

BeanDevice[®] 2.4GHz

AN-V

Wireless IOT Data Acquisition (DAQ) Instrument
voltage inputs ($\pm 5V$ or $\pm 10V$)



AN-420

Wireless IOT Data Acquisition (DAQ) Instrument
4-20mA [current loop] inputs



AN-mV

Wireless IOT Data Acquisition (DAQ) Instrument
low voltage inputs ($\pm 20mV$)
for load cell sensors

2.4 GHz



Contents

- 1. TECHNICAL SUPPORT** 4
- 2. VISUAL SYMBOLS DEFINITION** 4
- 3. ACRONYMS AND ABBREVIATIONS** 5
- 4. Beandevic[®] 2.4GHz AN-420/AN-MV/AN-V** 6
 - 4.1 UNBOX YOUR BeanDevice[®] 6
 - 4.2 PRODUCT OVERVIEW 7
 - 4.3 DEVICE DESCRIPTION 8
 - 4.4 PUSH BUTTONS AND LEDS DESCRIPTION 9
 - 4.5 WIRING CODE 10
 - 4.5.1 Sensor wiring code [BeanDevice[®] AN-420] 11
 - 4.5.2 Sensor wiring code [BeanDevice[®] AN-V & AN-mV] 13
- 5. WIRELESS COORDINATOR (BEANGATEWAY[®])** 14
 - 5.1 UNBOX YOUR BEANGATEWAY[®] OUTDOOR 14
 - 5.2 UNBOX YOUR BEANGATEWAY[®] INDOOR 15
 - 5.3 INDOOR VERSION 17
 - 5.4 OUTDOOR VERSION 18
- 6. START YOUR APPLICATION** 19
- 7. A QUICK SETTINGS OVERVIEW** 25
 - 7.1 DATA ACQUISITION CONFIGURATION 25
 - 7.2 USING THE DATALOGGER 27
- 8. WHERE TO FIND MORE TECHNICAL INFORMATION ?** 30

List of Figures

Figure 01 : BeanDevice® Box 6

Figure 02 : BeanDevice® optional accessories..... 7

Figure 03 : M12 Socket Pin assignment..... 10

Figure 04 : M12 Socket - positioning notch..... 10

Figure 05 : M12 socket Wiring Code (BeanDevice® side)..... 11

Figure 06 : M12-4pins Plug Wiring code (sensor side)..... 12

Figure 07 : Wiring code (sensor side) – Analog unipolar..... 13

Figure 08 : Wiring code (sensor side) – Analog bipolar..... 13

Figure 09 : BeanGateway® Outdoor Box..... 14

Figure 10 : BeanGateway® accessories..... 15

Figure 11 : BeanGateway® Indoor Box..... 15

Figure 12 : BeanGateway® Indoor version..... 16

Figure 13 : BeanGateway® Indoor Accessories..... 16

Figure 14 : Static IP allocation on your PC..... 20

Figure 15 : Dynamic IP allocation on your PC..... 20

Figure 16 : Turn on the BeanGateway® 21

Figure 17 : Localization process..... 21

Figure 18 : Start the Server..... 23

Figure 19 : BeanGateway® Dashboard..... 23

Figure 20 : Device Power OFF/ON..... 24

Figure 21 : Pairing your BeanDevice® to your BeanGateway® 24

Figure 22 : BeanDevice® Profile..... 24

Figure 23 : Expert View..... 25

Figure 24 : DAQ frame..... 25

Figure 25 : DAQ Configuration..... 26

Figure 26 : Real-Time Graph..... 26

Figure 27 : DataLogger Options..... 27

Figure 28 : DataLogger Status..... 27

Figure 29 : DataLogger Tab..... 27

Figure 30 : DataLogger status..... 28

Figure 31 : DataLogger Manager..... 28

Figure 32 : DataLogger Management..... 28

Figure 33 : DataLogger memory configuration..... 29



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.

Copyright © BeanAir® GmBh 2020

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 AN-420/AN-MV/AN-V

4.1 UNBOX YOUR Beandevic[®]

Open the Beandevic[®] box



Figure 1 : Beandevic[®] Box

The Beandevic[®] is provided with two omnidirectional N-Type antennas.



BeanDevice® optional accessories



Figure 2 : BeanDevice® optional accessories

User can purchase the following accessories from us :

- Wall plug-in power supply, Ref : [M8-PWR-12V](#)
- M12 Plastic ABS plug for sensors, Ref : [M12-PL-SENSOR](#)
- M12 Aluminum plug for sensors, Ref : [M12-AL-SENSOR](#)

4.2 PRODUCT OVERVIEW

The BeanDevice® AN-mV / AN-V / AN-420 is a wireless data acquisition system with an embedded datalogger.

This device can be connected to a third-party analog sensor with 4-20 mA, Voltage or Low voltage outputs. Four different models are available :

- [BeanDevice® AN-420](#) compatible with current loop 4-20 mA sensors
- [BeanDevice® AN-mV](#) compatible with low voltage ± 20 mV sensors
- [BeanDevice® AN-V](#) compatible with $\pm 5V$ or $\pm 10V$ sensors



BeanDevice® 2.4GHz AN-420
Wireless Analog Data Acquisition System with 4-20mA current loop inputs

