Anybus® Wireless Bridge II™

STARTUP GUIDE

SP2167 2.1 en-US ENGLISH

HMS Connecting Devices™

Important User Information

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1 About This Document

This document describes how to install Anybus Wireless Bridge II and set up a basic configuration.

For additional documentation, configuration examples, FAQs, troubleshooting guides and technical support, please visit www.anybus.com/support.

1.1 Document Conventions

The following conventions are used to indicate safety information and other important content in this document:

WARNING
Instruction that must be followed to avoid a risk of death or serious injury.

Caution
Instruction that must be followed to avoid a risk of personal injury.

Instruction that must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.

Additional information which may facilitate installation and/or operation.

1.2 Trademarks

Anybus® is a registered trademark and Wireless Bridge II™ is a trademark of HMS Industrial Networks AB. All other trademarks mentioned in this document are the property of their respective holders.

2 Safety

2.1 General Safety Instructions

Caution
This equipment emits RF energy in the ISM (Industrial, Scientific, Medical) band. Make sure that all medical devices used in proximity to this equipment meet appropriate susceptibility specifications for this type of RF energy.

Caution
The M12 power and LAN connectors must be provided with tool operated mechanical lock nuts that are tightened by the installer.

This equipment is recommended for use in both industrial and domestic environments. For industrial environments it is mandatory to use the functional earth connection to comply with immunity requirements. For domestic environments the functional earth must be used if a shielded Ethernet cable is used, in order to meet emission requirements.

This equipment contains parts that can be damaged by electrostatic discharge (ESD). Use ESD prevention measures to avoid damage.

2.2 External Antenna Restrictions

For models with external antenna, only use antennas that are certified for use with this equipment. Using external antennas that are not certified for use with this equipment will invalidate its certifications and make it non-compliant with the regulations for radio equipment.

A list of certified antennas can be found at www.anybus.com/support.

2.3 Intended Use

The intended use of this equipment is as a communication interface and gateway. The equipment receives and transmits data on various physical levels and connection types.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

2.4 Type Identification

The type name consists of a type prefix followed by two designators for interface configuration and functionality.

Prefix	AWB3	Anybus Wireless Bridge II
Interface configuration	A	Internal antenna, Dual M12
	B	External antenna, Dual M12, RP-SMA
Functionality	A	Ethernet with digital input
	B	Ethernet w/o digital input

Example: AWB3AA = Anybus Wireless Bridge II with internal antenna, Ethernet networking and digital input.

3 Installation

3.1 General Information

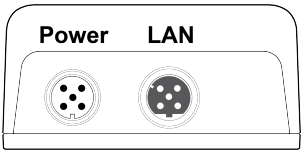
Anybus Wireless Bridge II can be screw-mounted directly onto a flat surface or mounted on a standard DIN rail using the optional DIN mounting kit.

For optimal reception, wireless devices require a zone between them clear of objects that could otherwise obstruct or reflect the signal. A minimum distance of 50 cm between the devices should also be observed to avoid interference.

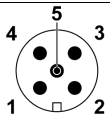
For models with internal antenna the characteristics of the antenna should be considered when choosing the placement and orientation of the unit. See the User Manual for more information about the antenna characteristics for this equipment.

Make sure that you have all the necessary information about the capabilities and restrictions of your local network environment before installation.

3.2 Connectors



Power Connector (A-coded male M12)



Pin	Function
1	Power + (9–30 V)
2	Digital Input Ground
3	Power Ground
4	Digital Input + (9–30 V)
5	Functional Earth

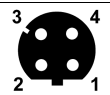
The digital input can be used for additional functionality with advanced configurations and to remotely reset the unit.

> **!** If voltage is applied to the digital input for more that 10 seconds the unit will be reset to factory defaults.

> **!** Signal wiring for the digital input must be carried in the same cable as power and functional earth if wiring length exceeds 3 meters.

See www.anybus.com/support for more information about the digital input.

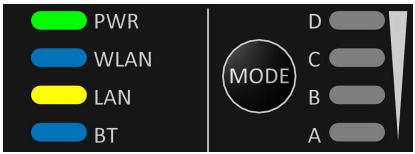
LAN Connector (D-coded female M12)



Pin	Function	Color coding (T568B)
1	Transmit +	Orange/White
2	Receive +	Green/White
3	Transmit -	Orange
4	Receive -	Green

