

QUICK START

BeanDevice® 2.4GHz

AX-3D-SR

Wireless Tri-Axis Accelerometer
Scalable Measuring Range
 $\pm 1.2g$ and $\pm 2.4g$



HI-INC-SR

Wireless Tri-Axis inclinometer
Scalable Measuring Range
 $\pm 10^\circ$ and $\pm 90^\circ$



AX-3D XRange

High Performance wireless IOT
vibration sensor | acceleration
and Particle Velocity monitoring

INC

Wireless IOT inclinometer sensor
tilt, inclination, slope
monitoring | low-cost version

HI-INC

Wireless IOT inclinometer
tilt, inclination, slope
monitoring



AX-3DS

Wireless IOT accelerometer
sensor Shock and impact
monitoring



AX-3D

Wireless IOT vibration sensor
Acceleration and Particle
Velocity monitoring



Hi-Inc XRange

High performance wireless IOT
inclinometer sensor | tilt,
inclination, slope monitoring



2.4GHz



Contents

1. TECHNICAL SUPPORT.....	4
2. VISUAL SYMBOLS DEFINITION.....	4
3. ACRONYMS AND ABBREVIATIONS.....	5
4. Beandevic [®] 2.4GHz HI-INC/AX-3D/AX-3DS.....	6
4.1 Unbox your BeanDevice [®]	6
4.2 Product overview.....	7
Power Supply.....	9
4.3 Non-Contact Buttons and LEDS description.....	11
5. Wireless IOT Coordinator (BEANGATEWAY [®]).....	12
5.1 UNBOX YOUR BEANGATEWAY [®] OUTDOOR.....	12
5.2 UNBOX YOUR BEANGATEWAY [®] INDOOR.....	14
5.3 INDOOR VERSION	15
5.4 OUTDOOR VERSION	16
6. START YOUR APPLICATION.....	17
7. Pair your Beandevic [®] to your Beangateway.....	22
8. QUICK SETTINGS.....	23
8.1 DATA ACQUISITION CONFIGURATION.....	23
8.2 USING THE DATALOGGER.....	24
9. WHERE TO FIND MORE TECHNICAL INFORMATION?.....	27

Disclaimer

The information contained in this document is the proprietary information of BeanAir.

The contents are confidential and any disclosure to persons other than the officers, employees, agents or subcontractors of the owner or licensee of this document, without the prior written consent of BeanAir GmbH, is strictly prohibited.

BeanAir makes every effort to ensure the quality of the information it makes available. Notwithstanding the foregoing, BeanAir does not make any warranty as to the information contained herein, and does not accept any liability for any injury, loss or damage of any kind incurred by use of or reliance upon the information.

BeanAir disclaims any and all responsibility for the application of the devices characterized in this document, and notes that the application of the device must comply with the safety standards of the applicable country, and where applicable, with the relevant wiring rules.

BeanAir reserves the right to make modifications, additions and deletions to this document due to typographical errors, inaccurate information, or improvements to programs and/or equipment at any time and without notice.

Such changes will, nevertheless be incorporated into new editions of this document. Copyright: Transmittal, reproduction, dissemination and/or editing of this document as well as utilization of its contents and communication thereof to others without express authorization are prohibited. Offenders will be held liable for payment of damages. All rights are reserved.

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

Symbols	Definition
	Caution or Warning – Alerts the user with important information about BeanAir® wireless IOT Sensors. if this information is not followed, the equipment /software may fail or malfunction
	Danger – This information MUST be followed if not you may damage the equipment permanently or bodily injury may occur.
	Tip or Information – Provides advice and suggestions that may be useful when installing BeanAir Wireless IOT Sensors.

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
LDCDA	Low duty cycle data acquisition
LLC	Logical Link Control
LQI	Link quality indicator
MAC	Media Access Control
PER	Packet error rate
POE	Power Over Ethernet
RF	Radio Frequency
SD	Secure Digital
UPS	Uninterruptible power supply
USB OTG	USB On The Go
WDAQ	Wireless DAQ
WSN	Wireless Sensor Networks

4. Beandevic® 2.4GHz

4.1 Unbox your Beandevic®

Open the Beandevic® box



Figure 1 : Beandevic® Box

The Beandevic® is provided with a wall plug-in power supply [optional] and a magnet.



Use the Magnet to:

- Power ON/Power OFF the Beandevic®
- Pair the Beandevic® to your BeanGateway®

BeanDevice® optional accessories



Figure 2 : BeanDevice® optional accessories

4.2 Product overview

SmartSensor® sensor series is suitable for Test & Measurement and Structural Health Monitoring [SHM]:

BeanDevice® 2.4GHz AX-3D

Wireless IOT vibration sensor
Acceleration and Particle
Velocity monitoring



BeanDevice® 2.4GHz AX-3DS

Wireless IOT accelerometer
sensor Shock and impact
monitoring



PRODUCT OVERVIEW

BeanDevice® 2.4GHz INC
Wireless IOT inclinometer sensor
tilt, inclination, slope
monitoring | low-cost version



BeanDevice® 2.4GHz HI-INC
Wireless IOT inclinometer
tilt, inclination, slope
monitoring



BeanDevice® 2.4GHz HI-INC Xrange
High performance wireless IOT
inclinometer sensor
tilt, inclination, slope monitoring