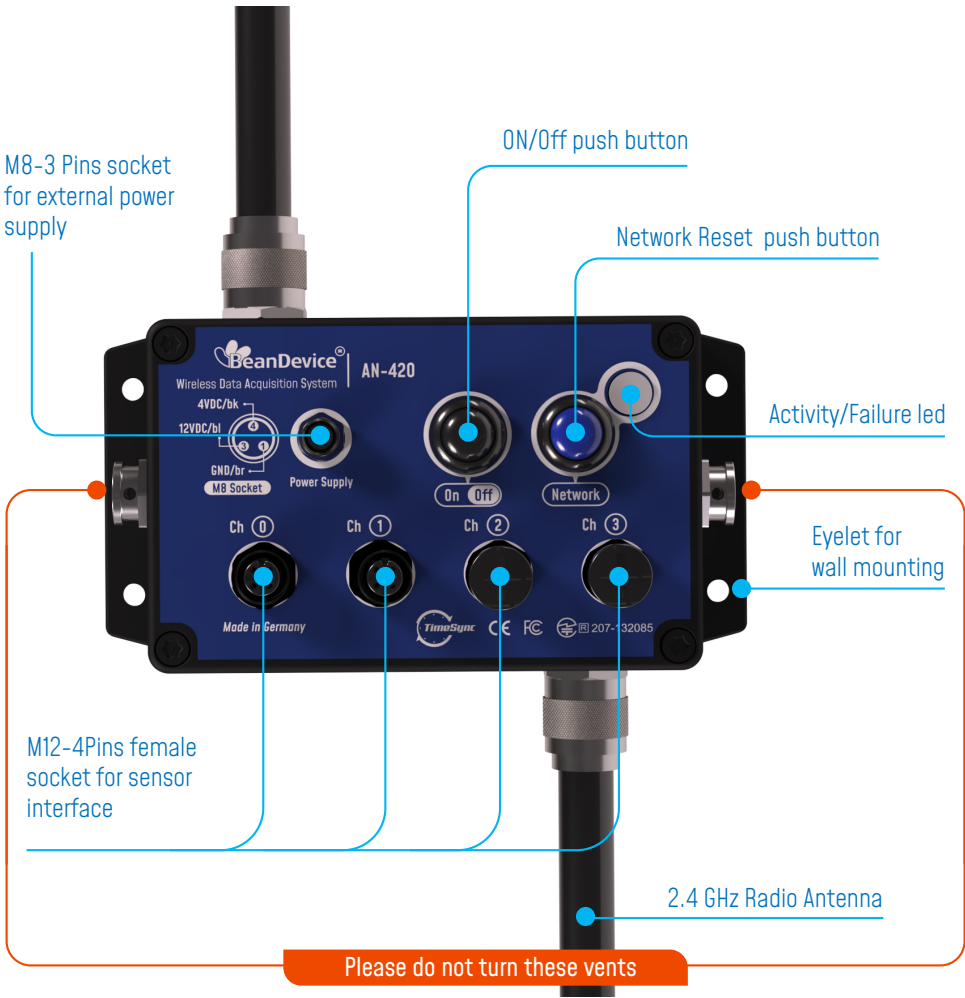


BeanDevice® 2.4GHz AN-V
Wireless Analog Data Acquisition System with analog voltage inputs ($\pm 5V$ ou $\pm 10V$)



BeanDevice® 2.4GHz AN-mV
Wireless Analog Data Acquisition System with analog voltage inputs ($\pm 20mV$)

4.3 DEVICE DESCRIPTION



4.4 PUSH BUTTONS AND LEDS DESCRIPTION

Operating status	Activity / Failure Network LED
The BeanDevice® is power off	LED OFF
The BeanDevice® is power on with wireless TX/RX activity	<p>Green LED : Wireless Network Activity</p> <p>Red LED : Wireless transmission failure</p>
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 by holding the magnet on Network Push Button during 2s	<p>Red LED ON during 2s then</p> <p>Green LED ON during 2s then</p> <p>Green LED blinks constantly until connection to BeanGateway®</p>
The BeanDevice® is power on & waits for wireless network connection	Green LED blinks

4.5 WIRING CODE

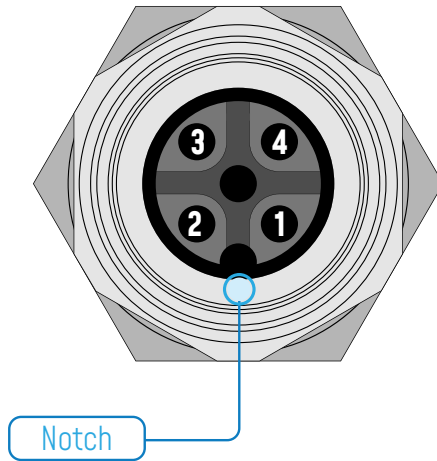


Figure 3 : M12 socket Pin assignation

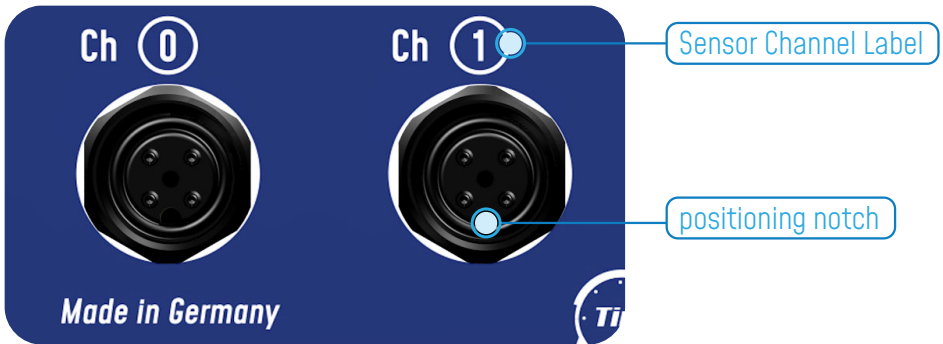


Figure 4 : M12 Socket - positioning notch

M12-4Pins A-coding should be used

4.5.1 Sensor wiring code (BeanDevice® AN-420)

M12 4pins Wiring code (BeanDevice® AN-420 side)

