Renesas LTE Cat-M1 Cellular IoT Module

RYZ014A Pmod™ Expansion Board

1. Product Overview

This Pmod™ expansion board provides a quick and easy way to interface with the RYZ014A module.

More information about this module can be found on the Renesas website:

RYZ014A - LTE Cat-M1 Cellular IoT Module | Renesas

2. Kit Contents

The following components are included in the kit:

1. RYZ014A Pmod™ expansion board
2. LTE Antenna (Taoglas: GSA.8830.A.201111) (SMA Male termination)
3. MVNO SIM Card (MicroAi SIM)

Figure 1. **Kit contents**

3. Pmod™ Interface

3.1 Overview

The RYZ014A LTE Cat-M1 Cellular IoT Module Pmod™ expansion board provides an interface using a 12-pin Digilent Pmod™ compatible connector (CN1).

This provides access to:

- A high-speed UART interface (UART0)
- A reset pin (RESET)
- A PMOD_RING pin (RING0)
- VDD and GND connections for module power

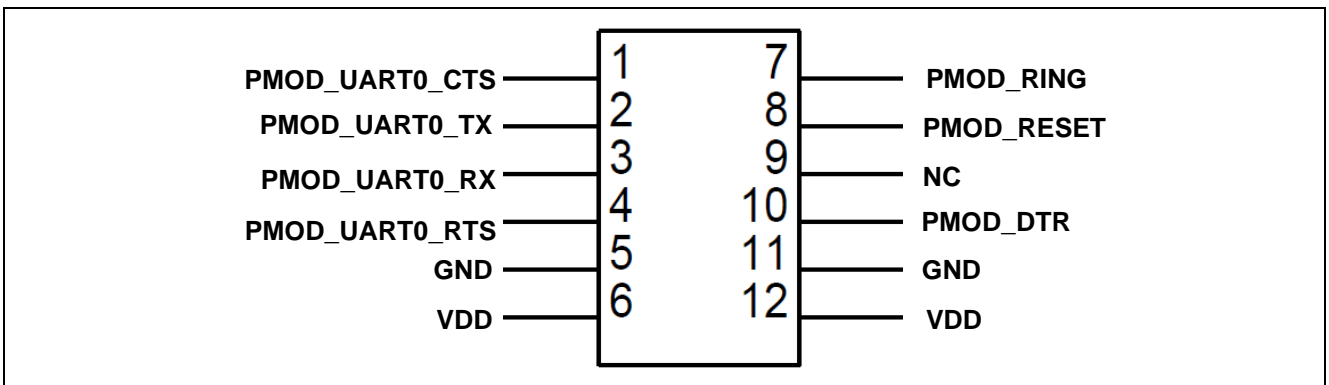Pmod™ is registered to Digilent Inc. and its specification can be found at the link below:

https://digilent.com/reference/pmod/start

3.2 Pin Diagram

Figure 2. Pin Diagram

3.3   Pin Descriptions and Directions

Table 1.   Pin Descriptions and Directions

Pin Number	Pin Name	Description	Direction
1	PMOD_UART0_CTS	UART CTS	UART CTS output from PMOD
2	PMOD_UART0_TX	UART TX	TX Input to Pmod
3	PMOD_UART0_RX	UART RX	RX Output from Pmod
4	PMOD_UART0_RTS	UART RTS	RTS input to Pmod
5	GND	GND	NA
6	VDD	3.3 V	NA
7	PMOD_RING	RING0 (See module datasheet for details)	Output from PMOD
8	PMOD_RESET	RESET	Input (Active High)
9	NC	Not connected	
10	PMOD_DTR	Reserved for future use. Do not connect.	
11	GND	GND	NA
12	VDD	3.3 V	NA