BeanDevice® 2.4GHz AX-3D Xrange
High Performance wireless IOT
vibration sensor
acceleration and Particle Velocity monitoring



PRODUCT OVERVIEW



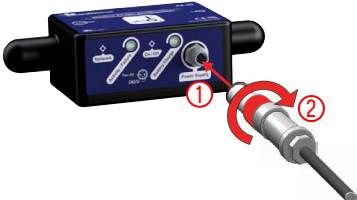
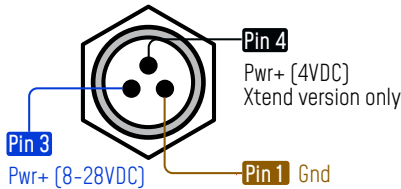
BeanDevice® 2.4GHz | **HI-INC-SR**
TRI-AXIS INCLINOMETER SENSOR
SCALABLE MEASURING RANGE $\pm 10^\circ$ and $\pm 90^\circ$



BeanDevice® 2.4GHz | **AX-3D-SR**
TRI-AXIS ACCELEROMETER SENSOR
SCALABLE MEASURING RANGE $\pm 1.2g$ and $\pm 2.4g$

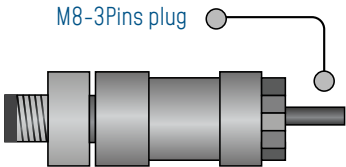
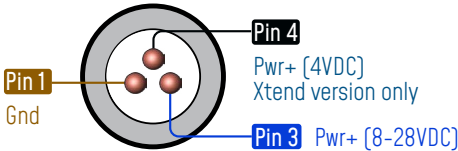
POWER SUPPLY

M8 3PINS SOCKET (FEMALE A-CODING) - PIN ASSIGNATION

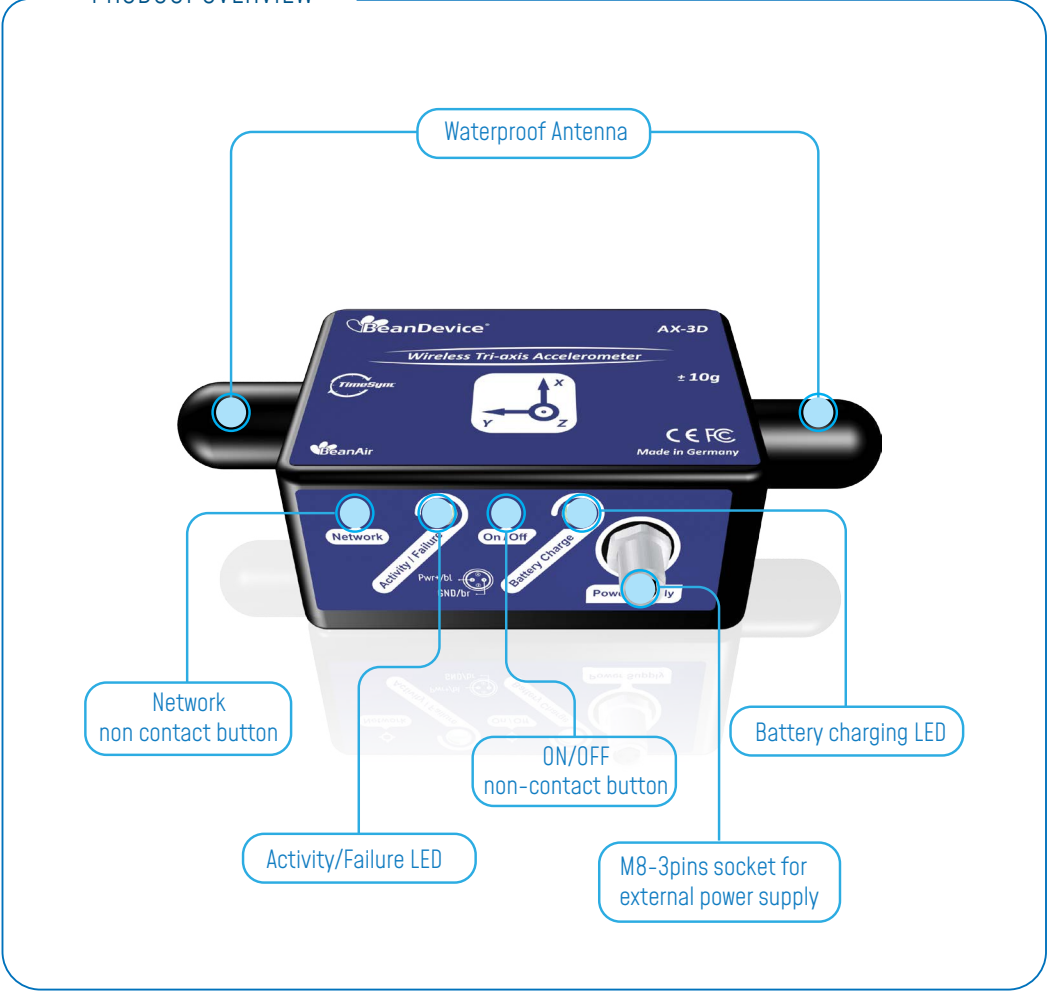


Interface Name	M8 Pin assignment	Wire Color [A-coding]
Power Supply 8-28VDC	PIN 3	Blue
Power Supply 4VDC [available on Xtend version only]	PIN 4	Black
Ground	PIN 1	Brown

M8 3PINS PLUG (MALE A-CODING) - PIN ASSIGNATION



PRODUCT OVERVIEW



Do not turn the Radome Antenna , you will unscrew it from its base and the device will not work properly.