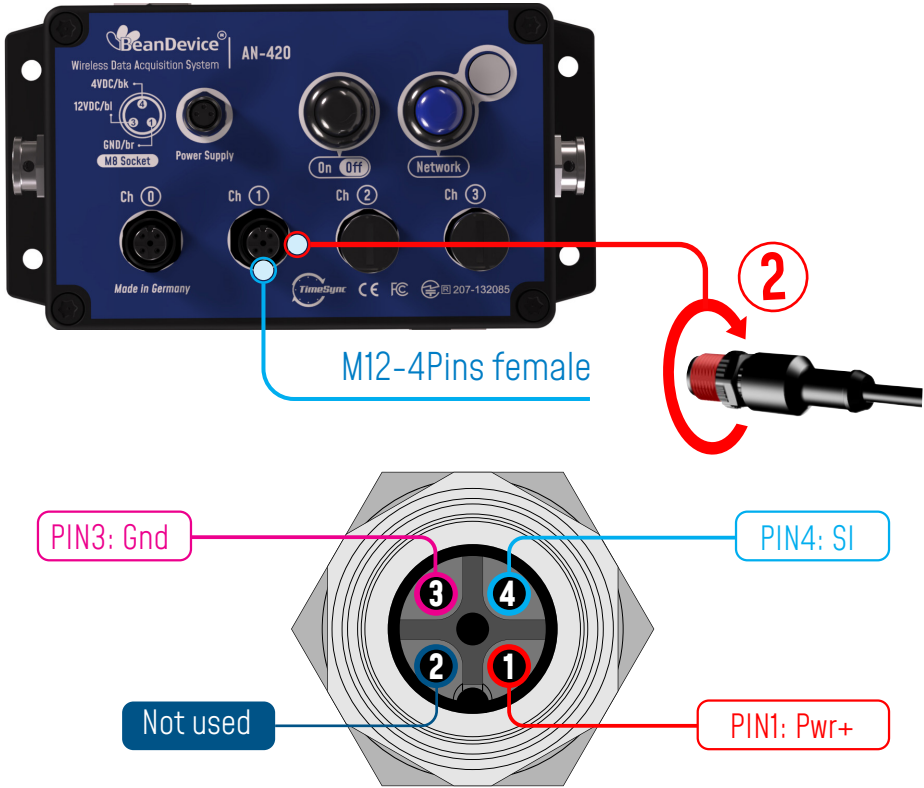


Figure 5 : M12 socket Wiring Code (BeanDevice® side)

CAPTION	PIN1 (Pwr+): Sensor power supply	PIN2: Not used
	PIN4 (SI): Signal input	PIN3 (Gnd): Electrical Ground

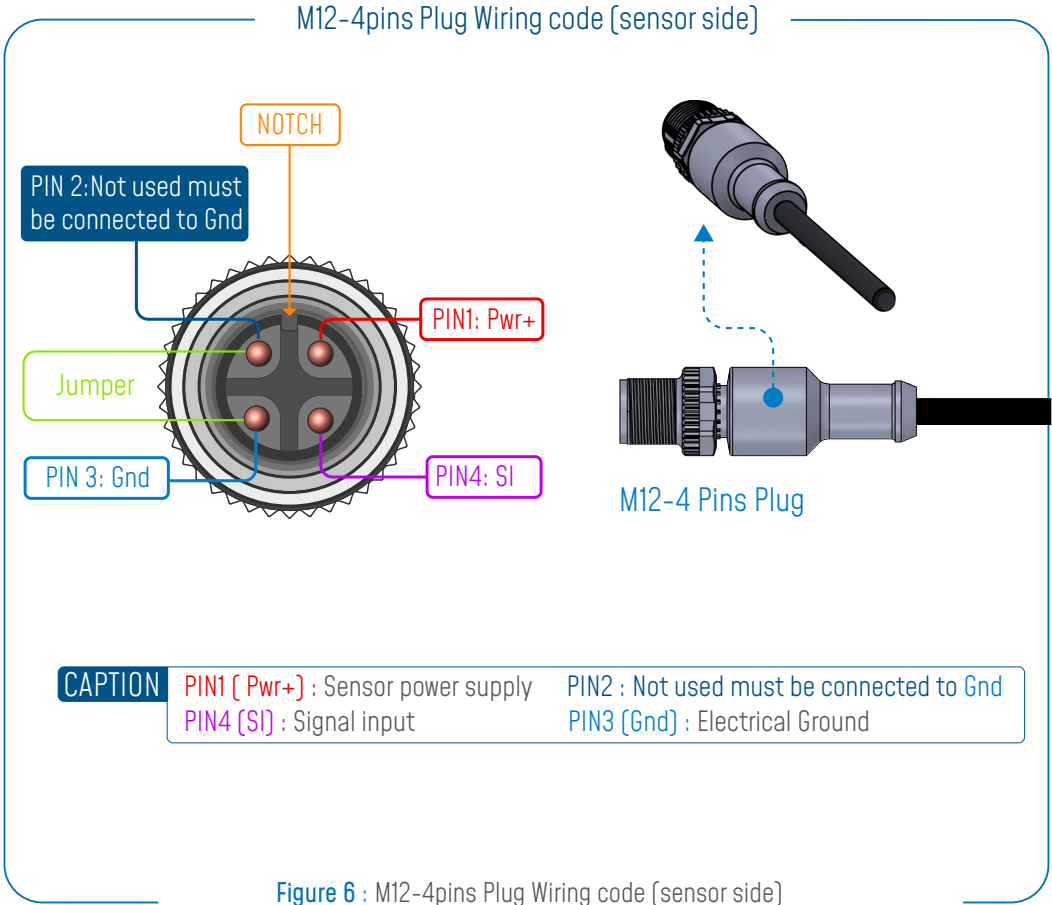


Figure 6 : M12-4pins Plug Wiring code (sensor side)

