# Wireless 🔀 User Manual



English BPXWXU1, revision 4



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#### Contents

## **TERMS AND CONDITIONS**

#### **GENERAL TERMS AND CONDITIONS**

Please find the general terms and conditions at: https://www.bartec.de/en/terms/TERMS\_BARTEC\_Group.pdf

#### WARRANTY SERVICE OPTIONS

Before contacting BARTEC PIXAVI, please try the following options:

1. Access <u>https://www.pixavi.com/support-forum/</u> and our FAQ page for troubleshooting advice and directions on running hardware diagnostics.

2. Consult the user manual which is included in your order. If you need additional assistance, please use one of the following support options to contact BARTEC or our authorized BARTEC Sales offices.

3. Online, chat and other forms of remote support may be available. Contact information is available at <u>https://www.pixavi.com/support-forum/</u>

4. Telephone support requests: Please contact your local BARTEC Sales Office.

## INTRO

The Wireless X is nothing short of a revolution within wireless equipment in hazardous areas. Based on 15 years of experience within wireless equipment and hazardous areas, BARTEC PIXAVI has re-designed the bulky enclosure completely. We designed the smallest, lightest and highest performing solution for wireless equipment ever created for hazardous areas. Based on both clever engineering, material science and state of the art wireless infrastructure, we are now eliminating the need for bulky and heavy enclosures and antennas. The Wireless X is designed to meet the requirements for the harsh environments of the open seas and is also ideal for onshore Petrochemical and Marine applications as well for all kind of industry where an explosive atmosphere may be present.

### **PRODUCT OVERVIEW**



## **SPECIFICATIONS AND MARKING**

#### **Specifications:**

Size	Ø x H = 452.5 x 188
Weight	10 kg for Aluminum version *
Main materials	<ul> <li>Marine grade aluminium and stainless steel</li> <li>Dome: RF transparent composite with gelcoat</li> </ul>
Ambient temperature	-20 °C ≤ Tamb ≤ 60 °C *
Type of protection	Ex d, e
Power Spec	85 - 264 VAC (47-63 Hz), 120 - 370 VDC, Max.10 A*
Packaging	510x510x310mm, 15kg *
	* Depending on configuration and access point inside

\* Depending on configuration and access point inside

#### Marking: Marking label



#### **Markings Explained**

Wireless radio	Product type
enclosure	
Ex db eb IIC	Ex = Denotes explosive atmosphere
T6 Gb	db = Protection concept
	eb = Protection concept
	IIC = Sub group
	T6 = Temperature group
	Gb = Equipment protection level
-20 °C ≤ Tamb	Ambient temperature rating
≤ 60 °C	
II 2G	II = Equipment group
	2 = ATEX category
	G = Gas
CE 0044	CE marking and notified body number
Serial Nr	BPX=Manufacturer
	WX=Wireless X
	EX=Ex version
	YY=Year of manufacture
	SSSSSS= unique serial number
Presafe 17	ATEX certificate number
ATEX 11333 X	
IECEx PRE	IECEx certificate number
17.0059 X	
Mfr	Identifies the manufacturer name and
	address

#### Special Conditions for Safe Use:

"X" - The instruction indicates all the necessary information to ensure the installation and use minimize the risk from electrostatic discharge.



"X" - Equipment must only be placed in areas with low risk of mechanical danger (ref clause 26.4.2 in EN 60079-0).

"X" – The equipment is intended for installation only in certain position (see "Preparations before installing").

### **PRODUCT MODELS**



## ITEM CHECK LIST

Before starting installation, check that all the following items have been included with your Wireless X. If anything is missing, contact your dealer. Do not use any sharp objects like scissors or knives when opening the box. This may damage the content.



Wireless X Wireless X enclosure



**User manual** Printed user manual



**Mounting fixture** Used as stable support when working in the Ex e chamber



Mounting bracket

Stainless steel mounting bracket



#### Mounting hardware

1x safety wire 4x M6 fasteners for locking Wireless X to the mounting bracket

### **PREPARATIONS FOR CABLING AND TERMINATION**



Never perform any installation or maintenance work on the Wireless X while it is connected to power!



Selection, Installation, Maintenance and repair of electrical apparatus for use in potentially explosive atmosphere should be done in accordance with IEC/ EN 60079-14/ -17/ -19 . Product installation must be carried out in accordance with any local codes that may apply and should only be carried out by a competent electrical personnel.



Only use suitable M20x1.5 Atex or IECEx certified compression or barrier glands depending on the cable/installation. Make sure a suitable material/ quality is selected to avoid galvanic corrosion with the main aluminum body. Stainless steel is recommended.



