Wireless data logger with analog inputs ±20 mV

**APPLICATIONS**

BeanDevice® AN-mV Main presentation Video
BeanDevice® AN-mV Configuration Video
BeanDevice® AN-mV Wireless Range Video

**FEATURES**

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

**USER MANUAL**

BeanDevice® ProcessSensor user manual
The BeanDevice® AN-mV 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 mode available on your BeanDevice® AN-mV:

- LowDutyCycle Data Acquisition
- Alarm
- Streaming & Streaming packet

EXAMPLE : DATA ACQUISITION SYSTEM FOR TECHNICAL BUILDING MANAGEMENT

- The BeanDevice® AN-mV is configured with its Datalogger feature. A standalone installation of the BeanDevice® AN-mV 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-mV 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”
BeanScape® Basic

The BeanScape® application allows the user to view all the data measurements transmitted by the BeanDevice® AN-mV. With the OTAC (Over-the-Air configuration) feature, the user can remotely configure the BeanDevice® AN-mV.

SEVERAL DATA ACQUISITION MODES ARE AVAILABLE ON THE BEANDVICE® AN-MV:

- **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 informations about the data acquisition modes, please read the following technical note: **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>$N$ - Number of data acquisition channels</th>
<th>Example : BND-AN-MV-2CH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 : 2 Channels</td>
<td>BeanDevice® AN-mV with two channels</td>
</tr>
<tr>
<td>4 : 4 Channels</td>
<td></td>
</tr>
</tbody>
</table>

### Analog data acquisition block specifications

<table>
<thead>
<tr>
<th>Signal Conditioning</th>
<th>Analog low voltage mV with voltage-compensated measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of analog inputs</td>
<td>2 or 4 Channels</td>
</tr>
<tr>
<td>A/D Converter</td>
<td>16 bits - SAR Architecture (Successive Approximation Register) with temperature compensation</td>
</tr>
<tr>
<td>Measurement range</td>
<td>±20 mV (bipolar) or 0-40 mV (unipolar)</td>
</tr>
<tr>
<td>Non-linearity error</td>
<td>±0.5 LSB</td>
</tr>
<tr>
<td>Measurement accuracy</td>
<td>&lt; 0.2% when the BeanDevice® is connected to an external power supply</td>
</tr>
<tr>
<td></td>
<td>&lt; 0.4% when the BeanDevice® operates on battery</td>
</tr>
<tr>
<td>Sensor Connector</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

| 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)   | 2 Watts |
Over-the-air configuration (OTAC) parameters

| Data Acquisition mode | 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 channel |
| Alarm Threshold | 2 high levels alarms & 2 low levels alarms |
| Sensor power supply | 4.5 to 20 Volts |
| Analog Input polarity | Bipolar or Unipolar |
| Power Mode | Sleeping, Sleeping with Network Listening & Active |
| TX Power | -7 dBm / -1 dBm / +5 dBm / +11 dBm / +15 dBm / +18 dBm |

RF Specifications

<table>
<thead>
<tr>
<th>Wireless Protocol Stack</th>
<th>IEEE 802.15.4 (2006 version)</th>
</tr>
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<tbody>
<tr>
<td>WSN Topology</td>
<td>Point-to-Point / Star</td>
</tr>
<tr>
<td>Data rate</td>
<td>250 Kbits/s</td>
</tr>
<tr>
<td>RF Characteristics</td>
<td>ISM 2.4GHz – 16 Channels.</td>
</tr>
<tr>
<td>TX Power</td>
<td>+0 dBm to +18 dBm</td>
</tr>
<tr>
<td>Receiver Sensitivity</td>
<td>-95.5 dBm to -104 dBm</td>
</tr>
<tr>
<td>Maximum Radio Range</td>
<td>1 Km (L.O.S)</td>
</tr>
<tr>
<td>Antenna diversity</td>
<td>2 omnidirectional N-Type antenna, gain of 2.2 dBi, IP67</td>
</tr>
</tbody>
</table>

Embedded Data logger

| Storage capacity | up to 1 million data points |
| Wireless data downloading | 3 minutes to download the full memory (average time) |

Environmental and Mechanical

| Enclosure | Aluminium, Watertight IP65 – Fire Protection : ULV94/Getex  
Enclosure dimensions (w/o antenna) L x l x h: 146.05mm x 65.5mm x 33.5mm |
| Shocks resistance | 10g during 50 ms |
| 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  

### Option(s)

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

«RETHINKING SENSING TECHNOLOGY»
### GETTING STARTING WITH A WIRELESS SENSOR NETWORK

#### DESCRIPTION

**Starterkit Wireless System acquisition BeanDevice AN-mV**

| 1 x BeanGateway Ethernet *(Indoor version)*, Ref. : BGTW-ETH-IND |
| 1 x BeanDevice AN-MV, Ref. : BND-AN-MV-4CH-IEEE |
| 1 x Beanscape Basic, Ref. : BNSC_BASIC |

**Starterkit Wireless System acquisition BeanDevice AN-mV**

| 1 x BeanGateway Ethernet *(Outdoor version)*, Ref. : BGTW-ETH-OUT |
| 1 x BeanDevice AN-MV, Ref. : BND-AN-MV-4CH-IEEE |
| 1 x Beanscape Basic, Ref. : BNSC_BASIC |

#### STARTERKIT REFERENCE

- **SK_BND_ANMV_4CH_IND**
- **SK_BND_ANMV_4CH_OUT**

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

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

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