



TECHNICAL NOTE

XRange version overview

The advertisement features a blue background with a digital data stream pattern. At the top left, the BeanAir logo is followed by the text "BeanAir presents". Below this, two product models are listed: "New BeanDevice AX-3D Xrange" and "New BeanDevice Hi-INC Xrange". The central image shows two pairs of sensors: one pair of AX-3D Xrange sensors (labeled "Wireless Triaxial Accelerometer") and one pair of Hi-INC Xrange sensors (labeled "Wireless Bi-axial Inclinometer"). A red "Xrange" logo with a signal waveform is positioned above the sensors. At the bottom of the image, the slogan "No limits, no boundaries" is displayed. In the bottom left corner, there is a "SmartSensor" logo.

BeanAir presents

New
BeanDevice
AX-3D Xrange

New
BeanDevice
Hi-INC Xrange

BeanDevice Xrange
Wireless Triaxial Accelerometer
IEEE 802.15.4
Made in France

BeanDevice Xrange
Wireless Bi-axial Inclinometer
IEEE 802.15.4
Made in France

SmartSensor

No limits, no boundaries

www.Beanair.com



"Rethinking sensing technology"

Document version : 1.2.1

Document Type : Technical Note

SmartSensors® vs SmartSensors®
Xrange

DOCUMENT

| | | | |
|--------------------|--|------------------|------------|
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| Author | Maxime Obr. | | |
| Internal Reference | | Project Code | N.A. |
| Document Name | SmartSensor vs SmartSensor-Xrange Benchmarking | | |

VALIDATION

| Function | Recipients | For Validation | For information |
|----------|------------|----------------|-----------------|
| Reader | | | X |
| Author | | X | |


MAILING LIST

| Function | Recipients | For action | For Info |
|-----------|-----------------------|------------|----------|
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Updates

| Version | Date | Author | Evolution & Status |
|---------|------------|-----------------------|--------------------------|
| V1.2 | 17/06/2015 | Maxime Obr. | First update of document |
| V1.2.1 | 10/05/2019 | Mohamed Bechir Besbes | Weblinks Update |



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| | Document Type : Technical Note | <i>SmartSensors® vs SmartSensors® Xrange</i> |



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1. TECHNICAL SUPPORT

For general contact, technical support, to report documentation errors and to order manuals, contact **Beanair Technical Support Center** (BTSC) at:
tech-support@Beanair.com

For detailed information about where you can buy the Beanair equipment/software or for recommendations on accessories and components visit:




www.Beanair.com

To register for product news and announcements or for product questions contact Beanair's Technical Support Center (BTSC).

Our aim is to make this user manual as helpful as possible. Please keep us informed of your comments and suggestions for improvements. Beanair appreciates feedback from the users.



2. VISUAL SYMBOLS DEFINITION


| Visual | Definition |
|--|---|
|  | <p><u>Caution or Warning</u> – Alerts the user with important information about Beanair wireless sensor networks (WSN), if this information is not followed, the equipment /software may fail or malfunction.</p> |
|  | <p><u>Danger</u> – This information MUST be followed if not you may damage the equipment permanently or bodily injury may occur.</p> |
|  | <p><u>Tip or Information</u> – Provides advice and suggestions that may be useful when installing Beanair Wireless Sensor Networks.</p> |



3. ACRONYMS AND ABBREVIATIONS

| | |
|---------|---|
| AES | Advanced Encryption Standard |
| CCA | Clear Channel Assessment |
| CSMA/CA | Carrier Sense Multiple Access/Collision Avoidance |
| GTS | Guaranteed Time-Slot |
| kSPS | Kilo samples per second |
| LLC | Logical Link Control |
| LQI | Link quality indicator |
| LDCDA | Low duty cycle data acquisition |
| MAC | Media Access Control |
| PAN | Personal Area Network |
| PER | Packet error rate |
| RF | Radio Frequency |
| SD | Secure Digital |
| SPS | Samples per second |
| SSD | Smart shock detection |
| WSN | Wireless sensor Network |
| MB | Mega Bytes |
| LOS | Line of Sight |



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4. AIM OF THE DOCUMENT

The aim of this document is to highlight the new features available on the Xrange version compared to the standard version.