Make sure to use cable ferrules on all cables when terminating.



Make sure the earth cable is min. 0.75mm<sup>2</sup>.

#### The Wireless X has four different versions:

The next section contains guides for how to install and terminate the cables.





Ethernet and power (ETH) page 14



Power over ethernet (POE) page 12



Power (PWR) page 16

## **FIBER VERSION (FIB)**

Follow the cabling and termination instructions below for correct installation. Lay out the parts, cables and components as shown in the illustrations. It's recommended to use the included dome fixture during the cabling and termination process.



Always pay attention to the fiber cables' minimum bend radius of 30 mm. If you bend the fiber cable tighter than this minimum bend radius, you risk breaking the fiber cable.

# 1. Remove Ex e lid and insert cables into glands

Unscrew the 7 M6x1 fasteners and remove the Ex e lid to access the power and network interfaces.

Follow the mounting instructions of the cable glands thoroughly.



# 2. Preparing the fiber splice tray

Unscrew the cover protecting the fiber splice tray and also the smaller cover over the slot you plan to splice the fiber cable in.



## **3.** Splicing fiber

Identify the RX and TX cables (marked with a sticker) Make sure to splice accordingly. Prepare the fiber - Strip the protective coatings, jackets, tubes, strength members, etc. leaving only the bare fiber showing. Make sure that fiber surface area is clean.



### **4.** Splicing fiber

Once properly aligned, the fusion splicer uses an electrical arc to melt the fibers, permanently welding the two fiber ends together.



### **5.** Protection of the splice

A typical fusion splice has a tensile strength of between 0.5 and 1.5 lbs. Using heat shrink tubing, silicone gel and/or mechanical crimp protectors will keep the splice protected from outside elements and breakage.



## **6**. Mount fiber tray lid

Mount the small cover protecting the splice, and then the lid, protecting the entire fiber tray.



# 7. Connect power and ground

Verify that the incoming powercable is <u>NOT</u> live using a multimeter.

Add cable ferrules. Connect power and ground cables to the power and earth terminals. For additional earthing info, see page: 17



### 8. Mount Ex e lid

Place the protective lid over the Ex e chamber. Make sure the Ex e gasket is properly seated. Attach the 7 M6 fasteners. It is recommended to use low- to medium strength thread locking sealant on all the 7 fasteners



## **POWER OVER ETHERNET VERSION (POE)**

Follow the cabling and termination instructions below for correct installation. Lay out the parts, cables and components as shown in the illustrations. It's recommended to use the included dome fixture during the cabling and termination process.



#### Installation

#### **3.** Cable Insulation cutting

Cut cable insulation and ethernet shielding according to the illustrated values and add cable ferrules.

Place the Ethernet cable shield in contact with the shield clamp.

# **4.** Terminate Ethernet cable

Attach the individual leads to the termination block. The connection points are spring loaded. **Important: Follow the color coding indicated in the illustration to the right.** 



, 30 mm

45 mm

### 5. Earthing

Add cable ferrules. Connect ground cable to the earth terminal. For additional earthing info, see page: 17.



#### 6. Mount Ex e lid

Place the protective lid over the Ex e chamber. Make sure the Ex e gasket is properly seated. Attach the 7 M6 fasteners. It is recommended to use low- to medium strength thread locking sealant on all the 7 fasteners.



## **ETHERNET AND POWER VERSION (ETH)**

Follow the cabling and termination instructions below for correct installation. Lay out the parts, cables and components as shown in the illustrations. It's recommended to use the included dome fixture during the cabling and termination process.



## **2.** Cable Positioning

Position the Ethernet cable towards the termination block.



#### **3**. Cable Insulation cutting

Cut cable insulation and ethernet shielding according to the illustrated values and add cable ferrules.

Place the Ethernet cable shield in contact with the shield clamp.



# **4.** Terminate Ethernet cable

Attach the individual leads to the termination block. The connection points are spring loaded. **Important: Follow the color coding indicated in the illustration to the right.** 



## 5. Connect power and ground

Verify that the incoming power cable is <u>NOT</u> live using a multimeter.

Add cable ferrules. Connect power and ground cables to the power and earth terminals. For additional earthing info, see page: 17.



### 6. Mount Ex e lid

Place the protective lid over the Ex e chamber. Make sure the Ex e gasket is properly seated. Attach the 7 M6 fasteners. It is recommended to use low- to medium strength thread locking sealant on all the 7 fasteners.



## **POWER VERSION (PWR)**

Follow the cabling and termination instructions below for correct installation. Lay out the parts, cables and components as shown in the illustrations. It's recommended to use the included dome fixture during the cabling and termination process.



