Micro Reader MR-1

User Manual

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FCC Radio Frequency Interference Statement (USA)

The FCC regards RFID equipment as low-power transmitting devices and, therefore, does not require users of RFID devices to obtain a license to operate them.

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 instruction manual, 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:

- Reorientation or relocation of 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

Any changes or modifications to the equipment that are not expressly approved by the party responsible for compliance could void the user's authority granted under FCC Rules to operate this equipment.

This equipment complies with the FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and all persons during normal operation.

The following sentence has to be displayed on the outside of the device in which the transmitter module is installed: "Contains FCC ID: 2ACXQ-CL4NXPLUS-MR1"

ISO/IEC 18000 – 3 Mode 2 (Air Interface at 13.56 MHz) Compliance

MR-1 module fully comply with the ISO/IEC18000 Part 3 Mode 2(Information technology – Radio frequency identification for item management. Part 3: Parameters for air interface communications at 13.56MHz) published in August, 2004.

1. Overview

The MR-1 is the smallest and simplest of Magellan's reader modules. It is intended for Original Equipment Manufacturer (OEM) applications where it is typically embedded in an RFID enabled product.

Examples include printers, hand held readers, data capture terminals, low cost desktop readers, identification and access controls.

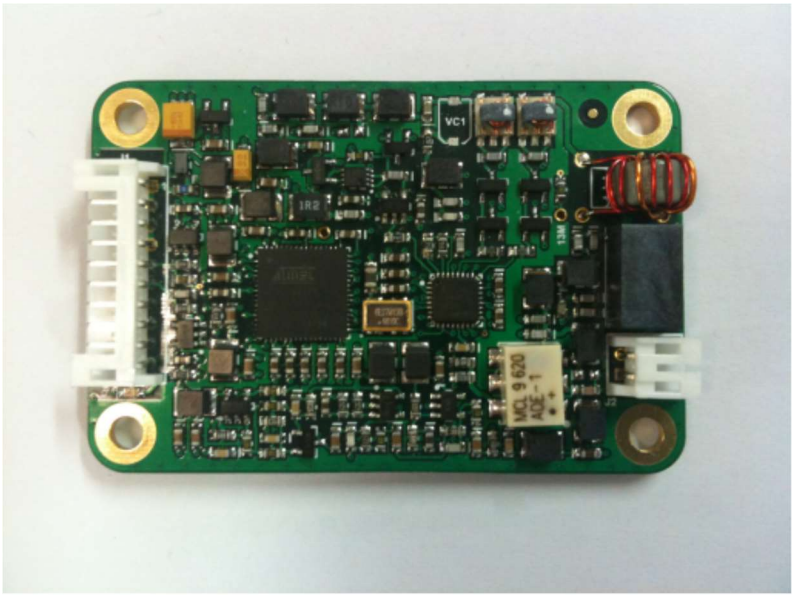

Figure 1: MR-1 Module Rev B1

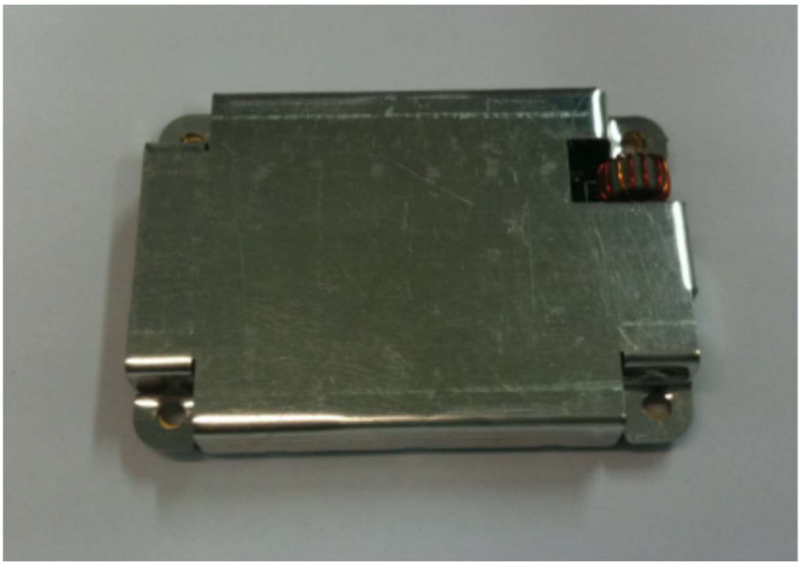

Figure 2: MR-1 Module Rev B1 with Shielding Can

2. Features and Benefits

- Low power module easy to build into RFID enabled equipment.
- Small footprint.
- Simple Serial UART interface.
- Simple Antenna connection.

