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Anybus® Wireless Bridge II™

INSTALLATION GUIDE

SCM-1202-013/SP2167 1.0 ENGLISH



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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 and technical support, please visit the Anybus support website www.anybus.com/support.

Trademark Information

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 Product Description

Anybus Wireless Bridge II provides wireless communication over WLAN and/or Bluetooth® to Ethernet networks.

WLAN or Bluetooth?

Choose WLAN when data throughput and seamless roaming are most important and there are few other radio emitting devices in the environment.

Choose Bluetooth if connection robustness and low latency are most important, and in environments with many other radio emitters.

Limitations

- Bluetooth PAN (Personal Area Network) will not work with iOS devices.
- Bluetooth PAN may not work with some Android devices due to varying implementations of Bluetooth by different manufacturers.
- WLAN 5 GHz cannot be used at the same time as WLAN 2.4 GHz or Bluetooth communication.

3 Installation



Caution

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



This product 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 omitted if a shielded Ethernet cable is used, in order to meet emission requirements.



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

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.

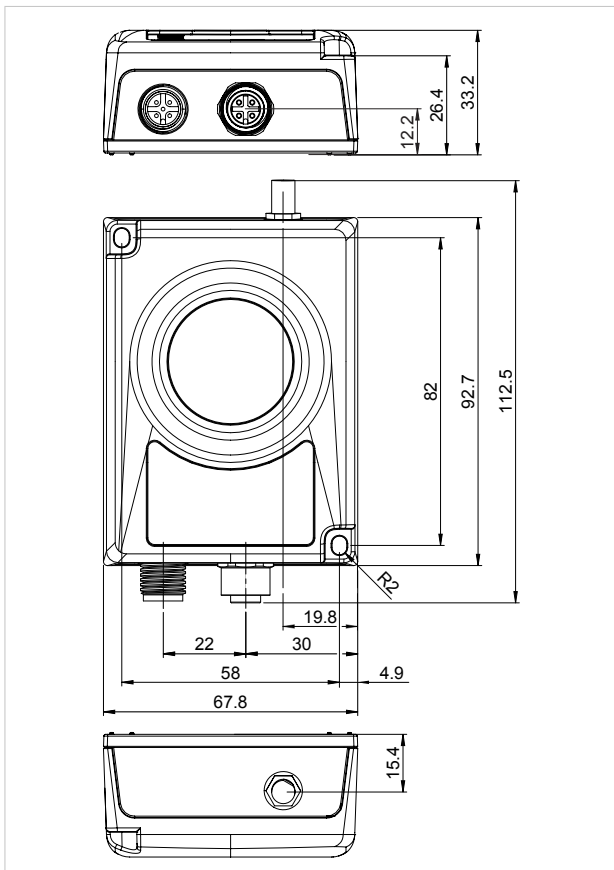
Make sure that you have all the necessary information about the capabilities and restrictions of your local network environment before installation.

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.

The characteristics of the internal antenna should be considered when choosing the placement and orientation of the unit (unless an external antenna is used).

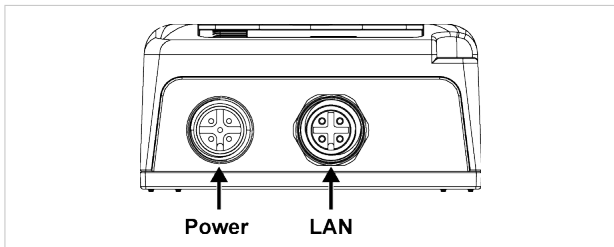
See the **Anybus Wireless Bridge II User Manual** for more information.

3.1 Dimensions



All measurements are in mm.

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

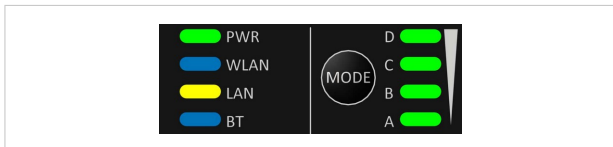


Signal wiring for the digital input must be carried in the same cable as power and functional earth if wiring length exceeds 3 meters.

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



PWR	Off	No power
	Green	Normal operation
WLAN	Off	WLAN disabled or no power
	Blue	Access Point mode: Connected to at least one client Client mode: Connected to access point
	Blue, flickering	WLAN data activity (when connected)
	Purple, blinking	Client mode: Scanning for access points
	Purple	Client mode: 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	NAP mode: Connected to at least one PANU client PANU mode: Connected to NAP
	Blue, flickering	Bluetooth data activity (when connected)
	Purple	PANU mode: Trying to connect to NAP
	Red	Unrecoverable error
A-B-C-D	Green	RSSI (received signal strength) or Link Quality See also Easy Config, p. 9 .

