

white bream

XBee module



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I Preface

I.1 Disclaimer

White Bream products are not authorized for use in, or in connection with surgical implants, or as critical components in any medical or nuclear, or aircraft, or other transportation devices or systems where failure to perform can reasonably be expected to cause significant injury to the user, without the express written approval of an executive officer of White Bream. Such use is at buyer's sole risk, and buyer is responsible for verification and validation of the suitability of products incorporated in any such devices or systems. Buyer agrees that White Bream is not liable, in whole or in part, for any claim or damage arising from such use and shall have no obligation to warranty such products. Buyer agrees to indemnify, defend and hold White Bream harmless from and against any and all claims, damages losses, costs, expenses and liabilities arising out of or in connection with buyer's use of White Bream products in such applications to the extent buyer has not obtained the express written approval of an executive officer of White Bream.

I.2 Trademarks

Throughout this manual, the trade names and trademarks of various companies and products may have been used, and no such uses are intended to convey endorsement of or other affiliations with this manual or product. Any brand names or product names used within this manual are trademarks or registered trademarks of their respective holders.

I.3 Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

I.4 Liability

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

1.5 Technical support

White Bream technicians and engineers are committed to providing the best possible technical support for our customers so that our products can be easily used and implemented. We request that you first visit our website at www.whitebream.com for the latest documentation, utilities and drivers, which have been made available to assist you. If you still require assistance after visiting our website then contact our technical support department by email at support@whitebream.com.



Warning

Warning messages in the manual may contain important information against product malfunction or safety information for the (end-)user.



Caution

Notices regarding proper use of the product and to warn the user about how to prevent damage to hardware or loss of data.



Information

Tips, tricks and suggestions regarding the use or installation of the product.



Antistatic Precautions

The internals of the product are made of static sensitive components. When disassembling the product, it is strongly recommended to use an antistatic benchmat and wriststrap. If this is not possible, at least make sure you always touch an exposed metal part, such as the shield of an connector, each time before you touch anything else inside.



ROHS - WEEE

White Bream products are manufactured using lead-free components and assembly processes. Please dispose of products according local waste regulations.



2 Introduction

This mini PCI express Xbee module provides an easy means of integrating this embedded wireless technology into standard computer systems. Depending on the target system, often a completely invisible integration is possible when using an internally mounted 2.4GHz antenna.

2.1 Specifications

- Xbee ZB module (p/n XB24CZ7UIS-004)
- Mini PCI express form factor
- USB to serial conversion FTDI FT230X
- U.FL antenna connection¹

2.2 Customizable features

- Different Xbee module
- Different pigtail cable or antenna

¹ Cover picture shows a module with integrated antenna. Therefore no U.FL antenna connection is visible. Standard production version does have this antenna connector.

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3 Connections and controls

Core function of the module is the USB HUB controller. This controller arranges for the connection of up to four high-speed USB 2.0 downstream devices to an USB host port. It implements multiple transaction translator (TT) architecture that provide dedicated TT to each downstream port, which guarantee full-speed data passing bandwidth when multiple full-speed devices perform heavy loading operations.

3.1 Suspend

One of the features of USB which is an essential part of today's emphasis of 'green' products is its ability to power down an unused device. It does this by suspending the device, which is achieved by not sending anything to the device for 3 ms.

When the HUB controller detects this suspend mode, it will switch off the LED indicator and turn off the enable signal to the power supply regulator.

3.2 Suspend Override

If an attached device requires more power during suspend, then the internal power supply can be kept active. This is done by feeding a non-zero voltage into the OVR input. OVR does not activate the power supply once it has been turned off.

3.3 Auxilliary Out

Devices that need more than the standard USB power (5V / 500mA) can use the AUX power output. This output is active when the internal 5V power supply is active, hence also when suspend override is engaged. Use this output to power devices that need external power to operate, but use too much idle current to leave attached permanently.

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4 Specifications

For detailed specifications of the radio module, please refer to the Xbee module datasheet, available from customer support or from the Digi website.