### **2.** Cable Positioning

Position the power and ground cables. Add cable ferrules at the end of the cables.

#### **3** Terminate cables

Verify that the incoming power cable is <u>NOT</u> live using a multimeter.

Connect power and ground cables to the power and earth terminals. For additional earthing info, see page: 17.



#### **4**. Mount Ex e lid

Place the protective lid over the Ex e chamber. Make sure the Ex e gasket is properly seated. Attach the 7 M6 fasteners. It is recommended to use low- to medium strength thread locking sealant on all the 7 fasteners.



### EARTHING



EARTHING: The Wireless X must be earthed to the earth system using minimum one of the earth/fixing points. This must be done according to the requirements specified in IEC 60079-14.



## DAISY CHAIN CONFIGURATIONS (DSY)

**Some versions can be configured as daisy chains, by having an extra output gland:** This section contain guidelines for how to install and terminate the cables.



Fiber daisy chain (FIB-DSY)



Power daisy chain (PWR/ETH-DSY)

## FIBER DAISY CHAIN (FIB-DSY)

The fiber cables can be configured as a daisy chain, if you have an extra set of fiber cables or more coming inside the Ex e chamber. Please follow the cabling and termination instructions below



## **POWER DAISY CHAIN (PWR/ETH-DSY)**

The power/ground cables can be configured as a daisy chain. Please follow the cabling and termination instructions below



#### Make sure the CC of the power cables are in the range of 1.5mm<sup>2</sup> to 4mm<sup>2</sup>

## Overview Make sure the power cables are terminated as explained in "POWER VERSION (PWR)" or "ETHERNET AND POWER VERSION(ETH)" Insert an extra gland for the daisy chain output. **2.** Termination

Terminate the cables as

cable ferrules.

illustrated. Make sure to use



## **PREPARATIONS BEFORE INSTALLING**



Never perform any installation or maintenance work on the Wireless X while it is connected to power!



During installation, if working at height cannot be avoided, a risk assessment should be carried out before any work at height is undertaken. The assessment should highlight the measures that must be taken to ensure people are not at risk of falling from height.



Only mount the Wireless X bracket to suitable structures.



The Wireless X must be mounted with the dome facing downwards.



Please follow deployment and guidelines provided by the wireless device manufacturer when deploying the wireless equipment.

#### **General info:**

- It's recommended to do a site survey to determine the best location to install the Wireless X.
- Optimal installation height is dependent on access point/model. Please check the manufacturer specification.

#### The Wireless X can be mounted in three different basic configurations:





**Ceiling** bracket included

Wall BPX-AC-WALL (accessory)



Pipe	(horizontal/vertical)	
BF	PX-AC-PIPE (accessory)	

The following section contains guidelines for installing the mounting brackets in the three different configurations, as well as, a guide on how to mount the Wireless X to the mounting brackets.

## **CEILING BRACKET**



Only mount the Wireless X bracket to suitable structures.

### Hardware needed:

- Mounting bracket
- M8 mounting hardware (not included)





### 1. Mount bracket to ceiling

Mount the bracket using the recommended mounting points. Only use high quality mounting hardware recommended for the mounting structure.

## WALL BRACKET



Only mount the Wireless X bracket to suitable structures

### Hardware needed:

- Mounting bracket
- Wall bracket (BPX-AC-WALL)
- 4x M8 bolts washers and nuts
- M8 bracket-to-wall mounting hardware (not included)





### 1. Attach wall bracket

Secure the wall bracket to the ceiling bracket with the bolts, washers and nuts supplied.

### 2. Mount to structure

Mount the bracket using the recommended mounting points. Only use high quality mounting hardware recommended for the mounting structure.

#### Installation

## PIPE BRACKET (HORIZONTAL)



Only mount the Wireless X bracket to suitable structures.

### Hardware needed:

- Mounting bracket
- Pipe bracket kit (BPX-AC-PIPE)
- 6x M8 bolt, nuts and washers
- 3x stainless steel pipe clamps







### **1. Attach pipe bracket**

First check the diameter of the pipe/pole. Insert the pipe bracket into the slots according to the pipe diameter.

Secure the pipe bracket to the ceiling bracket with the bolts, washers and nuts supplied.

### 2. Mount to structure

Mount the bracket assembly to the structure using the supplied band clamps. Make sure the bracket assembly is securely mounted.

#### Installation

## PIPE BRACKET (VERTICAL)



Only mount the Wireless X bracket to suitable structures.