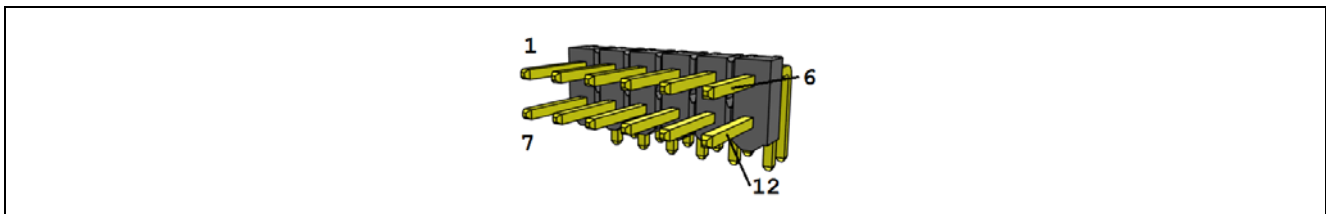## 3.4   Connector CN1 Pin Assignment

Figure 3.   Connector CN1 Pin Assignment

3.5   Electrical Specification

Table 2. Recommended Operating Conditions

Item	Min.	Typ.	Max.	Units
VDD	1.8	3.3	3.6	V
I_{LOAD}	-		480	mA

Please refer to the module data sheet for full electrical specifications.

Note: This Pmod has a maximum operating current of 480 mA dependent upon the LTE band, Tx/Rx settings, and network coverage. Please ensure that the host board can supply sufficient power or provide supplemental USB power via CN4 to avoid RF instability.

3.6   Module Control

The high-speed UART interface can be used to communicate with the module using the AT Commands or by using Renesas FSP if you are using an RA MCU. These commands are explained in the following document:

RYZ014 Modules User's Manual: AT Command (renesas.com)

3.7   CN2 Connector

CN2 is not fitted, this connector is for JTAG debugging the module and is not used.

3.8   CN4 Micro USB Connector

CN4 is a Micro USB connector which is used to connect to UART2 of the Module. See the module datasheet for more details on UART2 usage.

3.9   CN6 SIM Connector

CN6 is standard Micro SIM connector.

4.   Support

For further information about this product and access to further resources such as Application Notes and software from Renesas please go to: RYZ014A - LTE Cat-M1 Cellular IoT Module | Renesas.

5. Note

Third party links in this document may change at any time and are the responsibility of the third party, not Renesas.

6. Regulatory Information

This section contains general regulatory information. For a full list of requirements and integration guidelines please refer to the RYZ014A User's Manual.

6.1 FCC Statement

FCC-ID: 2AU6XRZ014A

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.

2. This device must accept any interference received, including interference that may cause undesired operation.

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 an industrial or residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference. 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 the 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.

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

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must be co-located or operating in conjunction with any other antenna and transmitter.

6.2 EU Declaration of Conformity

This device complies with the essential requirements and other relevant provisions of Directive 2014/53/EU. A copy of the Declaration of Conformity is available on request.

Warning – This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be requried to take adequate measures to correct this interference.

6.3 UKCA Declaration of Conformity

This device is in conformity with the following relevant UK Statutory Instrument(s) (and their amendments); No.1206 Radio Equipment Regulations 2017. A copy of the Declaration of Conformity is available on request.

Warning – This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures to correct this interference.

6.4 Japanese Radio Law

R 003-200328
T D200247003

This device is granted pursuant to the Japanese Radio Law (電波法). This device should not be modified (otherwise the granted designation number will become invalid)
The host product should provide the statement below on its housing:

当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している

(Translation: "This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Radio Law.")

7. Website and Support

Visit the following URLs to learn about the kit and the RA family of microcontrollers, download tools and documentation, and get support.

RYZ014A Resources	[RYZ014A - LTE Cat-M1 Cellular IoT Module	Renesas](#)
RYZ014A Module Integration Guide	[RYZ014A Module Integration Guide Rev.1.00](#)
LTE Cat-M1 Cellular IoT Modules	[Cellular IoT Modules	Renesas](#)
Product Support Forum	[Wireless Modules	Renesas Customer Hub](#)
Renesas Support	[renesas.com/support](#)

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	May.04.22	—	Initial release