4.1 Electrical

Parameter	Min	Typ	Max	Unit
VCC	3	3.3	3.6	VDC
Transmit current		45		mA
Suspend current		127		μA
Transmit power		8		dBm
Receive sensitivity		-102		dBm
Antenna connection		U.FL		

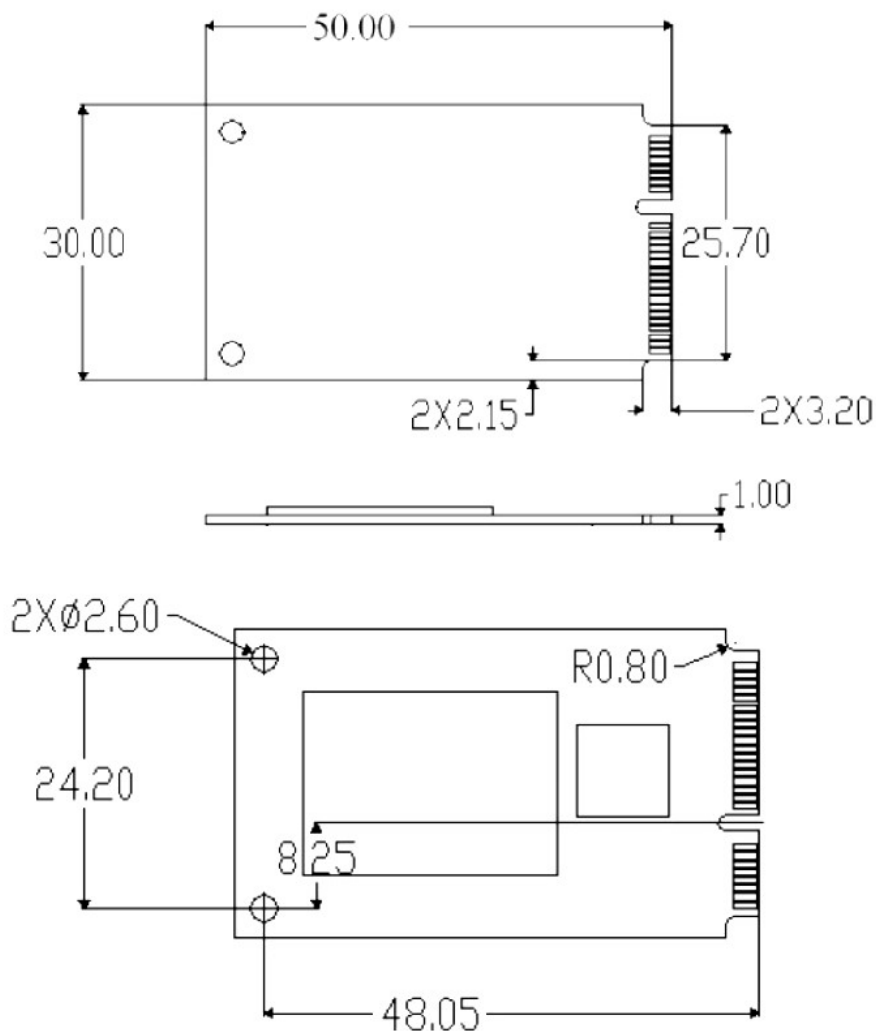
4.2 Environmental

Parameter	Min	Max	Unit
Operating temperature range	-40	+85	°C
Humidity (non condensing)	5	95	%

4.3 Compliance

Please refer to annex C

4.4 Dimensions



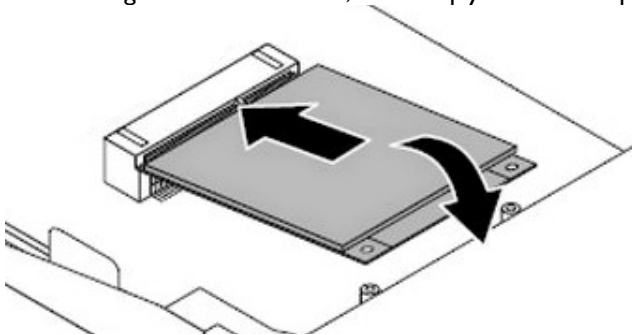
The module extends 2.3mm above the mini PCI express board.
Hence total module thickness is 3.3mm.