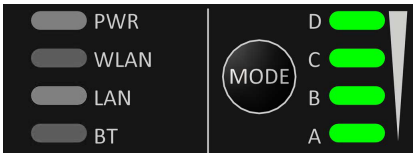
3.3 LED Indicators

3.3.1 Status Indicators



LED Indication		Description
PWR	Off	No power
	Green	Normal operation
WLAN	Off	WLAN disabled or no power
	Blue, blinking	Access Point: No clients, awaiting connections
	Blue	Access Point: Connected to at least one client Client: Connected to access point
	Blue, flickering	WLAN data activity (when connected)
	Purple, blinking	Client: Scanning for access points
	Purple	Client: Connecting to a detected access point
	Red	Unrecoverable error
LAN	Off	No Ethernet connection
	Yellow	Ethernet link present
	Yellow, flickering	Ethernet data activity (when connected)
BT	Off	Bluetooth disabled or no power
	Blue, blinking	NAP: No clients, awaiting connections
	Blue	NAP: Connected to at least one PANU client PANU: Connected to NAP
	Blue, flickering	Bluetooth data activity (when connected)
	Purple	PANU: Trying to connect to NAP
	Red	Unrecoverable error

3.3.2 Link Quality/Mode Indicators



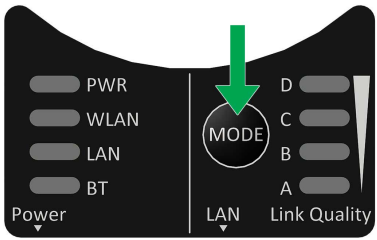
RSSI (WLAN Client) / Link Quality (Bluetooth PANU)

LED				Description
				No connection
A				RSSI/Link Quality < 25 %
A	B			RSSI/Link Quality 25–50 %
A	B	C		RSSI/Link Quality 50–75 %
A	B	C	D	RSSI/Link Quality > 75 %

These LEDs are also used when selecting an Easy Config mode and to indicate update status in Recovery Mode.

See *Easy Config, p. 12* and *Recovery Mode LED Indications, p. 10*.

3.4 MODE Button



The **MODE** button can be used to restart or reset the unit as well as for selecting an Easy Config mode.

When the unit is powered on, press and hold **MODE** for >10 seconds and then release it to reset to the factory default settings.

Recovery Mode

If the web interface cannot be accessed, the unit can be reset by starting in *Recovery Mode* and reinstalling the firmware using Anybus Firmware Manager II, which can be downloaded from www.anybus.com/support.

To enter Recovery Mode, press and hold **RESET** during startup.

> **!** Firmware updates should normally be carried out through the web interface. Recovery Mode should only be used if the unit is unresponsive and the web interface cannot be accessed.

Recovery Mode LED Indications

In Recovery Mode the Status LEDs will indicate firmware update status:

PWR	Green	Firmware update in progress
	Green, blinking	Waiting for valid firmware
WLAN + **BT**	Alternating red/blue	Firmware update in progress

4 Configuration

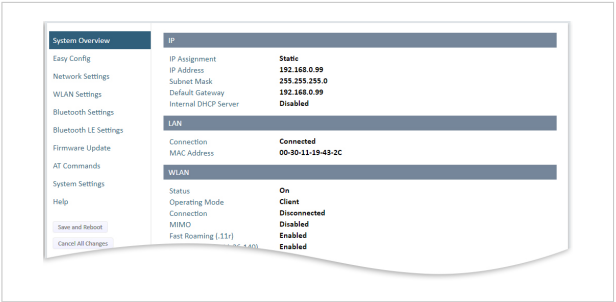
Anybus Wireless Bridge II is normally configured via the web interface or using one of the pre-configured **Easy Config** modes.

Advanced configuration can be carried out by issuing AT commands via the web interface or over a Telnet or RAW TCP connection to port 8080.

4.1 Web Interface

The web interface is accessed by pointing a web browser to the IP address of the unit. The default address is **192.168.0.99**.

The configuration settings are described in detail in the User Manual.



4.2 Easy Config

1. Power on the unit and wait for the **Link Quality** LEDs to light up and go out again, then immediately press and release the **MODE** button.
2. Press **MODE** repeatedly to cycle through the Easy Config modes until the desired mode is indicated by the **A-B-C-D** LEDs.
3. Within 20 seconds of step 2, press and hold **MODE** for 2 seconds. When the button is released the unit will restart in the selected mode.

4.2.1 Easy Config Modes

EC	LED				Role	Description
1	A				Bluetooth PANU	Configure as a client and scan for another client (PANU to PANU).
2		B			–	Reset configuration to factory defaults.
3	A	B			–	Reset IP settings to factory defaults.
4			C		Client	Wait for automatic configuration.
5	A		C		WLAN AP	Configure units in mode 4 as clients.
6		B	C		Bluetooth NAP	Restart as access point and connect clients.
7	A	B	C		WLAN AP	Configure units in mode 4 as clients.
8				D	Bluetooth NAP	Restart as access point and connect clients. Apply PROFINET optimization to all units.
9	A			D	Bluetooth PANU	Configure as a client and scan for another client (PANU to PANU). Apply PROFINET optimization to both units.
10		B		D	(any)	Apply PROFINET optimization and restart.
11	A	B		D	(any)	Enable PROFIsafe mode.

