white bream

Mini PCI-express XBee3 module

Table of Contents

1 Preface

1.1 Disclaimer

White Bream products are not authorized for use in or in connection with surgical implants, or as critical components in any medical, 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.

1.2 Trademarks & copyrights

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.

1.3 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.

1.4 Liability

White Bream assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use of, misuse of, or inability to use this product. White Bream 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 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.

Anti-static Precautions

The internals of the product are made of static sensitive components. When disassembling the product, it is strongly recommended to use an anti-static 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.
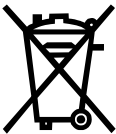
ROHS - WEEE

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

2   Description

This half-size mini PCI express Xbee®3 [1] module provides an easy means of integrating this embedded wireless technology into standard computer systems. Depending on construction of the target system, often a completely invisible integration is possible when using an internally mounted 2.4GHz antenna.

2.1   Specifications

- Xbee3 module (p/n XB3-24XXM)
- Half-size Mini PCI-express form factor
- USB to serial conversion FTDI FT231X
- U.FL antenna connection

2.2   Accessories

- Full-size Mini PCI-express adapter frame
- U.FL to RP-SMA pigtail cable 15cm
- RP-SMA stubby antenna

2.3   Customizable features

- Different Xbee3 module
- Different pigtail cable or antenna

---

[1] Xbee3 is a trademark of Digi International Inc.

3   Specifications

For detailed specifications of the radio module, please refer to the Xbee3 module datasheet, available from customer support or from the Digi website.

3.1   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		

3.2   Environmental

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

3.3   Compliance

Please refer to annex A-C

3.4   Dimensions
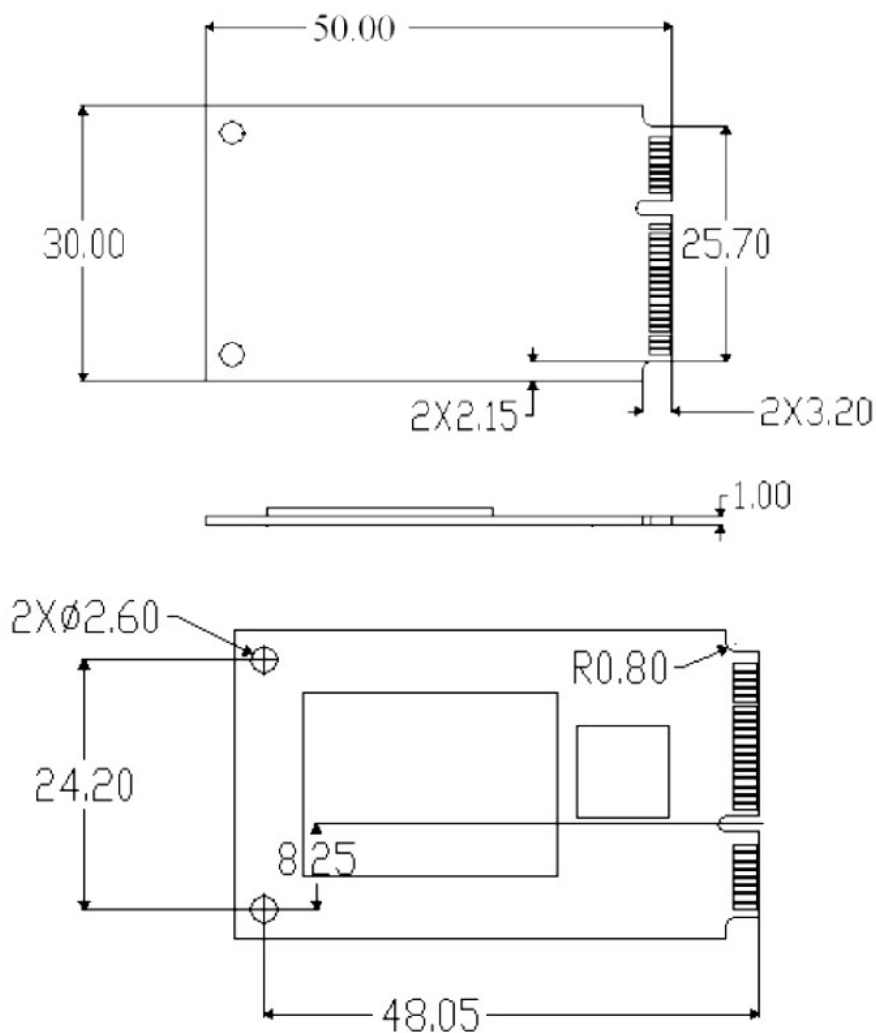
4   Installation

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

Next slide the Xbee3 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 must be fixed using one of two screws, or it simply latches into place.
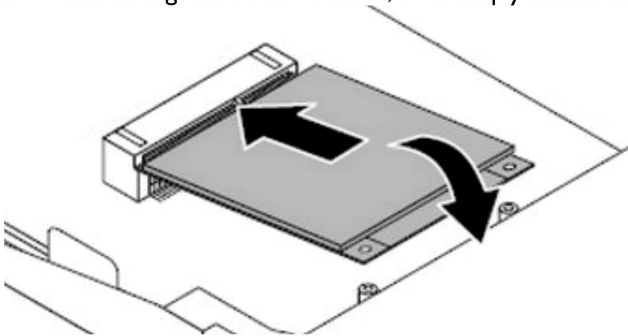
4.1   Antenna