4.3 Non-Contact Buttons and LEDS description



Operating status	Network LED	Battery Charge LED
The BeanDevice® is power off	LED OFF	No connection to external power supply: LED OFF Connection to External Power supply: Green LED ON: Battery charged Red LED ON: Battery not charged
The BeanDevice® is power on with wireless TX/RX activity	Green LED: Wireless Network Activity Red LED: Wireless transmission failure	
The BeanDevice® is power on	Green LED blinks twice	
The BeanDevice® is power off	Red LED ON during 2s	
The BeanDevice® is power on & a network Reset is performed	Red LED ON during 2s then Green LED ON during 2s then Green LED blinks constantly until connection to BeanGetway®	
The BeanDevice® is power on & waits for a network activity	Green LED blinks	

5. Wireless IOT Coordinator [BEANGATEWAY®]

The BeanGateway® is a wireless coordinator used to build and manage Beanair® Wireless IOT Sensors. It supports the conversation of data exchanged, compression and IP connectivity with the network thereby reducing the intelligence required in these platforms, maintenance and therefore the associated cost.

The BeanGateway is available in two versions: Indoor (IP40) and Outdoor (IP67)

5.1 UNBOX YOUR BEANGATEWAY® OUTDOOR

Open the BeanGateway® Outdoor box



Figure 3 : BeanGateway® Outdoor Box



The BeanGateway® Outdoor is provided with a wall plug-in power supply, a power adapter for your country, a N-Type antenna, a Wall mounting kit and an Ethernet cable.

Figure 4 : BeanGateway® accessories

5.2 UNBOX YOUR BEANGATEWAY® INDOOR

Open the BeanGateway® box



Figure 5 : BeanGateway® Indoor Box



Figure 6 : BeanGateway® Indoor version

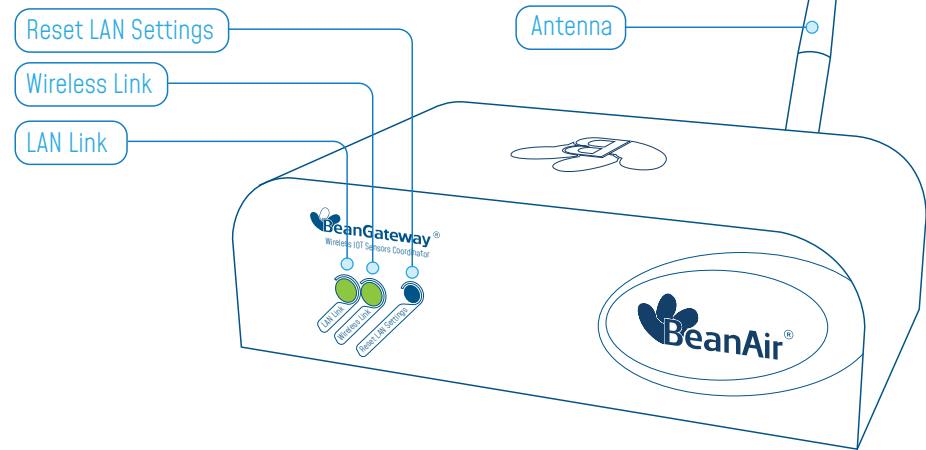
The BeanGateway® Indoor is provided with a wall plug-in power supply, a power adapter for your country, a RPSMA antenna and an Ethernet cable.



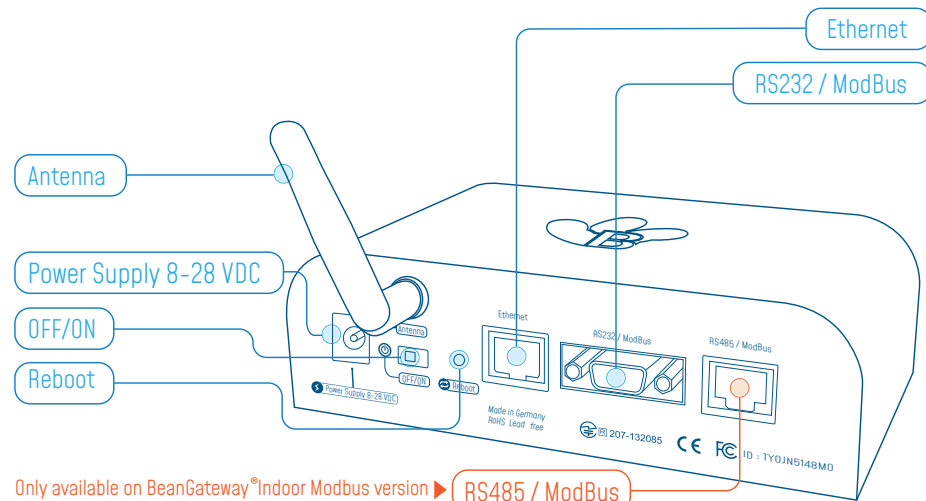
Figure 7 : BeanGateway® Indoor Accessories

