For further informations about the Datalogger, please read the following technical note – [TN\\_RF\\_007 – “BeanDevice® DataLogger User Guide”](#)





**Product reference**

BND-AN420 -NCH -WP

**N- Number of data acquisition channels :**

**2 :** 2 Channels

**4 :** 4 Channels

**WP- Wireless Protocol**

**IEEE :** IEEE 802.15.4 (2006)

Example : BND-AN420 -4CH -IEEE

BeanDevice® AN-420 with four channels , IEEE 802.15.4(2006) , Rechargeable battery

**Analog data acquisition block specifications**

<b>Signal Conditioning</b>	Analog current loop measurement
<b>Number of channels</b>	2 or 4 Channels
<b>A/D Converter</b>	16 bits - SAR Architecture (Successive Approximation Register) with temperature compensation
<b>Measurement range</b>	4-20 mA Current Loop measurement
<b>Non-linearity error</b>	± 0.5 LSB
<b>Measurement accuracy(@25°C)</b>	< 0,1% when plugged on external power supply < 0,08% when operating on battery power
<b>Sensor Connector</b>	M12-5Pins coming with an IP rating IP67

**Sensor wiring code (M12 Socket)**

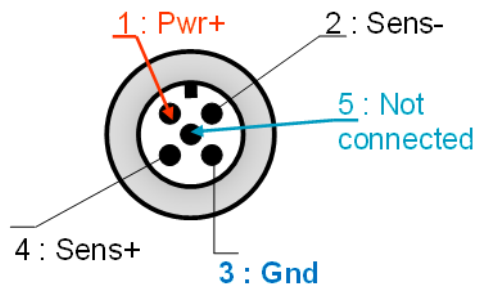
**Caption**

**Pwr+ :** sensor power supply (4.5 to 20 Volts)

**Gnd :** electrical ground

**Sens+ :** sensor signal + input

**Sens- :** Not used



Sensor Power Supply specifications	
<b>Excitation voltage range</b>	4.5 Volts to 20Volts , configurable from the BeanScope® software
<b>Excitation voltage accuracy on full scale range(@25°C)</b>	±0.1%
<b>Maximum Output Power (@25°C)</b>	2 Watts

Over-the-air configuration (OTAC) parameters	
<b>Data Acquisition mode</b>	Low Duty Cycle Data Acquisition (LDCDA) Mode: 1s to 24 hour Alarm & Survey mode: 1s to 24 hour Streaming Packet Mode: 400 SPS maximum Streaming Mode: 100 SPS maximum
<b>Sampling Rate (SPS = samples per second)</b>	Minimum: 1 SPS Maximum: 400 SPS maximum on each channel
<b>Alarm Threshold</b>	2 high levels alarms & 2 low levels alarms
<b>Sensor power supply</b>	4.5 to 20 Volts
<b>Power Mode</b>	Sleeping, Sleeping with Network Listening & Active
<b>TX Power</b>	-7 dBm / -1 dBm / 5 dBm / 11 dBm / 15 dBm / 18 dBm

RF Specifications	
<b>Wireless Protocol Stack</b>	IEEE 802.15.4 (2006 version)
<b>WSN Topology</b>	Point-to-Point / Star
<b>Encryption</b>	AES 128 bits (AES integrated coprocessor)
<b>Data rate</b>	250 Kbits/s
<b>RF Characteristics</b>	ISM 2.4GHz – 16 Channels.
<b>TX Power</b>	+0 dBm to +18 dBm
<b>Receiver Sensitivity</b>	-95,5 dBm to -104 dBm
<b>Maximum Radio Range</b>	1 Km (L.O.S)
<b>Antenna diversity</b>	2 omnidirectional N-Type antenna , gain of 2.2 dBi , IP67

Embedded Data logger	
<b>Storage capacity</b>	up to 1 000 000 data acquisition
<b>Write/read cycle</b>	400 000
<b>Wireless data downloading</b>	3 minutes to download the full memory (average time)



Environmental and Mechanical	
<b>Enclosure</b>	Aluminium, Watertight IP65 – Fire Protection : ULV94/Getex Enclosure dimensions (without antenna ) L x l x h : 146.05 mm x 65.5mm x 33.5 mm Weight : 550g
<b>Shocks resistance</b>	10g during 50 ms
<b>Operating Temperature</b>	-20 °C to +65 °C
<b>Norms</b>	CE Labelling Directive R&TTE (Radio) ETSI EN 300 328
	ROHS - Directive 2002/95/EC

Power supply	
<b>Integrated battery charger</b>	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> <li>· Current accumulation measurement</li> </ul>
<b>Current consumption @ 3,3V</b>	<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 : 60 mA @ 0dBm</li> <li>· During sleeping: &lt; 30 µA</li> </ul>
<b>External power supply</b>	External power supply : +8v to +28v
<b>Rechargeable battery</b>	Lithium-Ion high density rechargeable battery capacity of 950 mAh

Option(s)	
<b>Power-supply bloc</b>	Wall plug-in, Switchmode power Supply 12V @ 1,25A with sealed M8 Plug (IP67)
<b>Calibration certificate</b>	Calibration certificate linked to national and international standards (COFRAC)

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





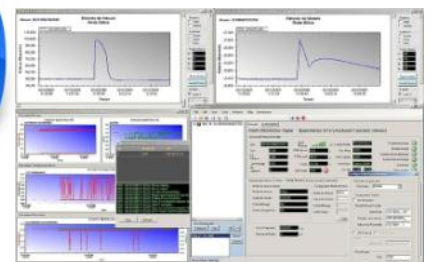
### Getting started with a Wireless Sensor Networks

## BeanGateway

### Indoor Version



## BeanScape WSN Supervision Software



OR



*\*\*OPC server is only available on the BeanScape® Premium+*

## BeanGateway

### Outdoor Version

Description	StarterKit Reference
<b>Starterkit Wireless System acquisition Beandevise AN-420</b> 1 x BeanGateway Ethernet ( <i>Indoor version</i> ), Ref: BGTW-ETH-IND 1 x BeanDevice AN-420 with four data acquisition channels , Ref: BND-AN-420-4CH-IEEE 1 x Beanscape Basic, Ref: BNSC_BASIC	SK_BND_AN420_4CH_IND
<b>Starterkit Wireless System acquisition Beandevise AN-420</b> 1 x BeanGateway Ethernet ( <i>Outdoor version</i> ), Ref.: BGTW-ETH-OUT 1 x BeanDevice AN-420 with four data acquisition channels , Ref: BND-AN-420-4CH-IEEE 1 x Beanscape Basic, Ref: BNSC_BASIC	SK_BND_AN420_4CH_OUT

The **BeanDevice® AN-420** operates only on our Wireless Sensor Networks , you will need the **BeanGateway®** and the **BeanScape®** for starting a wireless sensor network .



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