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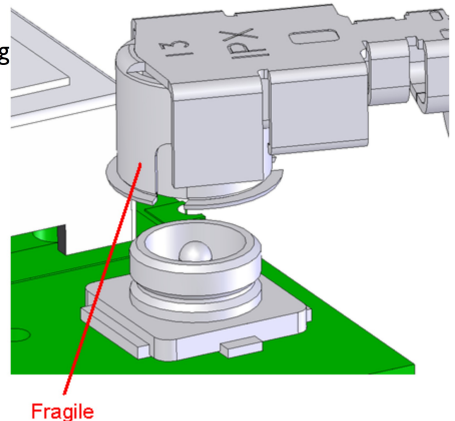
5   Drivers

5.1   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.

https://ftdichip.com/drivers/vcp-drivers/

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

https://ftdichip.com/drivers/d2xx-drivers/

5.2   Xbee3 module

For detailed specifications of the radio module, please refer to the Xbee3 module datasheet, available from customer support or from the Digi website.

https://www.digi.com/products/embedded-systems/digi-xbee/rf-modules/2-4-ghz-rf-modules/xbee3-zigbee-3#support

6   Ordering information

Partno	Description	Revision
80-851-300	Mini PCI-express XBEE3 module	0, Nov 2, 2022
80-851-301	Mini PCI-express XBEE3-RR module	0, Nov 2, 2022

6.1   Hardware revision info

Rev	Date	Changes
0	Nov 2, 2022	Initial release

7   Document revisions

7.1   Rev 1.0 (December 30, 2022)

Ref	Description
-	Initial version

Annex A: Declaration of Conformity for CE

The manufacturer hereby declares that this product is in accordance with the requirements of EEC directive 2014/30/EU regarding electromagnetic compatibility (EMC), directive 2014/35/EU regarding low voltage equipment (LVD), directive 2014/53/EU regarding radio equipment (RED), directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) and directive 2012/19/EU on waste electrical and electronic equipment (WEEE).
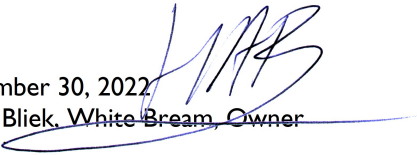
Manufacturer, facility:	White Bream L.J. Costerstraat 13d 3261LH, Oud-Beijerland The Netherlands
Product:	Mini PCI-express XBee3 module
Models:	80-851-30X, with X denoting variations with different Xbee modules.

CE & RoHS Marking:

December 30, 2022
Henk Bliek, White Bream, Owner

This product has been found in conformity with directive 2014/30/EU (EMC)
by testing and verification with the following standards:

- **EN 61000-6-2:2016** Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
- **EN 61000-6-3:2020** Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for equipment in residential environments

This product has been found in conformity with directive 2014/35/EU (LVD)
by testing and verification with the following standards:

- **EN 62368-1:2018/A11:2017** Audio/video, information and communication technology equipment – Part 1: Safety requirements

This product has been found in conformity with directive 2014/53/EU (RED)
by inclusion of pre-certified module complying with the following standards:

- **EN 62311:2020** Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)
- **ETSI EN 301 489-1 V2.1.1 (2017-02)** ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised standard for ElectroMagnetic Compatibility
- **ETSI EN 301 489-17 V3.1.1 (2017-02)** ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
- **ETSI EN 300 328 V2.1.1 (2016-11)** Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques

This product has been found in conformity with directive 2011/65/EU (RoHS)
by testing and verification with the following standards:

- **EN 63000:2018** Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Annex B: Declaration of Conformity for UKCA

The manufacturer hereby declares that this product is in accordance with the requirements of UK SI 2016 No. 1091 "Electromagnetic Compatibility Regulations 2016", UK SI 2017 No. 1206 "Radio Equipment Regulations 2017", UK SI 2016 No. 1101 "Electrical Equipment (Safety) Regulations 2016", UK SI 2017 No. 1206 "Radio Equipment Regulations 2017", and UK SI 2012 No. 3032 "The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012".

Manufacturer, facility:	White Bream L.J. Costerstraat 13d 3261LH, Oud-Beijerland The Netherlands
Product:	Mini PCI-express XBee3 module
Models:	80-851-30X, with X denoting variations with different XBee modules.
UKCA Marking:	

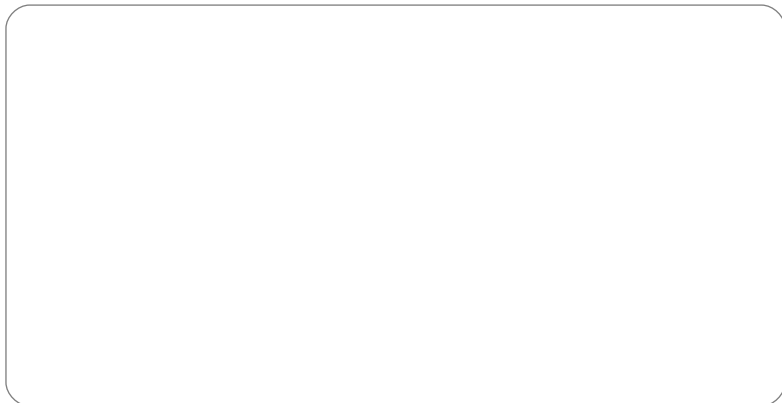December 30, 2022
Henk Bliek, White Bream, Owner

Annex C: Declaration of Conformity for FCC

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

white bream

L.J. Costerstraat 13d
3261LH Oud-Beijerland
The Netherlands

https://whitebream.com
https://whitebream.nl