5.3 INDOOR VERSION

Front View

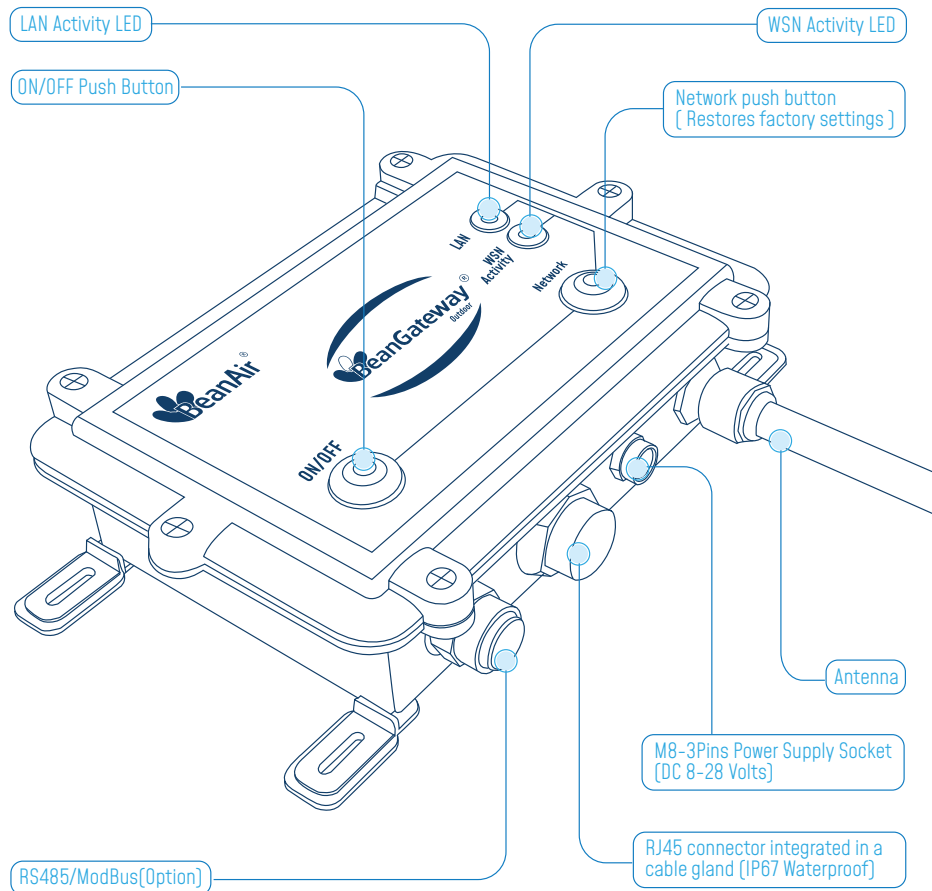


Rear View



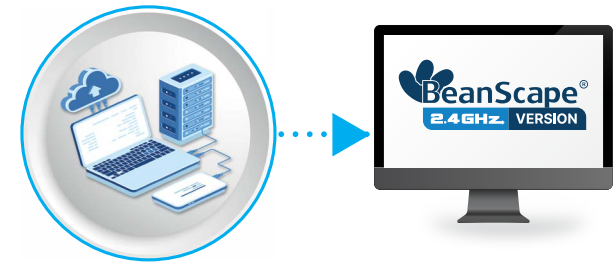
Only available on BeanGateway®Indoor Modbus version ▶ RS485 / ModBus

5.4 OUTDOOR VERSION

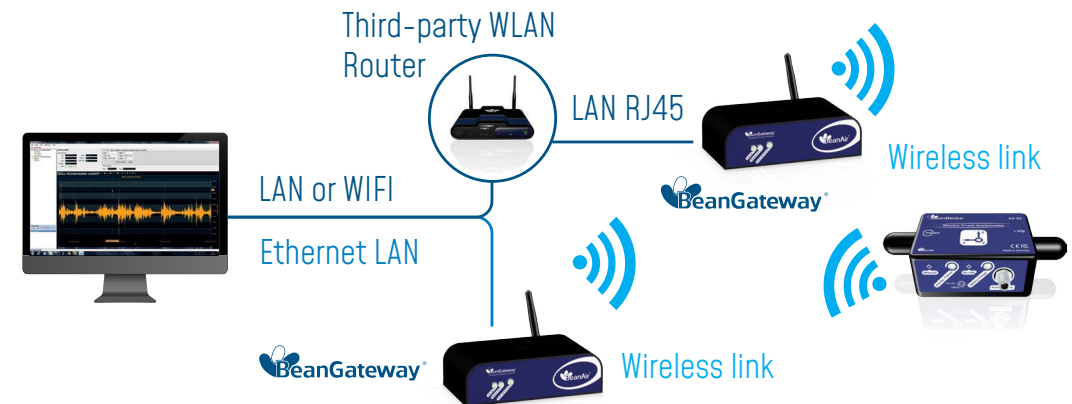


6. START YOUR APPLICATION

1. Download the BeanScape® from FTP ACCESS then follow the installation instructions.



2. Connect your Beangateway® directly to your PC or your WIFI/LAN router by using an Ethernet cable.



If you connect your BeanGateway® to your WIFI/LAN router, you can go for Static or Dynamic IP. If your Beangateway® is directly connected to your PC, Static IP should be selected as there is no DHCP server hosted on your PC.