Instructions for connecting a 2-wire sensor :

- Connect the sensor wire "Loop Supply" to PIN1 (Pwr+)
- Connect the sensor wire "Current output" 4-20mA to PIN4 (SI)
- Use a jumper cable to connect PIN3(Gnd) to PIN2

4.5.2 Sensor wiring code (BeanDevice® AN-V & AN-mV)

Wiring Code (Sensor Side)-Sensor with Analog **Unipolar** Output

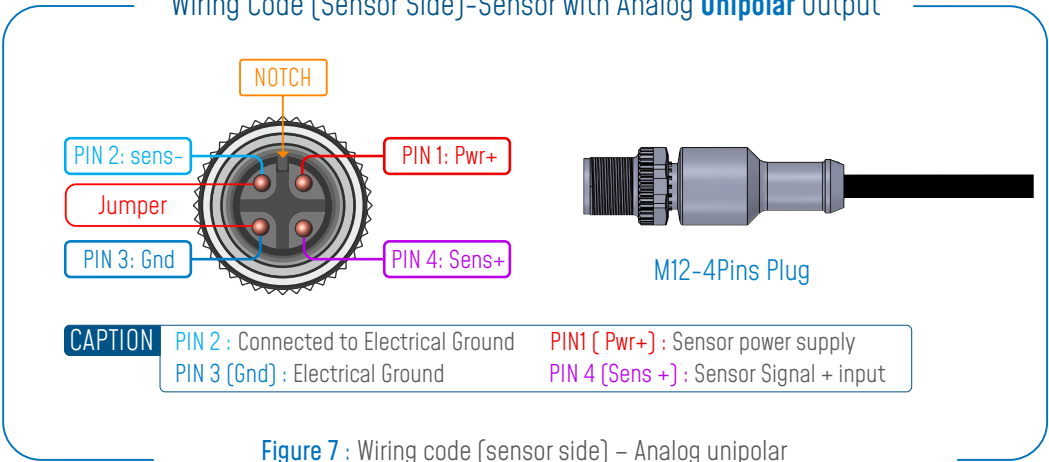


Figure 7 : Wiring code (sensor side) – Analog unipolar

Wiring Code (Sensor Side)-Sensor with Analog **Bipolar** Output

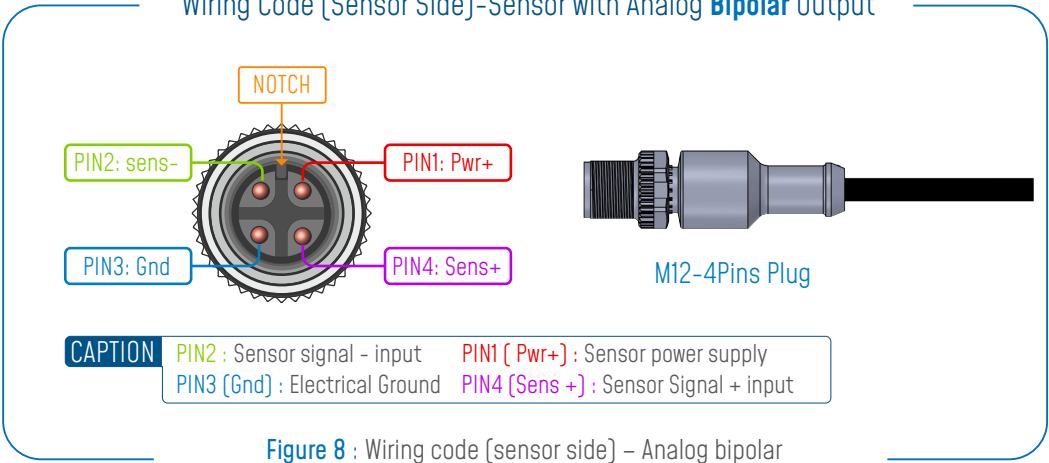


Figure 8 : Wiring code (sensor side) – Analog bipolar

- i If you use a unipolar analog sensor, Sens- pin must be connected to the electrical ground
- ! You can damage your sensor and/or your BeanDevice® if you don't respect the wiring code.

5. Wireless 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 9 : 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 10 : BeanGateway® accessories

5.2 UNBOX YOUR BEANGATEWAY® INDOOR

Open the BeanGateway® box



Figure 11 : BeanGateway® Indoor Box



Figure 12 : 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.