3. Specifications

Electrical	
Operating Frequency	13.56MHz
ISO/IEC Compliance	ISO/IEC 18000-3 Mode 2
Command Data Rate	424 kbit/s
Reply Data Rate	106 kbit/s
Number of Reply Channel	1 (Channel 'G')
Number of Axes	1
Power Supply	+5.0 ± 0.5Vdc
Power Supply Current	200mA max

Host	
Host Interface	Serial UART
Communications Protocol	
Baud Rate	Configurable (9600 default)
Parity	None
Data Bits	8
Stop Bits	1

Environmental	
Operating Environment	Indoor use – embedded applications
Temperature Range	0°C to +70°C ambient
Humidity	10% to 80% (non-condensing)

Mechanical	
External Dimensions: (L x W x H)	60 x 40 x 12.5 mm

Other Features	
Calibration and Tuning	No manual calibration or tuning required

4. Dimensions

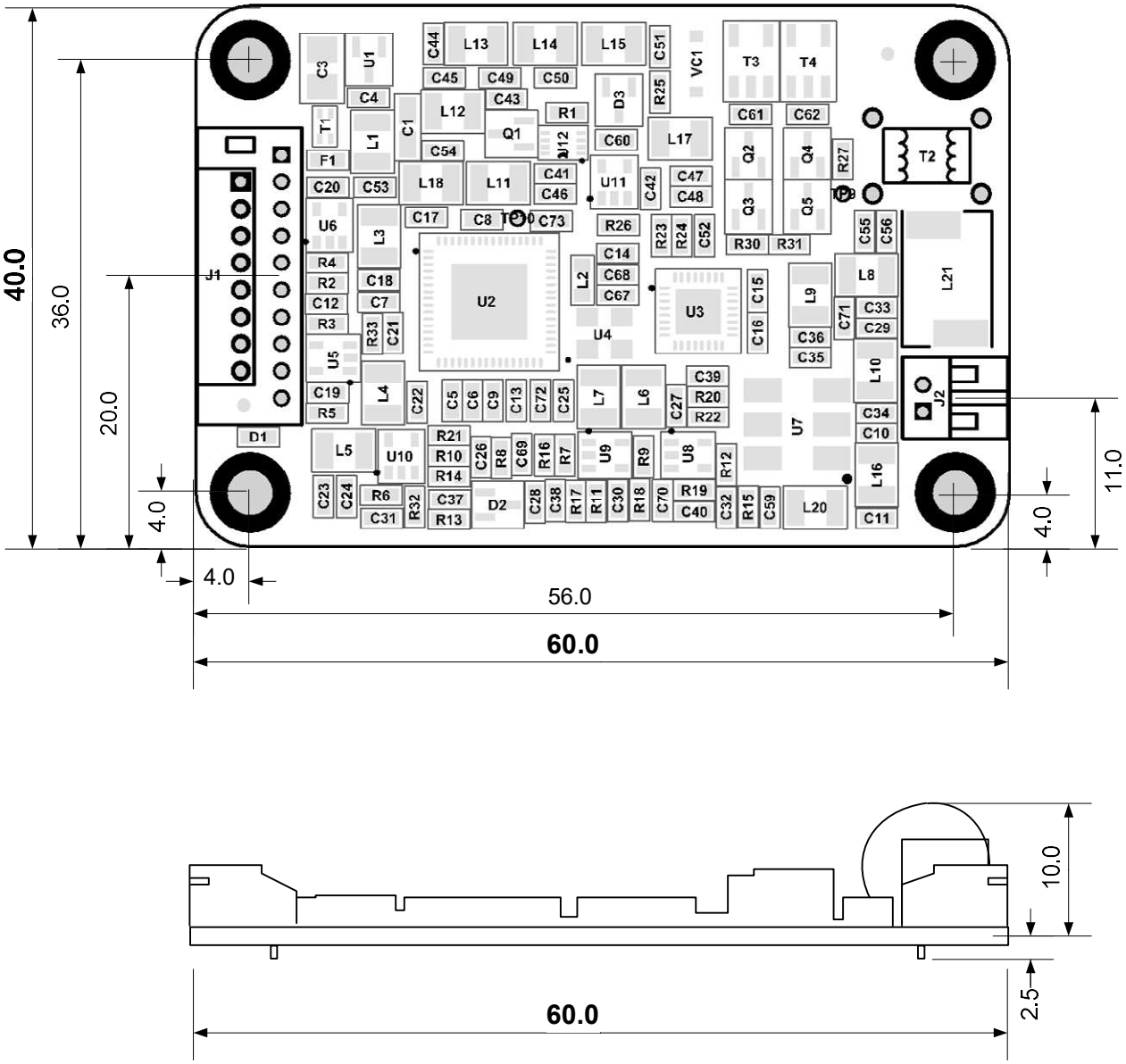

Figure 3 : Major Module Dimensions (mm)