Direct connection :

The BeanGateway® comes with the default IP address 192.168.4.123
Assign manually a static IP address to your PC with the same subnet as your BeanGateway®, 192.168.4.2

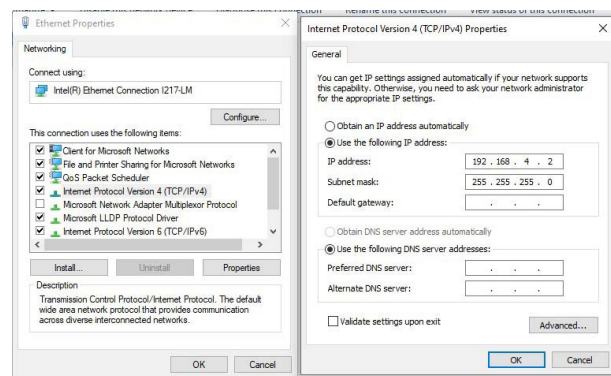


Figure 8 : Static IP allocation on your PC

Via LAN Router connection :

You can go for Dynamic IP address on both PC and BeanGateway®

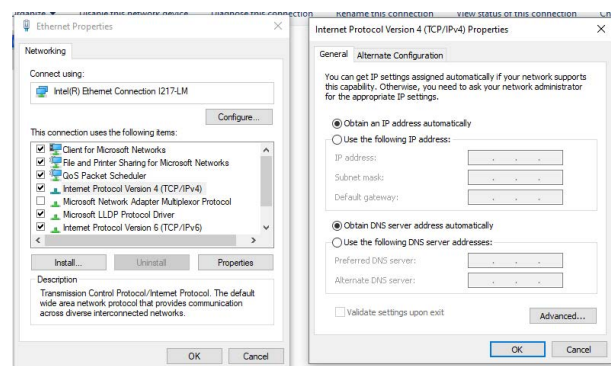


Figure 9 : Dynamic IP allocation on your PC

3. Make sure that your Beanscape® software is already installed on your PC and running.
4. Turn on the BeanGateway® by pushing on the ON/OFF button if you are using the outdoor version or slide the ON/OFF button to the right side if you are using the indoor version.



Figure 10 : Turn on the BeanGateway®

Localize your BeanGateway® on your LAN

5. Go to **Tools** tab then select BeanGateway® Ethernet/LAN Config. and select your PC IP address from the scroll down menu then click on localize, your BeanGateway® MAC ID will appear on a scrolling list, select it then click on validate.

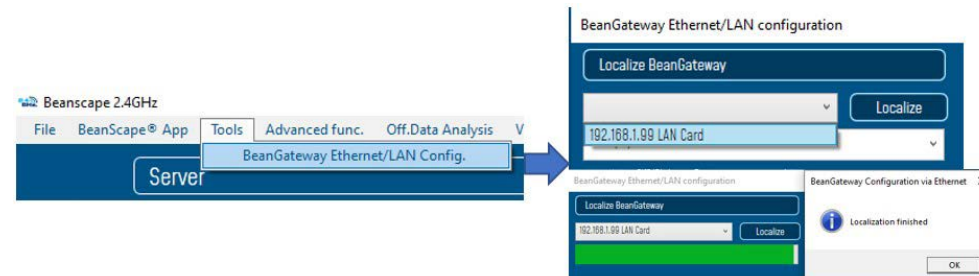


Figure 11 : Localization process

Via LAN Router connection :

Make sure that DHCP check box is enabled

Direct connection :

Allocate a static IP to your BeanGateway® before to click on validate

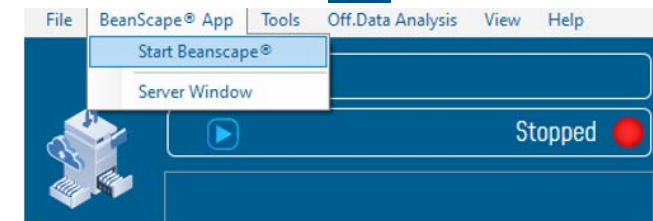


If the BeanGateway® scroll down menu appears empty, push on the CNC/Network push button for 10s until the network LED turns to red color. You will restore LAN settings from the factory (static IP address: 192.168.1.123) then redo the localization process.



Make sure you have no antivirus/firewall blocking the network activity between the BeanGateway® and the BeanScape® software.

6. Click on "Start" to start the server or click on BeanScape® App tab



OR

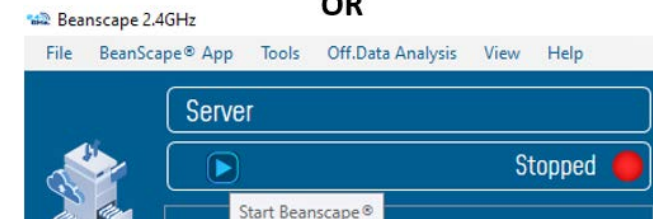


Figure 12 : Start the Server

The Beanscape® launches, and creates a mapping of the BeanGateway® on the bottom of the left side pane.