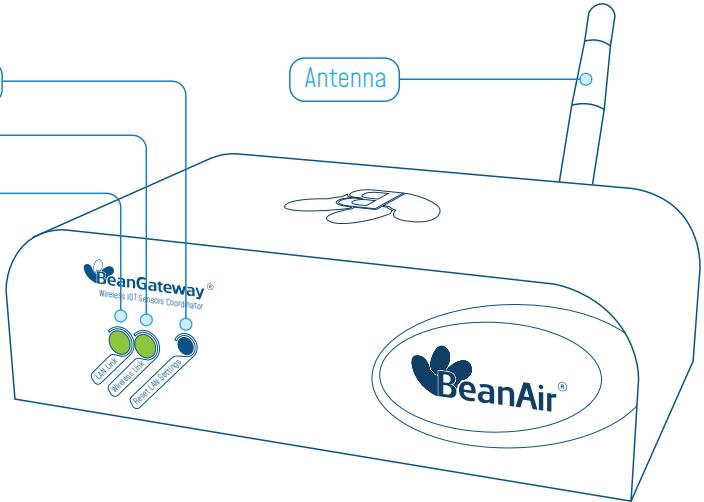


Figure 13 : BeanGateway® Indoor Accessories

5.3 INDOOR VERSION

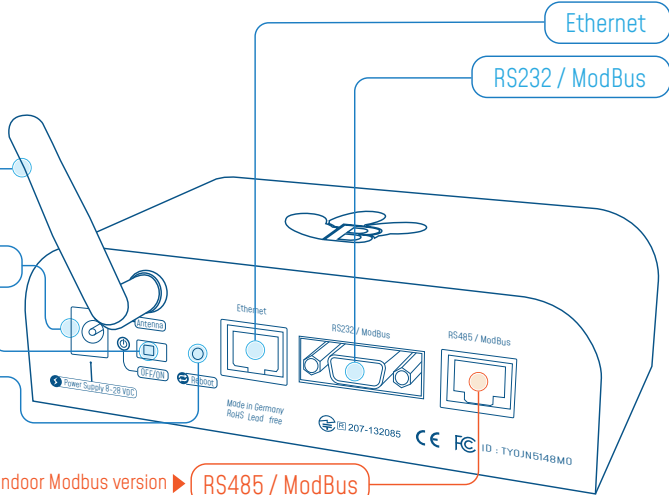
Front View

- Reset LAN Settings
- Wireless Link
- LAN Link



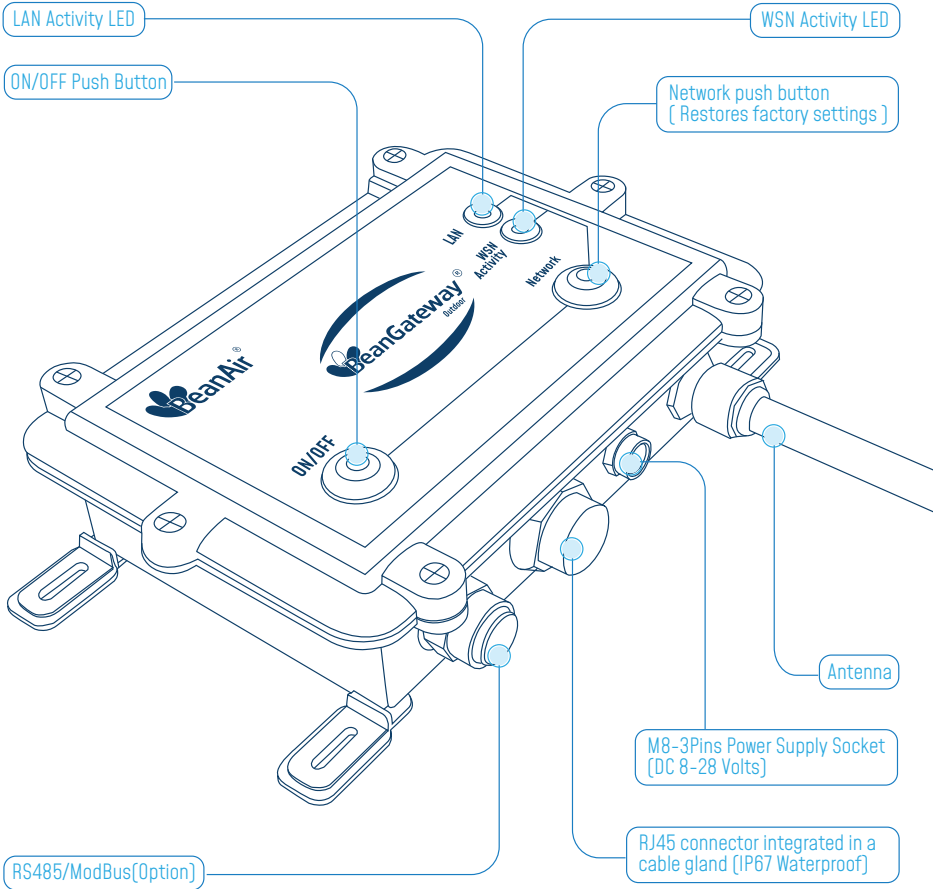
Rear View

- Ethernet
- RS232 / ModBus
- Antenna
- Power Supply 8-28 VDC
- OFF/ON
- Reboot



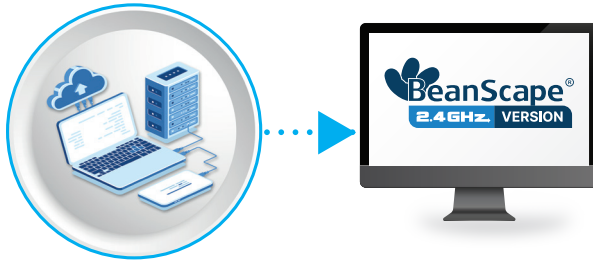
Only available on BeanGateway® Indoor Modbus version ▶ RS485 / ModBus

