# X4M06 Datasheet

## X4 Radar Development Kit

XeThru Datasheet **by Novelda AS**

Rev.A - Preliminary - September 10. 2018

**Summary**

X4M06 is a radar development kit for the XeThru X4 SoC. It is an assembly of the X4SIP02, X4A04 and XTMCU02 products.
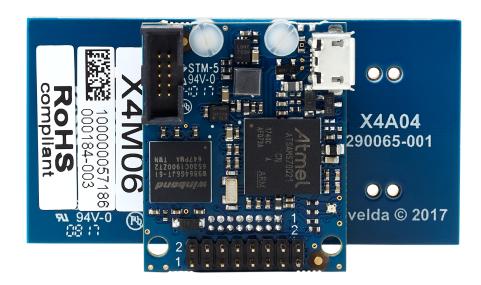
# Table of Contents

# 1 List of Features

- Development kit for XeThru X4 UWB radar SoC
- Designed for KCC/MIC compliant TX center frequency
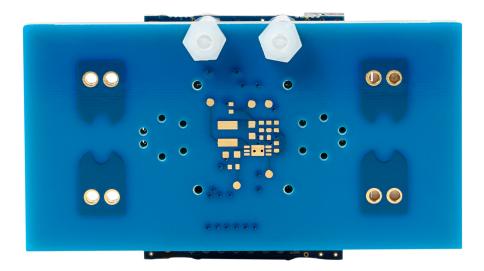- Assembly of X4SIP02, X4A04 and XTMCU02



**X4M06 side view**



**X4M06 top view**

**X4M06 bottom view**

## 1.1 Order Information

| Order Code | Item Description | MOQ | MPQ |
|------------|------------------|-----|-----|
| X4M06 | X4M06 Radar Development Kit | 1 | 1 |

MOQ: Minimum Order Quantity

MPQ: Minimum Package Quantity

# 2 Physical Dimensions

Refer to datasheets of X4SIP02, X4A04 and XTMCU02 for a description of physical dimensions of the X4M06.

# 3 Antenna

X4M06 has two differential antennas optimized for the X4 UWB radar SoC, one for transmit and one for receive. The antennas are directional patch antennas with integrated WiFi filter (filtenna) optimized for frequencies between 7.25 and 10.2 GHz with a typical opening angle of 65° azimuth and elevation.
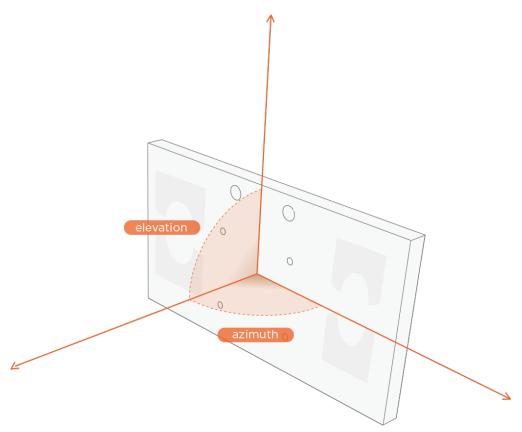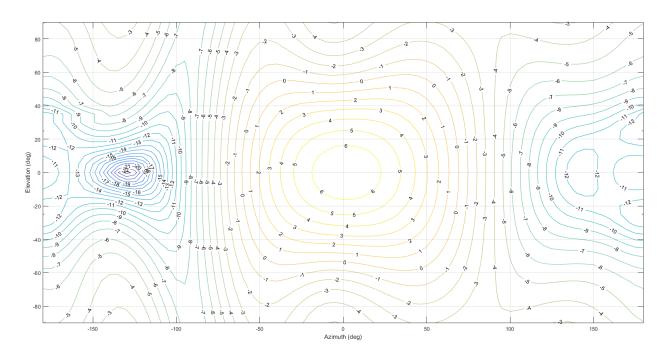
**Illustration of 0° azimuth and 0° elevation**



**Antenna gain (dB). Max gain is 6.75 dB**

# 4 Connectors

## 4.1 16-pin XeThru Interface Connector

The 16-pin header is compatible with other XeThru sensors such as X4M02 and can be used to power and communicate with X4M06. I/O voltage is 3.0V. Refer to the XTMCU02 schematics and the Microchip SAM S70 datasheet for additional details of operation.

| Pin | Name | Type |
|-----|------|------|
| 1 | VDD_EXT | Power, 3.3 - 5.5V |
| 2 | GND | Power |
| 3 | MOSI/RX | I/O |
| 4 | MISO/TX | I/O |
| 5 | SCLK | I/O |
| 6 | nSS | I/O |
| 7 | nRESET | Input with pull-up |
| 8 | IO7/WAKEUP | I/O |
| 9 | IO8/SWCLK | I/O |
| 10 | IO9/SWDIO | I/O |
| 11 | IO1 | I/O |
| 12 | IO2 | I/O |
| 13 | IO3 | I/O |
| 14 | IO4 | I/O |
| 15 | IO5 | I/O |
| 16 | IO6 | I/O |

## 4.2 USB Connector

USB micro type B connector supporting USB 2.0 High Speed. This connector can be used to power and communicate with X4M06.

## 4.3 Programming Connector

The 10-pin Programming Connector is compatible with Microchip's development tools for the Microchip SAM S70 microcontroller used in X4M06 and is intended for programming and debugging of the microcontroller.
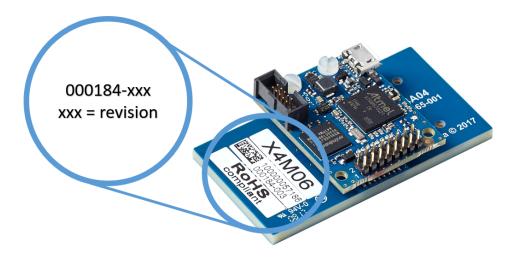
## 4.4 16-pin XeThru Radar Connector

A 16-pin socket for connecting the 16-pin header from the X4A04 antenna board.

**Pin descriptions**

| Pin | Name | Pin | Name |
| --- | --- | --- | --- |
| 1 | VDD3V | 2 | GND |
| 3 | QSPI_SCLK/SPI_SCLK | 4 | GND |
| 5 | QSPI_IO0/SPI_MOSI | 6 | GND |
| 7 | QSPI_IO1/SPI_MISO | 8 | GND |
| 9 | QSPI_IO2 | 10 | GND |
| 11 | QSPI_IO3 | 12 | GND |
| 13 | QSPI_nSS/SPI_nSS | 14 | X4_ENABLE |
| 15 | X4_GPIO1 | 16 | X4_GPIO2 |

# 5 Hardware Revisions

## 5.1 Identifying HW revision



**How to identify HW revision of X4M06**

For detailed descriptions of X4SIP02, X4A04 and XTMCU02 hardware, see their respective datasheets.

## 5.2 X4M06 Revision 2

Uses the following boards:

- X4SIP02 Revision 3

- X4A04 Revision 1
- XTMCU02 Revision 3

### 5.3 X4M06 Revision 3

Uses the following boards:

- X4SIP02 Revision 4 - Added shield box to comply with FCC modular approval
- X4A04 Revision 1
- XTMCU02 Revision 4 - MCU clock source changed from crystal to oscillator circuit

# 6 Schematics, Bill of Material and PCB Layout

Schematics, bill of material and PCB layout files for X4M06, X4SIP02, X4A04 and XTMCU02 can be downloaded from www.xethru.com.

# 7 Support and Resources

Development support, resources, links to development partners and resellers can be found on Novelda's web site www.xethru.com.

# 8 Disclaimer

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