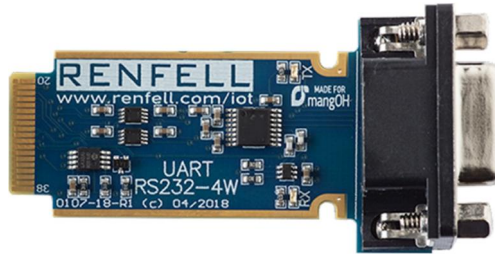


**Renfell Engineering Pty Ltd**  
**UART RS232 4 Wire**  
**mangOH™ Internet of Things card**



**Introduction**

The Renfell Engineering UART RS232 4 Wire IoT card allows the user to access the on-board hardware UART interface on the mangOH™ development board. For a HL family device, this card provides access to the hardware AT command UART; for a WP family device, this card provides access to the /dev/ttyHSL0 UART for program applications. Separate TX and RX LEDs provide a visual indication of transmit and receive data as an aide to debugging data communications.

**Table of contents**

Introduction ..... 1  
 Board Overview.....2  
 Block Diagram.....2  
 Connection Details.....2  
 Configuring the mangOH™ Red .....3  
     For HL family of devices .....3  
     For WP family of devices.....3  
 Installing the IoT Card into the mangOH™ Red.....3  
 References .....4

**Important Notice**

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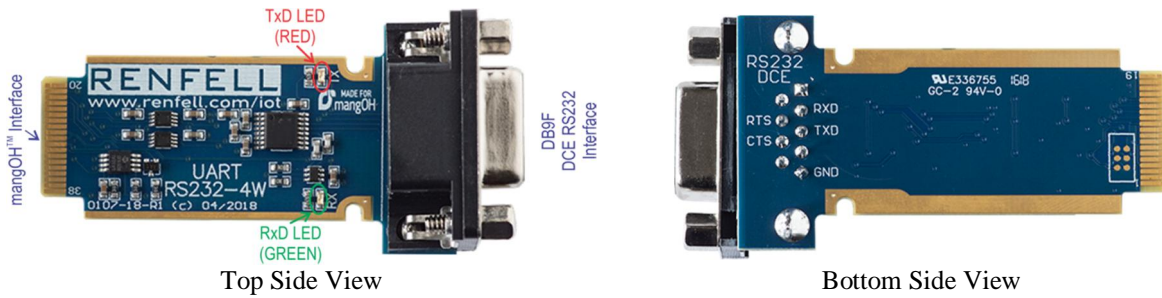
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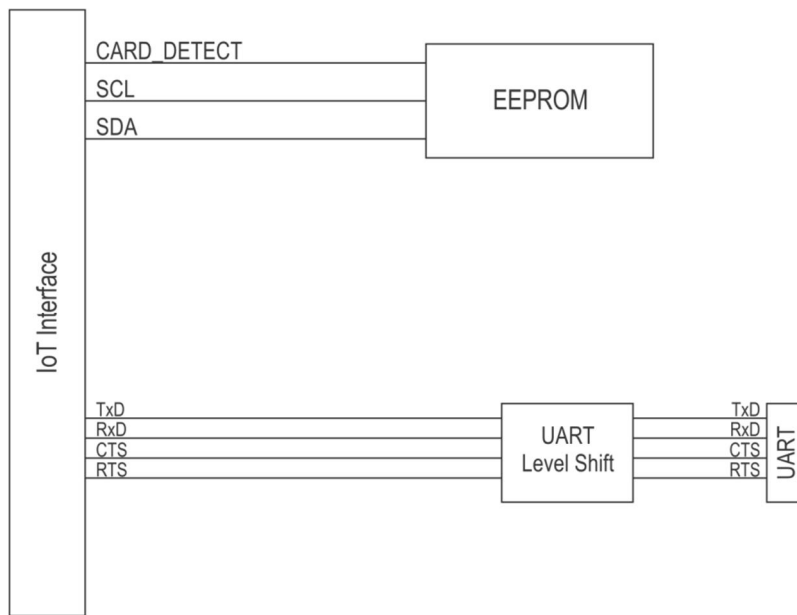
## Board Overview