5.4 OUTDOOR VERSION

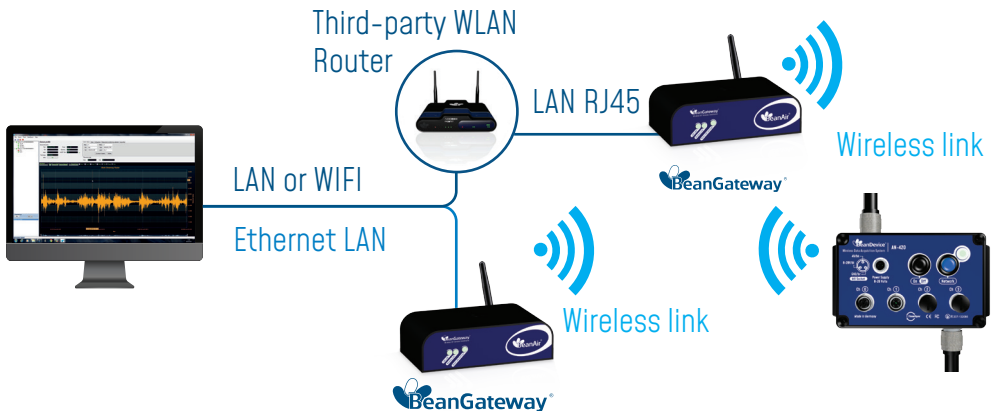


6. START YOUR APPLICATION

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



2. Connect your Beangateway® directly to your PC or to 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®,
 example: 192.168.4.2

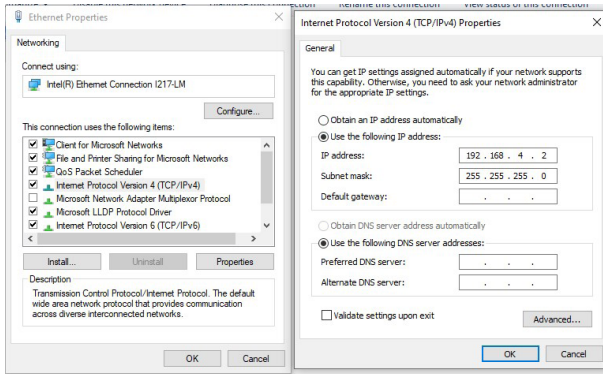


Figure 14 : Static IP allocation on your PC

Via LAN Router connection :

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

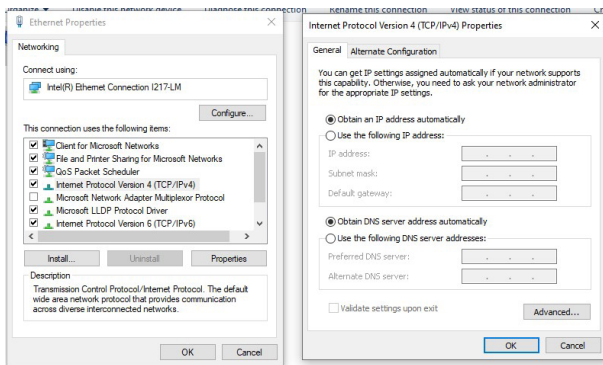


Figure 15 : Dynamic IP allocation on your PC

- 3. Make sure that your BeanScope® 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.



Indoor Version



outdoor Version

Figure 16 : Turn on the BeanGateway®

- 5. Localize your BeanGateway® on your LAN

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.

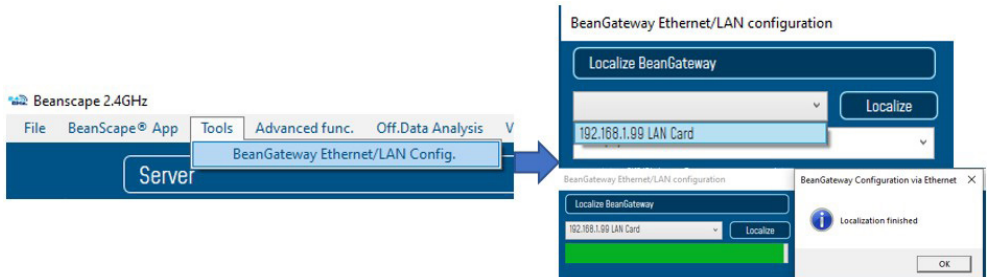
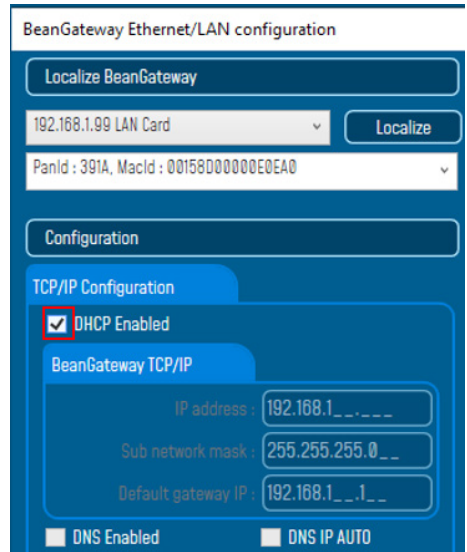


Figure 17 : Localization process

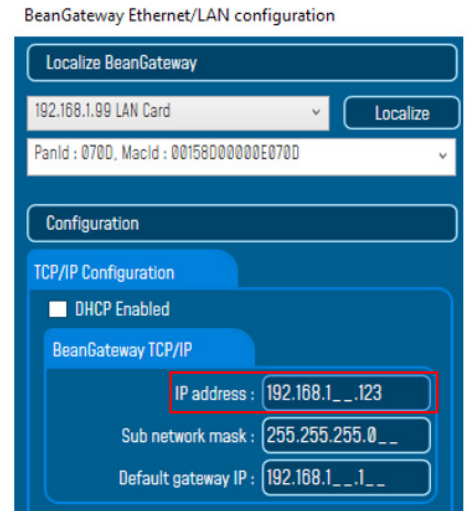
Via LAN Router connection :