Click on the BeanGateway® identified by the PAN ID in the lower left screen. the screen for monitoring and configuring your BeanGateway® will show up.

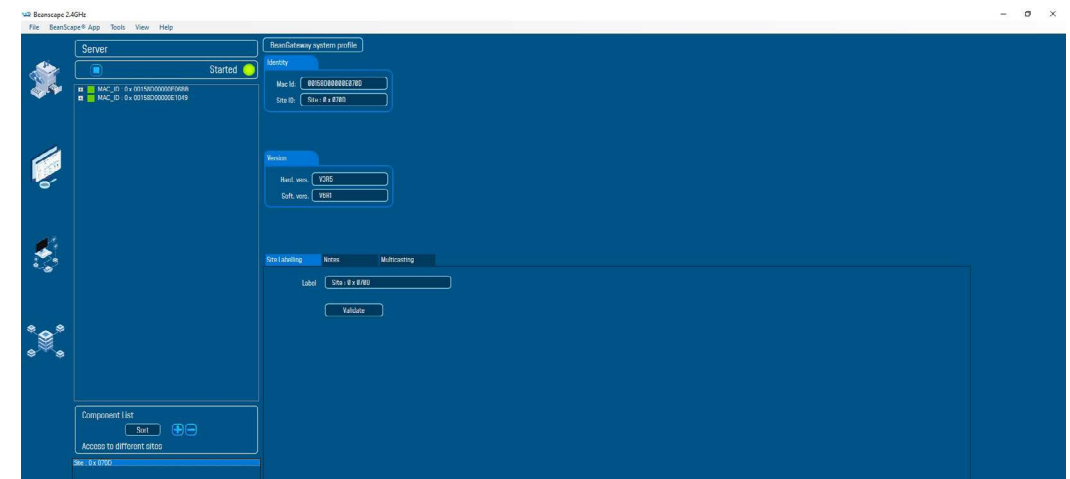


Figure 13 : BeanGateway® Dashboard

7. Pair your Beandevic® to your Beangateway

1. **Step 1:** Power on the BeanGateway which should be paired to your Beandevic Sensor,
2. **Step 2:** Power On the sensor by Holding the magnet on the 'ON/OFF' label for about 2s until Activity/failure Led flashes in green

2. **Step 3:** To Pair your sensor, hold the magnet on Network Label for more than 2s, until network LED flashes RED one time and restart to flash quickly in Green color.

The Beandevic sensor starts to Flash green normally when it's paired with the BeanGate-way.

Some Tips:

- Once the sensor is paired with a specific gateway, you don't need to re-pair every-time you power cycle the Beandevic sensor.
- You can not pair your Beandevic sensor to several BeanGateway at the same time,
- If you are Running multiple BeanGateway on the same site, to pair your sensor to a specific gateway , switch off all gateways except the Gateway which must be paired to your sensor,