Mounting Holes 4x 3.2 mm diameter

5. Connections

5.1 J1 - Host Connector

Connector Type 10 pin (JST Model S10B-PH-K-S)
Reference: http://www.jst-mfg.com/product/pdf/eng/ePH.pdf

Pin Number	Function
1	+5 Vdc
2	+5 Vdc
3	Ground
4	Ground
5	RxD UART Receive Signal (+5V TTL/ +3.3V LVCMOS) Input to module.
6	TxD UART Transmit Signal (+5V CMOS) Output from module.
7	Not Connected
8	Not Connected
9	Not Connected
10	Not Connected

5.2 J2 - Antenna Connector

Connector Type 2 pin (JST Model S2B-PH-K-S)
Reference: http://www.jst-mfg.com/product/pdf/eng/ePH.pdf

Pin Number	Function
1	RF
2	Ground

6. Antenna

Antenna Cable Length 50 cm maximum
Antenna Cable Types Twisted Pair or 50 Ohm co-ax.

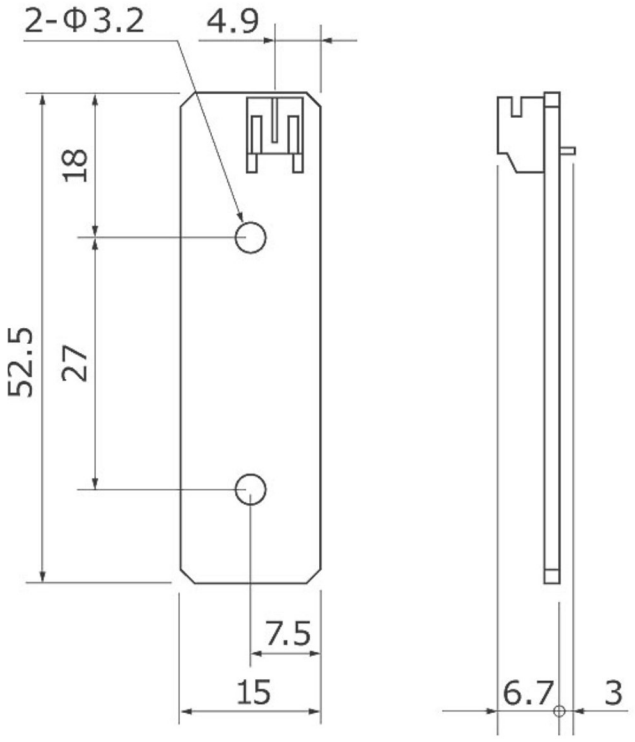

Figure 4 : Dimensions of 090-10-010-ASY Ver: A 6-Turn Antenna (mm) (Equivalent for unit in SATO CG208 Printer).

Antenna Cable Length	50 cm maximum
Antenna Cable Types	Twisted Pair or 50 Ohm co-ax

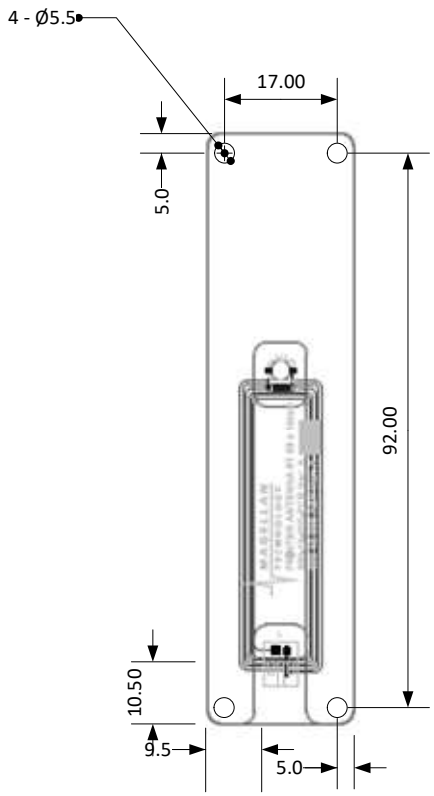

Figure 5 : Dimensions of 090-10-005-ASY Ver: A 6-Turn Antenna (mm) (Equivalent for unit in SATO CL4XX and CL4NX Printer).