### Hardware needed:

- Mounting bracket
- Pipe bracket kit (BPX-AC-PIPE)
- Wall bracket (BPX-AC-WALL)
- 10x M8 bolts, washers and nuts
- 3x stainless steel pipe clamps

**NB:** For vertical pipes and poles, a wall bracket (BPX-AC-WALL) is needed to ensure the dome is facing downwards. The pipe brackets would then need to be mounted on the wall bracket. The wall bracket can be mounted in different angles to fit different pipe/pole sizes.





### 1. Attach wall bracket to ceiling bracket

First check the diameter of the pipe/pole. Use a combination of the mounting holes to fasten the wall bracket in the correct angle.



### 2. Attach pipe bracket

Insert the pipe bracket into the slots of the wall bracket. Make sure they are in the correct position.

Secure the pipe bracket to the wall bracket with the bolts and nuts supplied.

### 3. Mount to structure

Mount the bracket assembly to the structure using the supplied band clamp. Make sure the bracket assembly is securely mounted.



## **MOUNTING THE WIRELESS X**



Ensure that the "Cabling and termination" step is finished before mounting the device to the bracket.



Ensure that the mounting bracket is already mounted in the ceiling, pipe or wall configuration.



Only mount the Wireless X to suitable structures.



### Hardware needed:

- Mounting bracket (mounted in one of the configurations above)
- Safety wire
- M6 fasteners for locking and earthing



### 1. Mount ceiling bracket

**1)** Make sure the bracket is securely fixed to the cealing. Attach the safety wire to the Wireless X using a M6 fastener and then attach the other end of the safety wire to the ceiling bracket. The safety wire is not meant for carrying the entire weight of the Wireless X during installation. It's solely a safety measure to avoid the Wireless X from drop to the ground in case of an accident.

**2)** Lift and align the Wireless X towards the ceiling bracket.



### 2. Attach Wireless X

Attach the Wireless X to the ceiling bracket. Make sure the feet enter the slots in the bracket.



### 3. Fixing and earthing

**1)** Rotate the Wireless X clockwise to lock it to the bracket.

**2)** Fix the Wireless X to the ceiling bracket with M6 fasteners. At least <u>two different tabs</u> must be used.

The unused fixing points may be used for earthing. For additional earthing info, see page: 19.

### **INSPECTION & MAINTENANCE**



The Ex d chamber consist of a cemented joint and cannot be opened. Do not tamper with the joint or any of the 24 M6 fasteners around the flange. This will void the warranty and the Ex certification.



The Ex e compartment is sealed with a gasket to eliminate water and moisture ingress. Moisture may however build up during rapid temperature fluctuations. It's recommended to always keep the Wireless X powered on (except during installation, maintenance and inspection) to maintain a stable temperature and reduce internal moisture levels

Maintenance and inspection of the Wireless X, mounted in explosive atmosphere, should be done in accordance with IEC/ EN 60079-17

BARTEC PIXAVI recommends a minimum inspection interval of 36 months.

Inspection procedure guidelines:

- Detach the Wireless X from the mounting bracket to access the Ex e chamber.
- Check that the cable glands are tightly and securely fastened to the Wireless X M20 threads.
- Check that all electrical connections are tight, and no unnecessary strain is applied to the cables inside the Ex e chamber.
- Check and remove any condensation inside the Ex e chamber.
- Replace the desiccant bag taped to the inside of the Ex e back plate.
- Check that the gasket around the Ex e chamber is whole, flexible and undamaged. Replace if needed. Part nr: WRGA1\_EXe\_Gasket.

### CLEANING

Avoid electrostatic charging, only clean the unit with water using a damp cloth. In principle, rubbing with non-conductive materials must be avoided.

#### What type of access points can I use inside the Wireless X?

We recommend using Cisco 27XX, 28XX, 37xx or 38xx series

For other access points, please contact BARTEC first.

Here are some of the access point requirements:

- Access point needs to be brand new when mounted inside the Wireless X
- Access point needs to withstand a pressure of 11,1 bar for min. 10 seconds.
- Access Point needs to be powered by POE or support an Input voltage of 48 volt
- Max RF throughput, Input interfaces (Power/POE etc), size along with maximum and minimum operating temperatures are also relevant.

If you are unsure if your access point will fit inside the Wireless X, your BARTEC representative can help you.

#### How do I find the right place to mount the Wireless X?

The location you choose to install your Wireless X affects the signal strength and network speed you will achieve. To optimize the network coverage:

- Always mount the Wireless X horizontally, with the dome facing down towards the area you want Wi-Fi coverage.

- Select a central location or one where you use your Wi-Fi-enabled devices most often. This because the distance from the Wireless X to the Wi-Fi equipment affects performance and signal strength.