RSSI (WLAN Client) / Link Quality (Bluetooth PANU)	A	B	C	D
No connection				
RSSI/Link Quality < 25 %	●			
RSSI/Link Quality 25–50 %	●	●		
RSSI/Link Quality 50–75 %	●	●	●	
RSSI/Link Quality > 75 %	●	●	●	●

Additional LED indications are used when the unit is in Recovery Mode.
See [Recovery Mode LED Indications, p. 11](#).

4 Configuration

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

Advanced configuration can be carried out by issuing AT (modem) commands through the web interface or over a Telnet or RAW TCP connection to port 8080. A list of supported AT commands is included in the web interface.

4.1 The Web Interface

The web interface is accessed by pointing your web browser to the IP address of the Wireless Bridge. The default address is **192.168.0.99**.

Most configuration settings are self-explanatory. See also the built-in help and the Anybus Wireless Bridge II User Manual.

The screenshot displays the web interface configuration page. On the left is a navigation menu with options: System Overview, Easy Config, Network Settings, WLAN Settings, Bluetooth® Settings, Firmware Update, AT Commands, System Settings, and Help. Below the menu are buttons for 'Save and Reboot' and 'Cancel All Changes'. The main content area shows configuration details for three sections: LAN, WLAN, and Bluetooth.

LAN	
IP Assignment	Static
Status	Connected
IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.99
MAC Address	02-00-36-00-48-00

WLAN	
Status	On
Operating Mode	Client
Connection	Disconnected
Channel	48
Channel Bands	2.4 GHz & 5 GHz
Connected to (SSID)	HMS-TSLab
Connected to (MAC)	-
MAC	02-01-36-00-48-00

Bluetooth	
Status	On
Operating Mode	PANU (Client)
Connection	Disconnected
Channel	004b00



The web interface is designed for the current stable versions of Internet Explorer, Chrome, Firefox and Safari. Other browser versions may not support all functions of the interface.

4.2 Easy Config

- Power on the unit and wait for the Link Quality LEDs to light up and go out again, then press and release the **MODE** button.
Step 1 must be carried out within 5 seconds of startup.
- Press **MODE** repeatedly to cycle through the Easy Config modes until the desired mode is indicated by the A-B-C-D LEDs.
Mode 2 is the first mode, which means that the number of required button presses are always one less than the mode number.
- Press and hold **MODE** for 2 seconds, then release the button. This will confirm the selected mode and restart the unit.
Step 3 must be carried out within 20 seconds of step 2, otherwise the unit will exit Easy Config setup and return to the previous settings.

4.2.1 Easy Config Modes

Mode	Role	Description	A	B	C	D
2	—	Reset configuration to factory defaults		●		
3	—	Reset IP settings to factory defaults	●	●		
4	Client	Wait for discovery and configuration			●	
5	WLAN AP	Discover units in Mode 4 and configure them as clients	●		●	
6	Bluetooth NAP			●	●	

Modes 4, 5 and 6 are used in combination to automatically set up a WLAN or Bluetooth network with units of this type.

Modes 5 and 6 will scan for units in Mode 4. Each detected unit in Mode 4 will be reconfigured as a client, and the scanning unit will be configured as an access point. The clients will then restart and connect to the access point.

Mode Timeout

- Mode 5 and 6 will scan for 120 seconds. The mode can be activated repeatedly to scan for additional units.
- Mode 4 will listen for 120 seconds, or until it has received a valid configuration from a unit scanning in Mode 5 or 6.



The IP address of a client may be changed by the configuration from the access point. Active browser sessions could therefore be lost.

4.3 Factory Restore

The unit can be restored to the factory default settings using any of the following methods:

- ▶ Press and hold the **MODE** button for >10 seconds and then release it
- ▶ Execute **Easy Config Mode 2**
- ▶ Click on **Factory Restore** on the **System Settings** page
- ▶ Issue the AT command **AT&F** and reboot

Default Network Settings

IP Assignment	Static
IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.99

Default WLAN Settings

Operating Mode	Client
Channel Bands	2.4 GHz & 5 GHz
Authentication Mode	Open
Channel	Auto
Bridge Mode	Layer 2 tunnel

Default Bluetooth Settings

Operating Mode	PANU (Client)
Local Name	[generated from MAC address]
Security Mode	Disabled

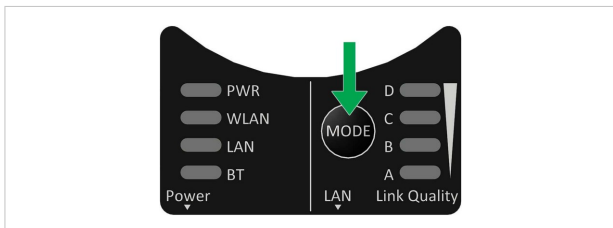
Default System Settings

Password	[empty]
-----------------	---------



Setting a secure password for the unit is strongly recommended.

4.4 MODE Button



The **MODE** button can be used to restart or reset the unit as well as for selecting Easy Config modes. See [Easy Config, p. 9](#).

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

See [Factory Restore, p. 10](#).