8. QUICK SETTINGS

8.1 DATA ACQUISITION CONFIGURATION

1. Go to the configuration frame and select Data Acq. Config tab

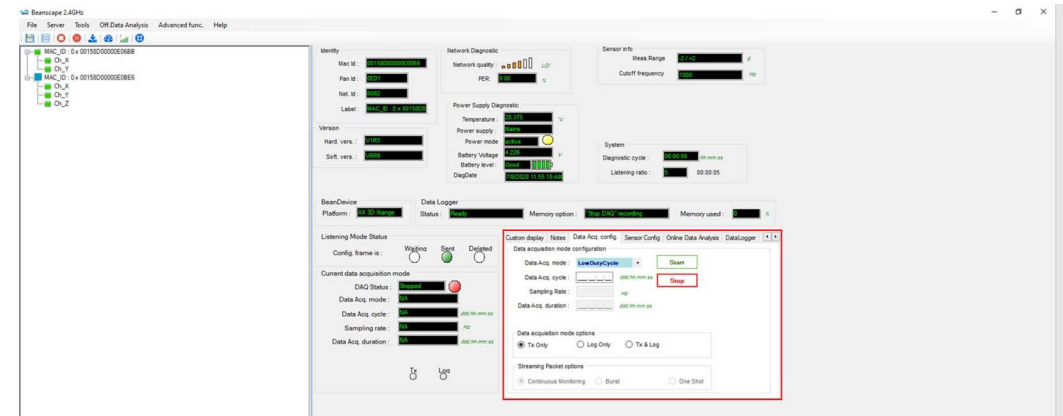


Figure 15 : DAQ configuration tab

2. Setup your Acquisition mode

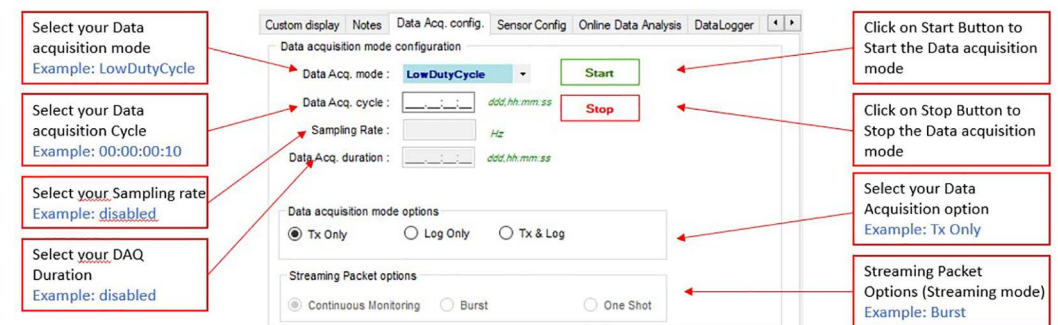


Figure 16 : DAQ Configuration

3. Click on the sensor profile to see real-time measurement graph

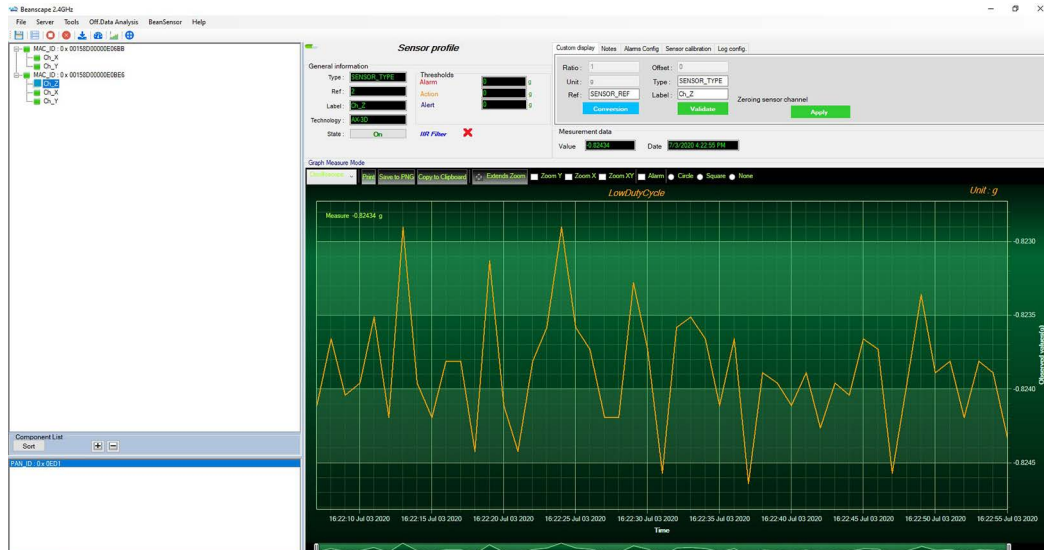


Figure 17 : Real-time graph



Find more info on the data acquisition modes available on the BeanDevice® 2.4 GHz and how to configure it on this technical note : <http://www.wireless-iot.beanair.com/files/TN-RF-008-Data-acquisition-modes-available-on-the-BeanDevice.pdf>

8.2 USING THE DATALOGGER

The BeanDevice® comes equipped with an embedded datalogger up to 8 millions data points (with events dating) in the Xrange version.

You can start the datalogging from the previously demonstrated data acquisition tab, you can select **Log only** as data acquisition option for only using the embedded datalogger without transmitting data to Beanscape or you can select **TX & LOG** for jointly save data on your Beanscape® Host computer and also in the datalogger at the same time.

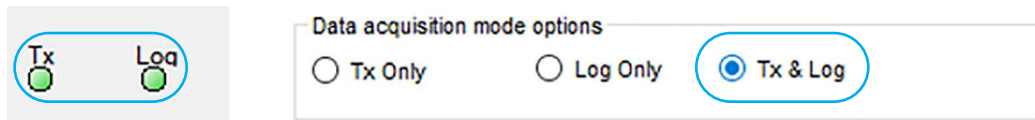


Figure 18 : Datalogger Options

From this status frame, you can monitor the Datalogger status, Memory option when the Datalogger is full and percent of memory used.



Figure 19 : DataLogger Status

These settings can be changed from the DataLogger tab present on configuration panel :

