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

- Integrated rechargeable Lithium-Ion battery
- Embedded data logger up to 1 million data points
- Integrated sensor power supply, software configurable 4.5V to 20V
- Wireless transmission IEEE 802.15.4 with antenna diversity

FEATUREED VIDEO
- BeanDevice® AN-420 Main presentation Video
- BeanDevice® AN-420 Configuration Video
- BeanDevice® AN-420 Wireless Range Video

USER MANUAL
- BeanDevice® ProcessSensor user manual

MECHANICAL DRAWING
- BeanDevice® AN-420 drawing

WIRELESS DATA LOGGER WITH 4-20MA CURRENT LOOP INPUTS
The **BeanDevice® AN-420** integrates an embedded data logger, which can be used to log data when a Wireless Sensor Networks cannot 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 modes 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 information about the Datalogger, please read the following technical note:

**TN_RF_007 – “BeanDevice® DataLogger User Guide”**

**RETHINKING SENSING TECHNOLOGY**
BeanScape® Basic

The BeanScape® 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.

BeanScape® Premium+ Add-on

The BeanScape® 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 the different data acquisition modes:
TN_RF_008 – “Data acquisition modes available on the BeanDevice®”
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® (4.5 to 20V).

**Product Reference**

<table>
<thead>
<tr>
<th>BND-AN420-NCH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong> - Number of data acquisition channels:</td>
</tr>
<tr>
<td>4 : 4 channels</td>
</tr>
<tr>
<td>Example: BND-AN420-4CH</td>
</tr>
<tr>
<td>BeanDevice® AN-420 with four channels</td>
</tr>
</tbody>
</table>

**Analog data acquisition block specifications**

<table>
<thead>
<tr>
<th><strong>Signal Conditionning</strong></th>
<th>Analog current loop measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of channels</strong></td>
<td>4 Channels</td>
</tr>
<tr>
<td><strong>A/D Converter</strong></td>
<td>16 bits - SAR Architecture (Successive Approximation Register) with temperature compensation</td>
</tr>
<tr>
<td><strong>Measurement range</strong></td>
<td>4-20 mA Current Loop measurement</td>
</tr>
<tr>
<td><strong>Non-linearity error</strong></td>
<td>± 0.5 LSB</td>
</tr>
<tr>
<td><strong>Measurement accuracy(@25°C)</strong></td>
<td>&lt; 0.1% when plugged on external power supply</td>
</tr>
<tr>
<td></td>
<td>&lt; 0.08% when operating on battery power</td>
</tr>
<tr>
<td><strong>Sensor Connector</strong></td>
<td>M12-5Pins coming with an IP rating IP67</td>
</tr>
</tbody>
</table>

**Caption**

- **Pwr+**: sensor power supply (4.5 to 20 Volts)
- **Gnd**: electrical ground
- **Sens+**: sensor signal + input
- **Sens-**: Not used

**Sensor wiring code (M12 Socket)**

| 1 : Pwr+ |
| 2 : Sens- |
| 3 : Gnd |
| 4 : Sens+ |
| 5 : Not connected |

**Sensor Power Supply specifications**

<table>
<thead>
<tr>
<th><strong>Excitation voltage range</strong></th>
<th>4.5 Volts to 20Volts, configurable from the BeanScape® software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Excitation voltage accuracy on full scale range(@25°C)</strong></td>
<td>±0.1%</td>
</tr>
<tr>
<td><strong>Maximum Output Power (@25°C)</strong></td>
<td>2 Watts</td>
</tr>
</tbody>
</table>
### Over-the-air configuration (OTAC) parameters

| Data Acquisition mode (SPS = Sample Per Second) | 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 |
| Sampling Rate (SPS = samples per second) | Minimum: 1 SPS  
Maximum: 400 SPS maximum on each channels |
| Alarm Treshold | 2 high levels alarms & 2 low levels alarms |
| Sensor power supply | 4.5 to 20 Volts |
| Power Mode | Sleeping, Sleeping with Network Listening & Active |
| TX Power | -7 dBm/ -1 dBm/ +5 dBm/ +11 dBm/ +15 dBm/ +18 dBm |

### RF Specifications
- **Wireless Protocol Stack**: IEEE 802.15.4 (2006 version)
- **WSN Topology**: Point-to-Point / Star
- **Data Rate**: 250 Kbits/s
- **RF Characteristics**: ISM 2.4GHz - 16 Channels
- **TX Power**: +0 dBm to +18 dBm
- **Receiver Sensitivity**: -95.5 dBm to -104 dBm
- **Maximum Radio Range**: 1 Km (L.O.S)
- **Antenna diversity**: 2 omnidirectional N-Type antenna, gain of 2.2 dBi, IP67 | Nema 6

### Embedded Data Logger
- **Storage Capacity**: up to 1 million data points
- **Wireless data dowloading**: 3 minutes to download the full memory (average time)

### Environmental and Mechanical
- **Enclosure**: Aluminum, Watertight IP65 | Nema 4 – Fire Protection: ULV94/Getex  
Enclosure dimensions (w/o antenna) L x W x H: 146.05mm x 65.5mm x 33.5mm  
Weight: 550g
- **Shock Resistance**: 10g during 50ms
- **Operating Temperature**: -20 °C to +65 °C
- **Norms**: CE Labelling Directive R&TTE (Radio) ETSI EN 300 328  
ROHS - Directive 2002/95/EC

### 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 accumulation measurement
- **Current Consumption @3.3V**:  
  - During data acquisition: 70mA to 130mA (depends on external sensor power supply)
  - During Radio transmission: 60 mA @ 0dBm
  - During sleeping: < 30 µA
- **External Power Supply**: External power supply: +8v to +28v
- **Rechargeable Battery**: Lithium-Ion high density rechargeable battery capacity of 950 mAh
STARTERKIT REFERENCE

DESCRIPTION STARTERKIT REFERENCE

Starterkit Wireless System acquisition BeanDevice AN-420
1 x BeanGateway Ethernet (Indoor version), Ref. : BGTW-ETH-IND
1 x BeanDevice AN-420, Ref. : BND-AN-420-4CH
1 x Beanscape Basic, Ref. : BNSC_BASIC

SK_BND_AN420_4CH_IND

Starterkit Wireless System acquisition BeanDevice AN-420
1 x BeanGateway Ethernet (Outdoor version), Ref. : BGTW-ETH-OUT
1 x BeanDevice AN-420, Ref. : BND-AN-420-4CH
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 networks.

Product specifications are subject to change without notice. Contact Beanair for latest specifications.
FOR MORE INFORMATION:

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Visit our website: www.beanair.com
Visit our blog: www.industrial-wn.com

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