Please note that this IoT card **doesn't** meet the IoT specifications in the following ways:

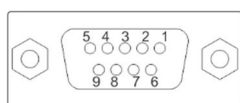
1. Dimensions (to fit the DB9 connector, the connector extends out past the end of the recommended card area)
2. nRESET/Enable (to enable access to a HL UART, this card is always enabled)

## Block Diagram



## Connection Details

Connection to the IoT card is via a Female DB9 connector, configured as a 4 wire RS232 DCE interface. A "straight through" RS232 cable is required to connect the UART card to a standard PC serial port.



DB9 Female connection  
Looking INTO IoT card

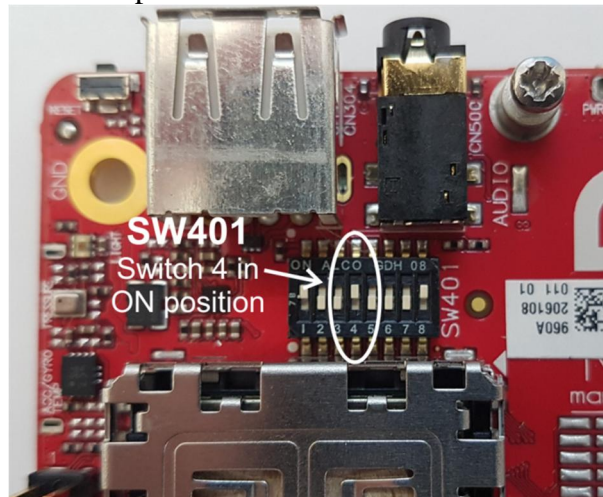
Signal Name	DB9F Pin No (IoT Card)	Direction into IoT card	DB9M Pin No (PC)
RxD	2	OUT	2
TxD	3	IN	3
RTS	7	IN	7
CTS	8	OUT	8
GND	5		5

## Configuring the mangOH™ Red

Before inserting the UART RS232-4W card into the IoT slot, the mangOH Red™ must be correctly configured for the Module that is installed.

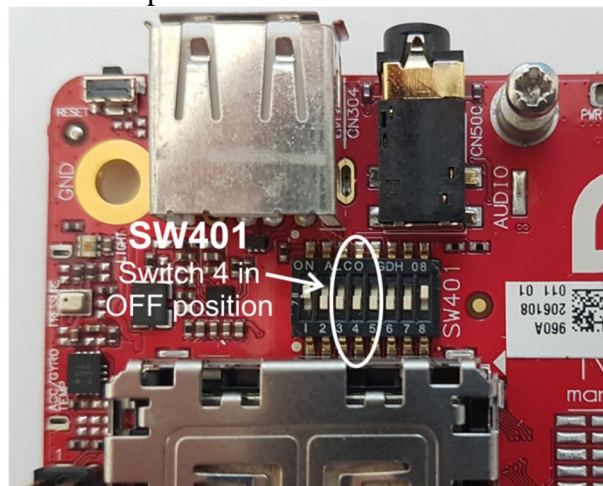
### For HL family of devices

To enable the mangOH™ Red to use a HL family device, SW401, switch #4 must be set to the 'ON' position as shown in the picture below.



### For WP family of devices

To enable the mangOH™ Red to use a WP family device, SW401, switch #4 must be set to the 'OFF' position as shown in the picture below.



## Installing the IoT Card into the mangOH™ Red

**Note:** Due to hardware differences, this IoT card **WILL NOT** work in a mangOH™ Green board.

1. Remove any other IoT cards (if installed)
2. Plug the UART RS232-4W card into the IoT slot on the mangOH™ Red
3. Insert two M2 x 4 phillips head screws into the mounting blocks on the mangOH™ Red to firmly seat the IoT card

## References

- Latest product information: <http://www.renfell.com/iot/index.html>
- mangOH™ and Legato Tips, Articles and Tutorials: <https://www.littlesliceofmangoh.com>
- Legato information: <http://legato.io>
- mangOH™ information: <http://mangoh.io>