

ZM-1100-PA/ZM-3100-PA User's Manual

Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

Warning

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1. Introduction

The ZM-1100-PA/ZM-3100-PA is a FCC certified design and a small-sized wireless-UART converter solution consisting of a micro controller unit with RF transceiver and a RF power amplifier front-end, or often called the low-noise amplifier (LNA), and it offers excellent the sensitivity. ZM module is based on the 2.4 GHz IEEE 802.15.4 standard, and it contains ZigBee firmware and can be controlled through an external host/system microcontroller or external evaluation software through the UART interface. We use the same hardware but the different firmware to achieve the ZigBee Coordinator or Router.

2. Models

ZM-1100-PA/ZM-3100-PA module is intended for OEM integrator. The modules includes PA/LNA, Dipole Antenna Connector. It depends on market positioning to install firmware.

3. Features

- 48.1 mm x 29 mm PCB
- 7x2 mm spacing pin connector
- Utilizes globally available 2.4 GHz ISM band
- Control and Configuration with specific commands via UART@115.2Kbps.
- Programmable Transmit Power Output, Max 10 dBm.
- Typical Receiver Sensitivity -97dBm.
- Typical Data Rate 250Kbps.
- Complete IEEE 802.15.4 Spec. compliant.
- ZigBee 2007 Pro installed.
- 65527 unique node addresses.
- Typical transmission range 700 meters(Line of Sight).
- Required Supply Voltage: 2 to 3.6VDC.
- Operating Temperature: -25°C to +75°C
- Storage temperature: -40 to +80°C
- RoHS.

4. Protocol Overview

The bidirectional data exchange between an external host/system microcontroller and the ZM-1100-PA/ZM-3100-PA uses the hardware UART and follows the RS232 protocol. This RS232 protocol is summarized in Table 1.

Table 1. Host RS232 Serial Interface Communication Parameters

PARAMETER	PARAMETERS	DESCRIPTION
	Baud Rate	115.2Kbps
	Start Bits	1
	Data Bits	8
	Stop Bits	1
	Parity	None

FCC Statement:

Federal Communication Commission Interference Statement

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: Q6M-ZM31001100-PA". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Cable loss (dBi)	Test Gain (dBi)
1	Cortec	R-AN2400-1901RS	Dipole Antenna	SMA Male Reverse	5.7	0.5	5.2