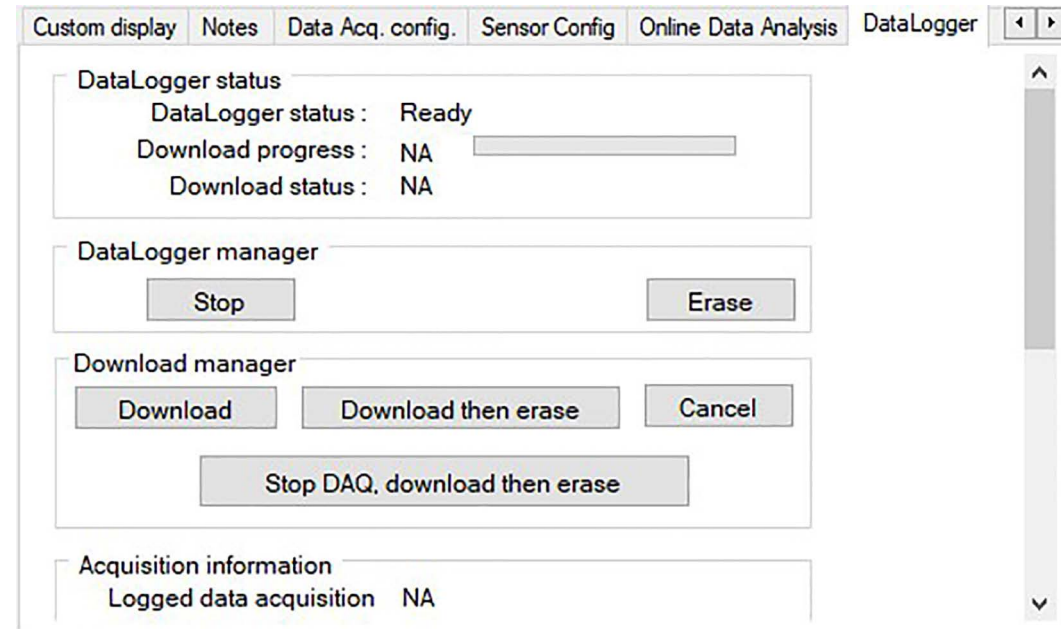


Figure 20 : DataLogger tab

Brief information on the status of the datalogger and progress of download can be seen on this tab

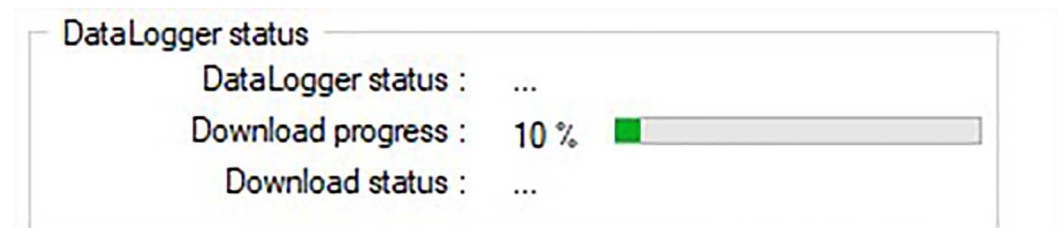


Figure 21 : DataLogger status

Four status are available:

- o **Ready**: the Datalogger is ready to register data
- o **Active logs only**: Data acquisition is logged only
- o **Active TX and Log**: Data acquisition is logged & transmitted by Radio
- o **Stopped**: Datalogger is stopped

Two buttons, one to stop the logging and the other is to erase stored data and initialize the Datalogger



Figure 22 : DataLogger manager

Below, in the download manager, different options to control the datalogger

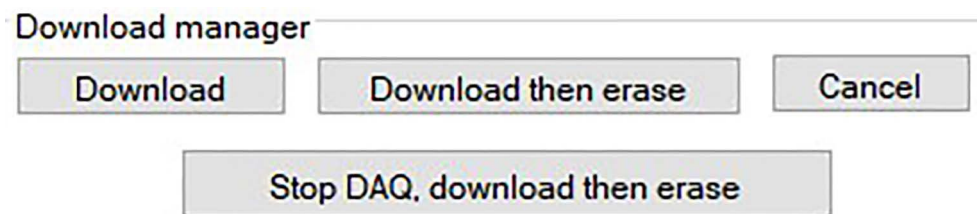


Figure 23: DataLogger Management

- Download**: Starts to download all the logs on the BeanDevice® flash memory to your computer
- Download then erase**: downloads all the logs and the erase them.
- Cancel**: Stops the download process
- Stop DAQ, download then erase**: stop recording data ,download the data logged then erase it

Below, we can configure the datalogger when it's full . Several choices are available:

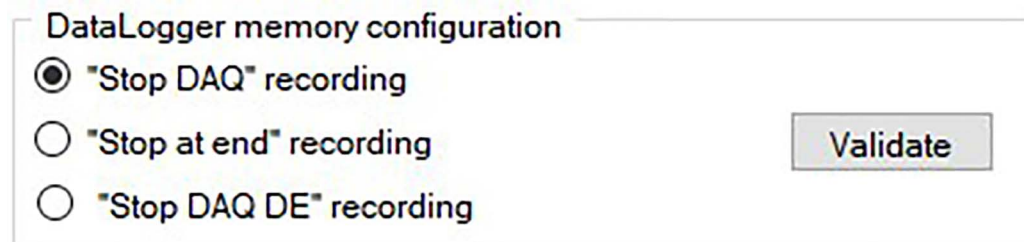


Figure 24 : DataLogger memory configuration

- "Stop DAQ" recording : Stop recording when the memory is full
- "stop at end" recording: Data recording stops when the memory is full
- "Stop DAQ DE"recording: Stop recording ,Download then erase the stored data

9. WHERE TO FIND MORE TECHNICAL INFORMATION ?

- For more technical literature, please visit our White Paper Page:
<http://beanair.com/wireless-iot-sensors-white-paper.html>
- Please refer to the BeanDevice® 2.4GHz Smart Sensors user manual section for more information
<https://www.wireless-iot.beanair.com/files/UM-RF-01-ENG-SmartSensor-wireless-accelerometer-inclinometer-and-shock-sensor.pdf>
- For detailed information on the available Data Acquisition mode ,please refer to our technical note
<http://www.wireless-iot.beanair.com/files/TN-RF-008-Data-acquisition-modes-available-on-the-BeanDevice.pdf>

Facing technical problems ?
Contact our technical support team at :
tech-support@beanair.com





Buchholzer Straße 65,
13156 Berlin, Germany



www.beanair.com



info@beanair.com



+493066405051