Figure 1: BeanDevice® AX-3D, XRange version



Figure 2: BeanDevice® AX-3D, standard version



5. RELATED DOCUMENTS & VIDEOS

5.1 WHITE PAPER WEBPAGE

Application notes, technical notes and user guides are available on our White Paper webpage:

[Click here](#)

White Paper

> Home

| Application Notes | | | |
|-------------------|---|----------------------|--|
| Reference Number | Document Name | Related product | Description |
| AN_RF_002 | Structural Health Monitoring on bridges | All BeanAir products | The aim of this document is to overview BeanAir® products suited for bridge monitoring, their deployment, as well as their capacity and limits by overwriting various data acquisition modes available on each BeanDevice® |
| AN_RF_003 | IEEE 802.15.4 2.4 GHz Vs 868 MHz | All BeanAir products | Comparison between 868 MHz frequency band and a 2.4 GHz frequency band |
| AN_RF_005 | BeanGateway & Data Terminal Equipment Interface | BeanGateway® | DTE interface Architecture on the BeanGateway® |
| AN_RF_006 | How to extend your wireless range | All BeanAir products | A guideline very useful for extending your wireless range |
| AN_RF_007 | BeanAir WSN Deployment | All BeanAir products | Wireless sensor networks deployment guidelines |

| Technical Notes | | | |
|------------------|--|----------------------|---|
| Reference Number | Document Name | Related product | Description |
| TN_RF_001 | Wireless range benchmarking | BeanDevice® | Wireless range benchmarking of the BeanDevice® |
| TN_RF_002 | Current consumption in active & sleeping mode | BeanDevice® | Current consumption estimation of the BeanDevice in active and sleeping mode |
| TN_RF_003 | Aggregation capacity of Wireless Network | All BeanAir products | Overview of aggregation capacity of wireless sensor networks in streaming mode |
| TN_RF_005 | Pulse counter and binary data acquisition available on the BeanDevice® ONE-BN (Wireless Pulse data logger) | BeanDevice® ONE-BN | Presentation of pulse counter (ex: energy metering application) and binary (compatible with logical sensors) data acquisition available on the BeanDevice® ONE-BN |
| TN_RF_006 | WSN Association process | All the BeanDevice® | Description of the BeanDevice® network |

Support


- White Paper
- Beanair Technical Support Center
- Beanair Workshop
- Technical Support FTP Server

You need more information ?

Our teams work hard to provide our customers with simple and accurate information regarding our products. However, if you weren't able to find the needed information within our documentation, we will be happy to help you : just fill in the contact form

► More info ?

Figure 3 : White Paper web page

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5.1 FEATURED VIDEOS



All the videos are available on our Youtube channel

| <i>Beanair video link (Youtube)</i> | <i>Related products</i> |
|---|---|
| First step into Beanair Wireless Sensor Networks | <i>All</i> |
| Wireless Sensor Networks | <i>All</i> |
| Wireless Sensor Networks dedicated to Structural Health Monitoring | <i>All</i> |
| BeanGateway® - Ethernet Outdoor version introduction | <i>BeanGateway® - Ethernet Outdoor version introduction</i> |
| BeanGateway® – Ethernet Indoor version presentation | <i>BeanGateway® Ethernet Indoor version</i> |
| Beandevicé® AN-XX wireless range demonstration | <i>BeanDevice® AN-V/AN-420/AN-mV Standard and Extender</i> |
| BeanDevice® AN-XX presentation | |
| Self-powered data logger | <i>BeanDevice® AN-V/AN-420/AN-mV Xtender</i> |
| BeanDevice® AX-3D presentation | <i>BeanDevice® AX-3D</i> |
| BeanDevice® HI-INC presentation | <i>BeanDevice® HI-INC</i> |
| Wireless inclinometer with integrated datalogger | |
| BeanDevice® AX-3DS presentation | <i>BeanDevice® AX-3DS</i> |
| Wireless Accelerometer dedicated to shock detection | |
| High performance wireless accelerometer | <i>BeanDevice® AX-3D Xrange</i> |
| Wireless temperature and humidity sensor with integrated data logger | <i>BeanDevice® ONE-TH</i> |
| High performance wireless inclinometer | <i>BeanDevice® HI-INC Xrange</i> |
| High Grade and affordable wireless sensor networks for environmental monitoring | <i>Ecosensor products</i> |