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 BeanScope® App tab

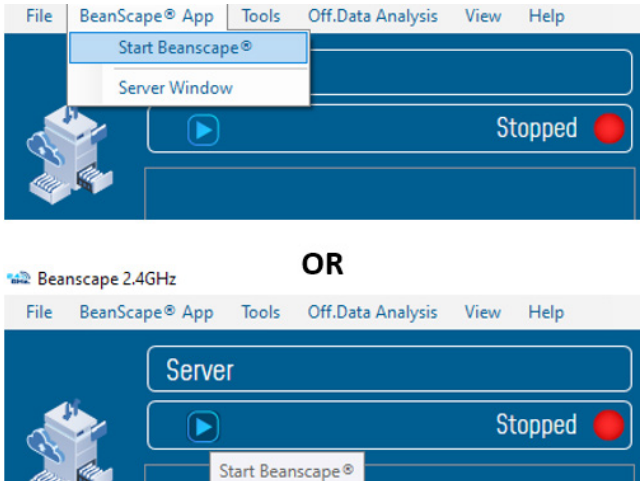


Figure 18 : Start the Server

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.

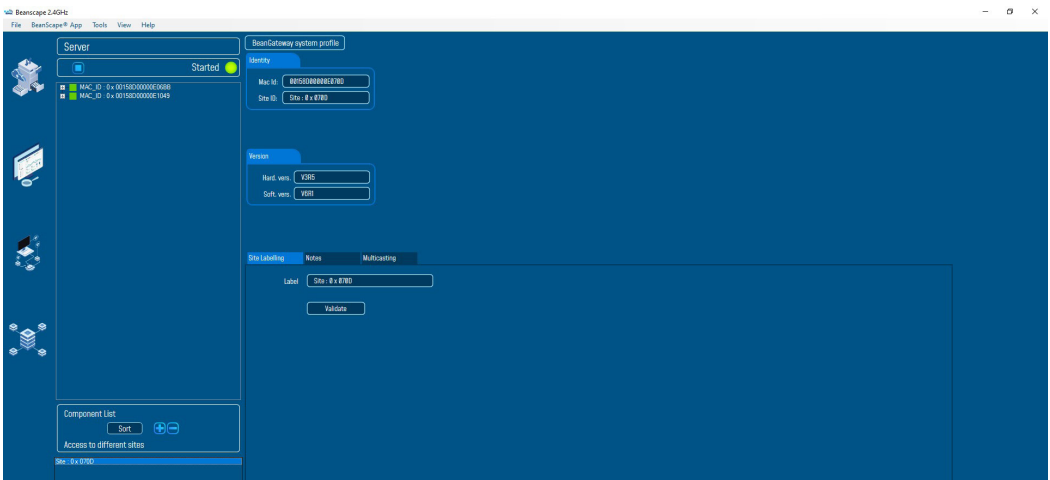


Figure 19 : BeanGateway® Dashboard

- Power on the Beandevic[®] : Push the ON/OFF push button.
The Activity/Failure Led will blink in green color.

Figure 20 : Device Power OFF/ON



- For the first use, you need to pair your Beandevic[®] to your BeanGateway[®].
Push the Network push button until that Activity/Failure Led blinks in Red color.
Default factory paramaters will be restored.

Figure 21 : Pairing your Beandevic[®] to your BeanGateway[®]



- Click on the Beandevic[®] that showed up on the left side pane



Figure 22 : Beandevic[®] Profile

Now you can see the screen for monitoring and configuring the Beandevic[®] and its related sensor channels.

7. A QUICK SETTINGS OVERVIEW

7.1 DATA ACQUISITION CONFIGURATION

- From View tab change the view from Standard view to Expert view by entering the right serial key provided with your BeanScope® DVD