The Easy Config modes are also described when selected in the web interface.

4.3 I/O-Data Cycle Time

Based on recommendations from industrial equipment suppliers, such as Rockwell and Siemens, it is recommended to use the following minimum I/O-data cycle times for PROFINET and EtherNet/IP networks:

- Wireless link Point-to-Point with Bluetooth PANU-PANU or Wi-Fi Access Point to Station: 32 ms
- Wireless link with Access Point and up to 4 wireless clients/stations, Bluetooth or Wi-Fi: 64 ms

4.4 Factory Restore

Any one of these actions will restore the factory default settings:

- Clicking on **Factory Restore** on the **System Settings** page
- Executing **Easy Config Mode 2**
- Issuing the AT command **AT&F** and then restarting the unit
- Holding **MODE** pressed for >10 seconds and then releasing it
- Applying voltage to the digital input for >10 seconds

Default Network Settings	
IP Assignment	Static
IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.99
Internal DHCP Server	Disabled
DHCP Interfaces	All

Default WLAN Settings	
Operating Mode	Client
Channel Bands	2.4 GHz & 5 GHz
Authentication Mode	WPA/WPA2–PSK
Channel	Auto
Bridge Mode	Layer 3 IP forward
MIMO	AWB3000: Enabled AWB3010: Disabled

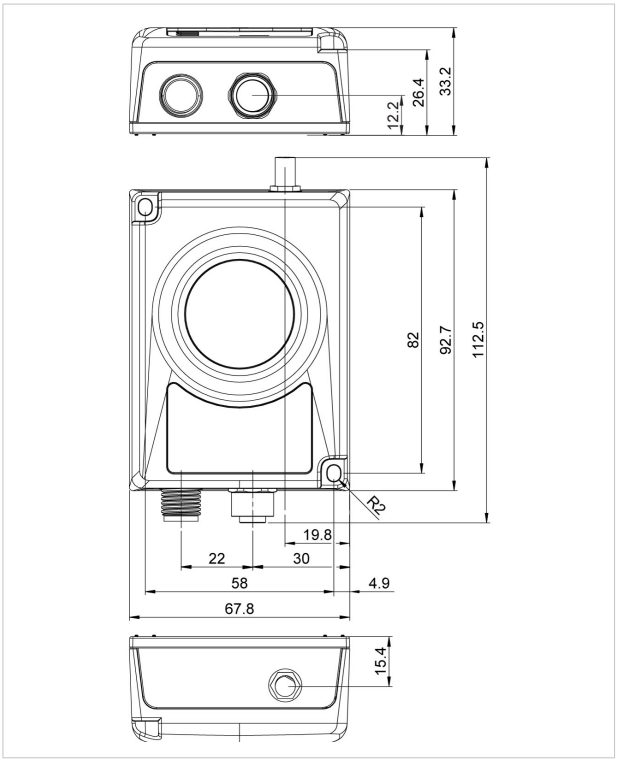
Default Bluetooth Settings	
Operating Mode	PANU (Client)
Local Name	[generated from MAC address]
Connectable	No
Discoverable	No
Security Mode	Just works
Bluetooth LE	Operating Mode: Disabled Connectable: No Discoverable: No

5 Technical Data

5.1 Hardware Specifications

Order code	**AWB3000**	**AWB3010**
Wired Interface type	Ethernet	
Antenna	3 internal antennas: 2.4 GHz 2.4 GHz MIMO 5 GHz	1 external antenna: 2.4 GHz + 5 GHz dual band
Dimensions (LxWxH)	93 x 68 x 33.2 mm	
Weight	120 g	
Operating temperature	-40 to +65 °C	
Storage temperature	-40 to +85 °C	
Humidity	EN 600068-2-78: Damp heat, +40 °C, 93 % humidity for 4 days	
Vibration	See datasheet	
Housing material	Plastic (see datasheet for details)	
Protection class	IP65	
Mounting	Screw mount or DIN rail using optional clip	
Power connector	M12 male A-coded	
Ethernet connector	M12 female D-coded	
Power supply	9–30 VDC (-5 % +20 %) Cranking 12 V (ISO 7637-2:2011 pulse 4) Reverse polarity protection	
Power consumption	0.7 W (idle), 1.7 W (max)	

5.2 Installation Drawing



All measurements are in mm.

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