- Steering clear of other electronic equipment can help avoid interference and signal obstruction.

#### What could interfere with the Wireless X?

Your surroundings can affect the Wireless X Wi-Fi performance. Metal (steel construction materials, doors, etc.), concrete and brick, glass but also equipment like microwave ovens, cordless phones and other electronic equipment might interfere with the Wireless X Wi-Fi signal.

#### Does the Wireless X support external antennas?

No. The concept of the Wireless X is to keep the antennas inside the Wireless X. However, you can use access points with external antennas as long as they fit inside the Wireless X.

## TROUBLESHOOTING

#### No wireless signal can be detected near the Wireless X

Check and verify that the Access Point has power. Measure with a voltmeter if necessary. Check and verify that the Access Point is connected to the LAN. Check the AP vendors documentation/Implementation guidelines for further troubleshooting.

## How can I verify that the Access Point inside the Wireless X is powered up and working?

Connect to the management system of the Access Point (via Web interface) or the centralised management system (if the Access Point is the lightweight/managed type) and do a simple diagnostics check. You can also access the logs of your DHCP server, to verify that the Access Point is connected and has received an IP address. Check the AP vendors documentation/ Implementation guidelines for further troubleshooting.

#### The Wi-Fi performance is slower than expected

BARTEC PIXAVI does not provide any wired or wireless bandwidth specific guarantees. The network speed and performance depends on the actual equipment mounted inside the Wireless X, the splicing and termination quality, network cable length, network cable type and also interference coming from other RF equipment nearby. Check that you have spliced the fiber (for fiber version) or terminated the Ethernet cable (for Ethernet/POE version) as specified in this user manual. Check that the maximum network cable length is not exceeding 100 meters for Ethernet and 3 Km for fiber cable.

### REPAIR

Repair and maintenance work on the Wireless X should only be performed by authorized personnel with appropriate training. Maintenance and servicing is performed based on EN 60079-17. As part of the maintenance, in particular, parts that depend on the ignition safety must be inspected. This includes, in particular, the seals, the fastening system, cable and wire entries.

### SUPPORT

Email: **support@bartec-pixavi.com** Phone: **+47 51 73 15 15** Web <u>https://www.pixavi.com/support-forum/</u>



### WARNING

Only genuine accessories and spare parts, made by BARTEC PIXAVI, may be used. Using non-genuine parts will void warranty.

### **TECHNICAL DRAWINGS**



## **MATERIAL LIST**

ltem	Description	Material
Main Chassis and Ring	Chassis and ring around dome	Marine grade aluminum, Powder coated
Dome	Dome for Ex d chamber	Composite, Marine grade gelcoat
Ex e lid	Lid for Ex e chamber	Marine grade aluminum, Powder coated
Ex e Gasket	Gasket for Ex e chamber	NBR, CS= 1.5mm, ID= 275mm
Screws and mountingparts	All fasteners and external brackets	316L Stainless steel
Mounting brackets	Ceiling, wall and pipe brackets	316L Stainless steel

## LETTER OF CONFORMITY

Title	BARTEC PIXAVI Wireless X Letter of Conformity		
Document ID	PX-HW-DV-IS-WX-2018-1		
Revision	1		
Author	Tobias Rokseth		
Place of issue	Stavanger		
Date of issue:	03.01.2018		
	<b>AVI AS</b> (Vestre Svanholmen 24, 4313 SANDNES, Norway), sole responsibility that the product:		
<b>3ARTEC PIXAVI</b>	Wireless X (Wireless Radio Enclosure)		
To which this de following directiv	claration relates is in accordance with the provisions of the es		
ATEX Directive 20	14/34/EU		
and is in conformi	y with the following standards or other normative doc.		
EN 60079-0:2012/A11:2013, EN 60079-1:2014 and EN 60079-7:2015.			
Ex-code: II 2 G Ex	db eb IIC T6 Gb		
Notified body invo	ved for Ex certification: Presafe		
Related certificate	s: Presafe 17 ATEX 11333 X		
	Christian Rokseth CEO, BARTEC PIXAVI AS		

### COMPLIANCE

Equipment is complying with:

-ATEX directive 2014/34/EU/

-IEC 60079-0:2011,

-EN 60079-0:2012/+A11 :2013,

-IEC/EN 60079-1:2014, IEC/EN 60079-7:2015

-EN60950-1 Information technology equipment - Safety - Part 1: General requirements



#### Vestre Svanholmen 24 / Norway / 4313 Sandnes

Tel.: +47 51731515 sales@bartec-pixavi.com www.bartec-pixavi.com

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