5.2 TECHNICAL VIDEOS

| <i>Beanair video link (Youtube)</i> | <i>Related products</i> |
|--|-------------------------|
| How to launch the BeanScape® software | <i>BeanScape®</i> |
| BeanGateway® Ethernet/LAN Configuration, directly connected to the Laptop/PC | <i>BeanGateway®</i> |
| How to remove a BeanDevice® from your Network | <i>BeanDevice®</i> |
| Energy Scan | <i>BeanGateway®</i> |
| Changing RF Power | <i>BeanGateway®</i> |
| Manual channel selection | <i>BeanGateway®</i> |
| Automatic Channel selection | <i>BeanGateway®</i> |
| Authorized Channels | <i>BeanGateway®</i> |
| Fast Fourier Transform waveform analysis module | <i>BeanScape®</i> |



6. XRANGE VERSION VS STANDARD VERSION OVERVIEW

| Features | | Standard version | Xrange version |
|-----------------------------|-----------|------------------|----------------|
| Weight (g) | | 145 | 165 |
| Battery capacity (mAh) | HI-INC | 950 | 1350 |
| | AX3D | 1250 | 1550 |
| Maximum number of data logs | | 1 million | 8 millions |
| Base plate | Flatness | 0,1 mm | 38,1 µm |
| | Roughness | | 1,6 µm |
| IP rating | | IP66 | IP67 |

Table 1 : Standard version Vs Xrange version



6.1 HIGH CAPACITY EMBEDDED DATALOGGER



For further information, please read the following application note:

[TN RF 007 – “BeanDevice® DataLogger User Guide”](#)

The Xrange version comes with a flash memory with a higher capacity:

| CHARACTERISTICS | Standard version | Xrange version |
|----------------------------------|----------------------------|-----------------------------|
| <i>Flash Memory size (Mbits)</i> | 16 | 128 |
| <i>Datalogger size</i> | 1 million data logs | 8 millions data logs |

Table 2 : Datalogger size

6.2 BATTERY CAPACITY

| | Battery Capacity (mAh) |
|---------------|------------------------|
| HI-INC | 950 |
| HI-INC Xrange | 1350 |
| AX3D | 1250 |
| AX3D Xrange | 1550 |

Figure 4 : Battery capacity



For further information about the battery life in streaming and streaming packet measurement mode, please read the following technical note:

[TN RF 012– « BeanDevice® autonomy in streaming mode »](#)

6.3 MECHANICAL CHARACTERISTICS

The SmartSensor® Xrange opens the way to a whole new precise measurement scale.



| Characteristics | SmartSensor | SmartSensor Xrange |
|---------------------|---|--|
| Mounting techniques | Ashesive mounting | Screw mounting Three M5 drilled flanges |
| Flatness | 0,1 mm | 38,1 µm |
| Surface Roughness | 0,1 mm | RA 1.6 (µm) |
| Surface treatment | Satin black textured polyester powder paint | Black anodized (Corrosionproof) |
| Material | AL 6061 | AL 7075 (twice harder than AL6061) |