- ▶ Press and hold **MODE** while applying power to boot into *Recovery Mode*. Recovery Mode can be used to reinstall firmware using an external application if the web interface cannot be accessed. Please refer to the support website for more information.



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

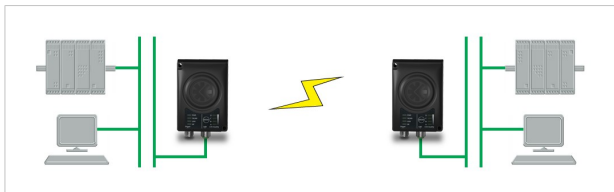
In Recovery Mode the LEDs will indicate firmware update status.

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

4.5 Configuration Examples

Settings not mentioned here should be left at their default values.

Ethernet Bridge over WLAN – Easy Config setup



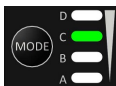
This example describes how to connect two Ethernet networks over WLAN using two Wireless Bridges. Both units are configured using only the **MODE** button.

1. Power on the first Wireless Bridge, wait for the LEDs to light up and go out, then press **MODE** and release it immediately.
2. Press **MODE** repeatedly until only LED **C** is lit, indicating Easy Config Mode 4, then confirm by pressing and holding **MODE** for 2 seconds.

This unit will now be discoverable and open for automatic configuration.

3. Power on the second Wireless Bridge, wait for the LEDs to light up and go out, then press and release **MODE**.
4. Press **MODE** repeatedly on the second unit until **A + C** are lit, indicating Easy Config Mode 5, then confirm by pressing and holding **MODE** for 2 seconds.

This unit should now automatically discover and configure the other unit as a WLAN client.



PROFINET communication

WLAN communication with PROFINET devices requires that **Bridge Mode** is set to **Layer 2 tunnel** on the **WLAN Settings** page of the web interface.

5 Technical Data

5.1 Technical Specifications

General Specifications

Order code	AWB3000	AWB3010
Antenna	Internal	External
Maximum range	400 m (WLAN and Bluetooth) <i>Using an external antenna does not extend the range but allows separate placement of antenna and unit (e.g. if unit is placed in an enclosure).</i>	
Wired Interface type	Ethernet	
Dimensions (LxWxH)	93 x 68 x 33.2 mm	
Weight	120 g	
Operating temperature	-30 to +65 °C	
Storage temperature	-40 to +85 °C	
Vibration	Sinusoidal vibration test according to IEC 60068-2-6:2007 and with extra severities. Shock test according to IEC 60068-2-27:2008 and with extra severities. See Anybus Wireless Bridge II Compliance Sheet for details.	
Humidity	EN 600068-2-78: Damp heat, +40 °C, 93 % humidity for 4 days	
Housing	Plastic (Bayblend FR3010)	
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)	
Configuration	Push-button, web interface, AT commands	
Browser support	Internet Explorer, Firefox, Chrome, Safari (current stable versions)	
Certifications	See Anybus Wireless Bridge II Compliance Sheet.	

Host Communication

Ethernet interface	10/100BASE-T, auto MDI/MDIX cross-over detection Supports all common Ethernet protocols based on TCP/IP including the industrial protocols EtherNet/IP, Modbus TCP, BACnet/IP and Profinet IO.
Digital input	9–30 VDC Signal cable length must be <3 m if separate from power supply cable.

WLAN Specifications

Wireless standards	WLAN 802.11a/b/g/d/e/i/h
Operation modes	Access Point or Client
2.4 GHz channels	1–11
5 GHz channels	Access Point: 36–48 (U-NII-1) Client: 36–140 (U-NII-1, U-NII-2A, U-NII-2C)
RF output power	16 dBm
Max number of clients	7 (for access point)
Power consumption	54 mA @ 24 VDC (WLAN interface only)
Data throughput	Gross data throughput: 54 Mbit/s Net data throughput: up to 20 Mbit/s
Authentication	WPA/WPA2-PSK, LEAP, PEAP
Encryption	WEP64/128, TKIP, AES/CCMP

Bluetooth Specifications

Core specification	4.0
Wireless profiles	PAN (PANU & NAP)
Operation modes	Access Point or Client
RF output power	10 dBm
Max number of clients	7 (for access point)
Power consumption	36 mA @ 24 VDC (Bluetooth interface only)
Net data throughput	Up to 1 Mbit/s
Security	Authentication & Authorization, Encryption & Data Protection, Privacy & Confidentiality, NIST Compliant, FIPS Approved

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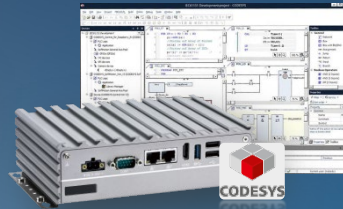
VPN+IOT 物聯網模組



Anybus X-Gateway



CODESYS SoftPLC



Jmobile Runtime IPC



I4-SCADA IPC



工業 4.0 數位工廠與 工業物聯網解決方案

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