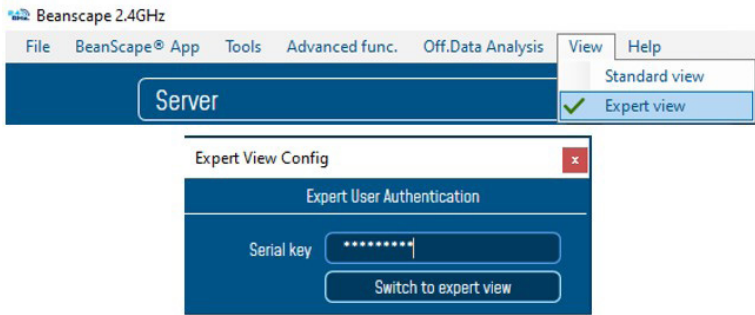


Figure 23 : Expert View

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

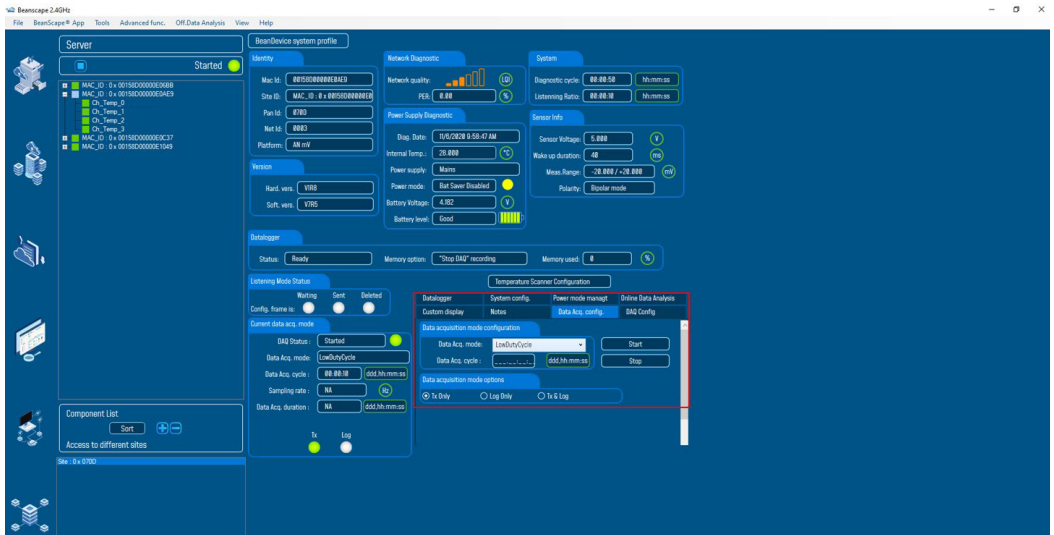


Figure 24 : DAQ frame

3. Setup your Acquisition mode

Select your Data acquisition mode
Example: LowDutyCycle

Select your Data acquisition Cycle
Example: 00:00:00:10

Click on Start Button to Start the Data acquisition mode

Select your Data Acquisition option
Example: Tx Only

Figure 25 : DAQ Configuration

4. Click on the sensor channel to see real-time measurement graph

Beanscape 2.4GHz

Ambient Temp. Sensor configuration

Graph Measure Mode

LowDutyCycle

Measured 0.042 g

Time

Figure 26 : Real-Time Graph



Find more info on the different data acquisition modes available on the BeanDevice® 2.4GHz :
<http://www.wireless-iot.beanair.com/files/TN-RF-008-Data-acquisition-modes-available-on-the-BeanDevice.pdf>

7.2 USING THE DATALOGGER

The BeanDevice® 2.4GHz comes equipped with embedded datalogger of up to 1 million data points [with events dating].

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 BeanScope® or you can select **TX & LOG** for jointly save data on your BeanScope® and the datalogger at the same time.

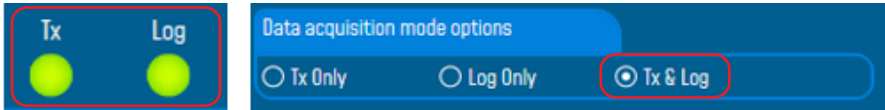


Figure 27 : DataLogger Options

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

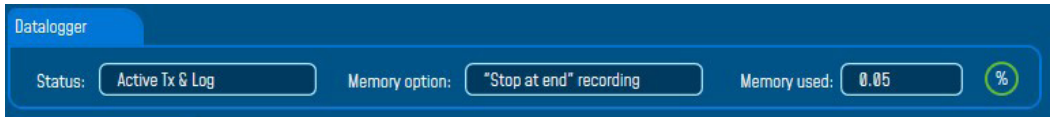


Figure 28 : DataLogger Status

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

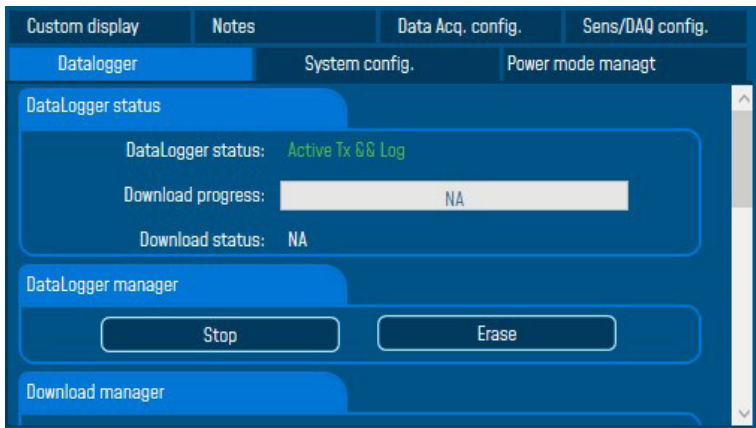


Figure 29 : DataLogger tab

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

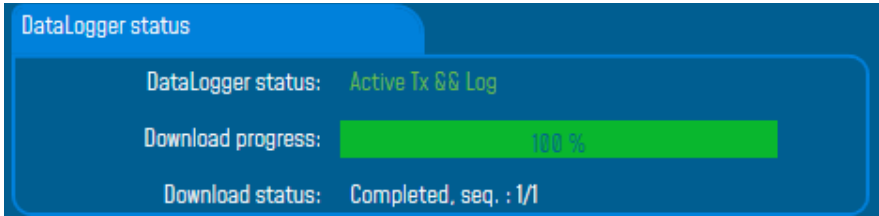


Figure 30 : DataLogger status

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 31 : DataLogger manager

Below, on the download manager frame, different options to control the datalogger are available :

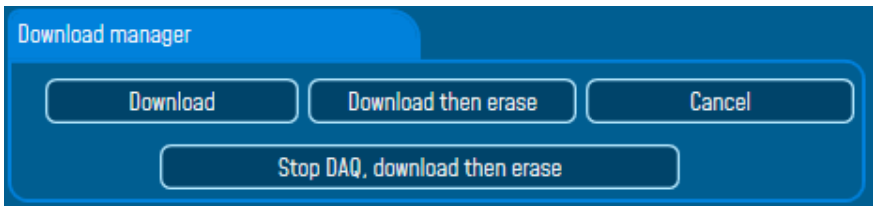


Figure 32 : DataLogger Management

- 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 33 : 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

8. 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 ProcessSensors user manual section for more information
<https://www.wireless-iot.beanair.com/files/UM-RF-02-ENG-ProcessSensor-Wireless-DAQ.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