Table 3: Mechanical characteristics

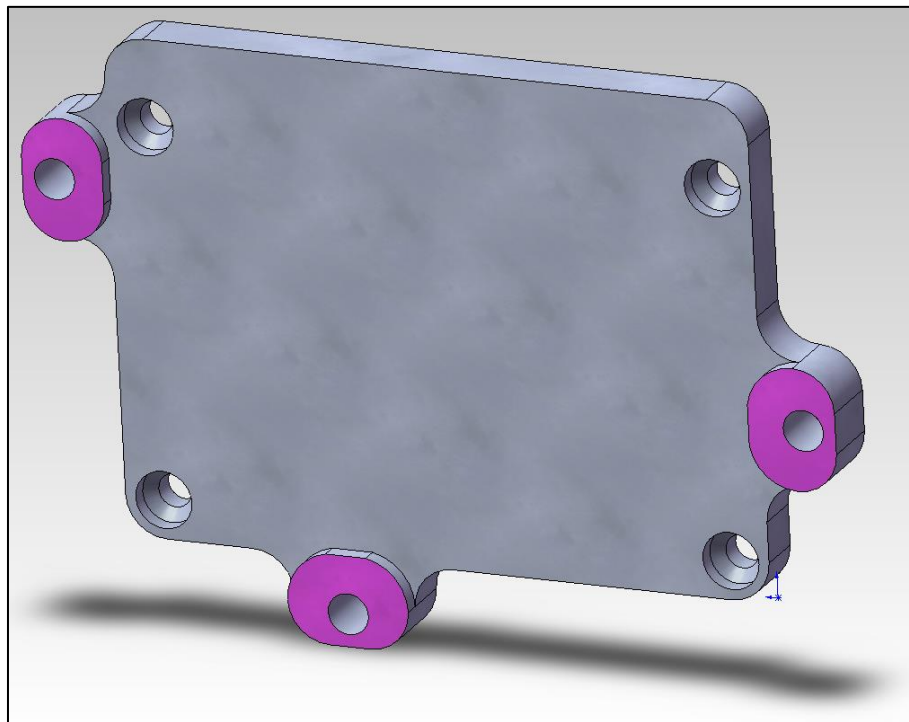


Figure 5: Xrange base plate overview

| Reference Edge Characteristics | SmartSensor Xrange |
|--------------------------------|---------------------------------------|
| Flatness | 21 µm |
| Surface Roughness | RA 1.6 (µm) |
| Surface treatment | Black anodising (Corrosionproof) |
| Material | AL 7075 (twice harder than AL6061) |

Table 4: Reference edge characteristics

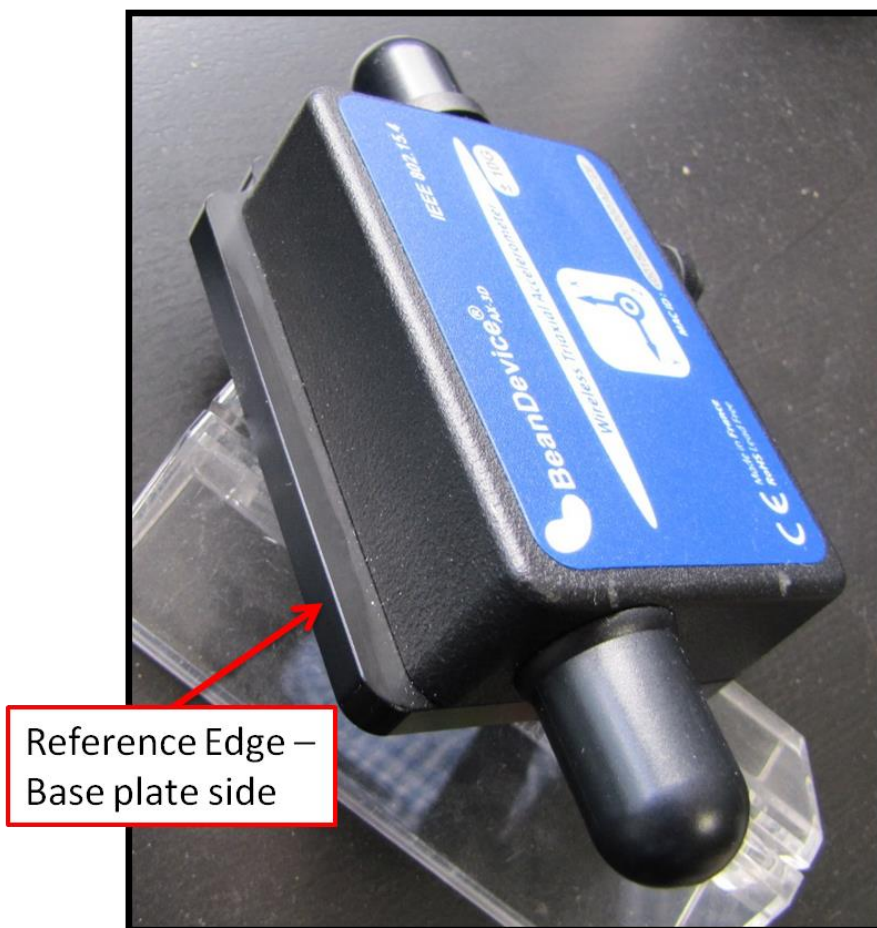


Figure 6 : Reference edge picture