5 Installation

Open the encloure of the target system to acces the mini PCI express slot. Refer to the respective manual for more details on this procedure.

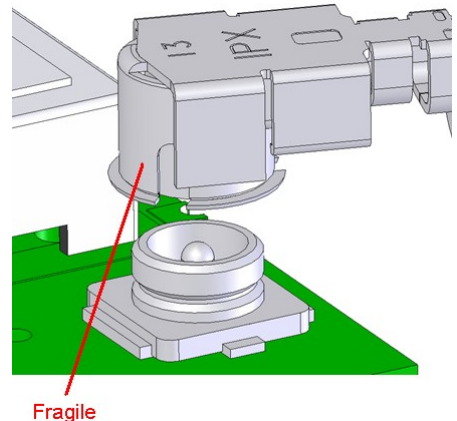


Next slide the Xbee mini PCI express card into the slot, while keeping it under an angle. After full insertion, the card can be pressed down. Depending on the target socket, the module msut be fixed using one of two screws, or it simply latches into place.



5.1 Antenna

Carefully align the U.FL connector with the receptable on the board before pressing the plug down. Failure to align the connectors will result in damage to both ends!



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6 Drivers

6.1 USB interface

The drivers for the FTDI USB to serial converter are available in to different versions.

For simple virtual COM-port based uses (for example to work with the Digi X-CTU tool), the VCP drivers should be used.

<http://www.ftdichip.com/Drivers/VCP.htm>

Better integration with the application can be achieved by using the D2XX drivers. These drivers allow the application to access the device directly, without additional configuration steps such as COM-port selection.

<http://www.ftdichip.com/Drivers/D2XX.htm>

6.2 Xbee module

For detailed specifications of the radio module, please refer to the Xbee module datasheet, available from customer support or from the Digi website.

<http://www.digi.com/products/wireless-wired-embedded-solutions/zigbee-rf-modules/zigbee-mesh-module/xbee-smt#docs>

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Annex A: Certifications

A.1 CE Declaration of Conformity

We, White Bream, hereby certify that the CARGO/UNIGO computer system and its accessories comply with the CE requirements as laid out in directive 2004/108/EC

A.2 FCC Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

Consult the dealer or an experienced radio/TV technician for help

A.3 Underwriter Laboratories

Our products are designed to be compliant with UL requirements for product safety. However, no testing or validation has been done to access this compliance.

A.4 ROHS

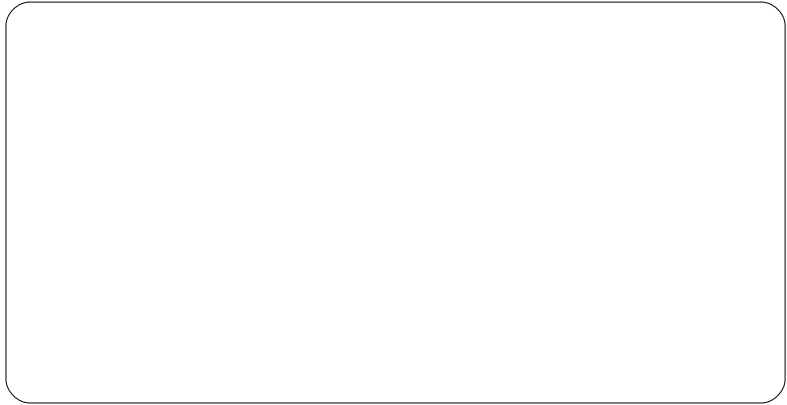
White Bream products are created using lead-free components and assembled accordingly.

A.5 Radio Certification

Wireless functions rely on the radio certifications of the respective core modules. Please refer to the respective radio module data sheet.

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1.0	Oct 22, 2014	Initial document	



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