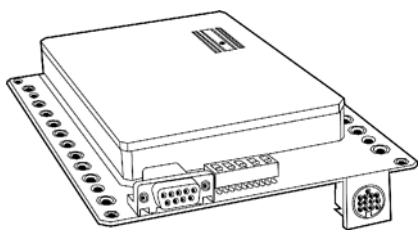


The Intermec logo, featuring the word "Intermec" in a blue, italicized, sans-serif font. To the right of the text is a blue square icon containing a white stylized "i" shape.

Installation and Quick Start Guide



IM5 Reader Module

Packing List

Check to ensure that you receive these items:

- Intermec® IM5 Reader Module
- Compliance Statement
- Warranty Card



The IM5 RFID module is EPCglobal Gen2 certified
(86x MHz RFID frequency band).

950110126000000094



The IM5 RFID module is EPCglobal Gen2 certified
(915 MHz RFID frequency band).

950110126000000100

Host Communication

Host communication comes through the 9-pin female D-sub connector. RS-232 standards are supported as ordered from the factory or service center.

- The maximum data rate is 115.2K baud, with 8 data bits, no parity bit, and 1 stop bit.
- The maximum RS-232 distance from the reader to the host, modem, or other physical controller interface is 50 feet (15.2 meters).

RS-232 Connections

Pin Number	Definition
2	TXD (Transmit Data) to the host
3	RXD (Receive Data) from the host
5	Ground
7	CTS (Clear to Send) from the host
8	RTS (Request to Send) to the host

Power Requirements

Power comes in from 8 to 10 volts DC. Your 915 MHz Reader uses less than 2.4 amps. Intermec supplies 9 volts DC at 2.4 amps from Intermec power supply, p/n: 851-067-001.

User I/O

A general purpose I/O (Input/Output) connector provides signal lines in and out of the reader allowing monitoring and/or control of external devices or functions.

The connector for this is a 13-pin female circular DIN. The mating male connector you need for mating with this is an Intermec p/n: 351-184-001.

I/O Pin-outs

Pin Number	Definition
1	GPIO IN0
2	GPIO IN1
3	GPIO IN2
4	GPIO IN3
5	GPIO OUT0
6	GPIO OUT1
7	GPIO OUT2
8	GPIO OUT3
9 through 13	Ground through individual 10 ohm resistors

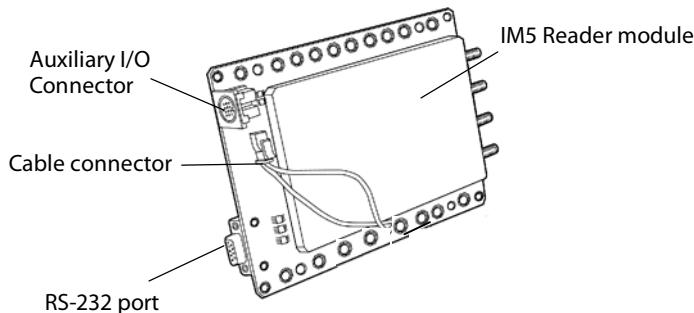
Outputs and inputs have 12 volt transient suppression devices to ground at the connector. Output signals are driven by 2N3904 NPN transistors (low level) with a 100 kohm pull-up to +5 volts through a silicon diode, giving about a 4.3 volt high level. An output can be pulled high from an external source as high as 12 volts. This will however tend to pull the other outputs higher (through two 100k resistors). The low level will be about 0.1 volt up to about 30 mA. The output low voltage will climb higher as the sink current increases. There is no protection on this. You need to ensure that their load won't require the reader to sink more than 50 mA.

Input signals should be 0 to +1.5 volt for a low input and +3.5 to +5 volts for a high input. Each input has a 1.1 kohm resistor in series with clamping diodes, but only about 1 μ A is used until the input exceeds the 0 to +5 volt input range. There is also a weak (100 kohm) pull-up to +5 volt on each input.

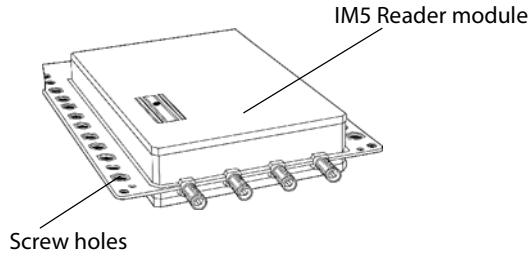
Installing the IM5 Reader Module

The IM5 Reader Module requires 8-10 volts DC at 2 amps. The IF4 Serial Reader is powered through a 2-pin bulkhead barrel connector (Switchcraft p/n: 712A).

The Reader Module supplies 9-volt 2.4 amps to this connector. Mating plugs for this connector are Switchcraft part numbers 760, 760K or 761K. A cable within the PSR connects the bulkhead barrel connector, via an endplate switch, to the 2-pin Molex connector on the IM5 Reader Module.



The IM5 Reader Module has holes along the sides that can be used for mounting. For best results, attach heat sink to case via the screwholes in the heat sink.



Connecting and Getting Started



Warning

FCC and Industry Canada regulations limit exposure to radio frequency (RF) radiation. To comply with these regulations, operators of this device must maintain a distance of at least 23 cm. (9.1 inches) from the cover on the antenna assembly (The cover on the antenna is the dome shaped surface). While the device is on, the operator's body and parts of the body such as eyes, hands, or head, must be 23 cm. (9.1 inches) or farther from the cover of the antenna assembly.

FCC and Industry Canada regulations also require that the antenna assembly of this device be installed in accordance with the installation procedures to allow the operator to comply with the limit.

Only Intermec antennas and accessories have been authorized as compliant with FCC and Industry Canada regulations. Use of antennas and accessories not authorized:

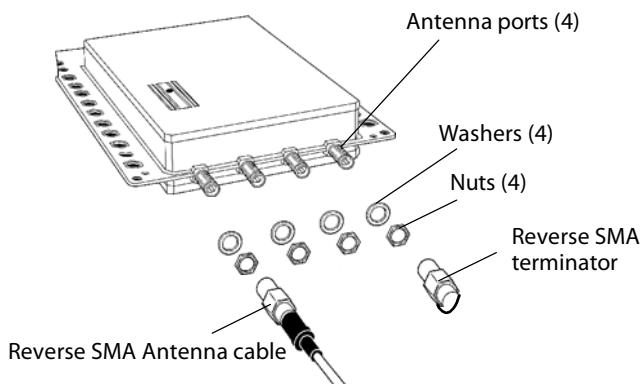
- may void the compliance of this product.
- may result in RF exposures beyond the limits established for this equipment.
- require the user to re-submit their product for compliance to the FCC and Canadian regulatory agencies.

Antenna Installation

- 1 Connect the antenna cable to a port. The four antenna connectors have lock washers and nuts to allow for panel mounting.
- 2 Connect a reverse SMA terminator (Intermec p/n 345-004-001) to any port that does not have an antenna attached.



Each port must have either an antenna or a terminator connected. Do not apply power to the Reader unless an antenna cable or terminator is installed on each antenna port.



Reader LED Explanation

LED	Meaning
0	Power On
1	Reader communicating with host, LED flashes as data transfer occurs.
2	Reader searching for tags
3	Reader communicating with a tag, LED flashes as transfer occurs.

Troubleshooting

Troubleshooting

Doesn't Recognize Tag
1. Ensure antenna is properly connected. 2. Ensure reader is connected to your computer. 3. Ensure computer is plugged into AC outlet and computer is On. 4. Ensure tag is within range of antenna. 5. Call Intermec Technical Support 1-800-755-5505 (option 2).

Product Specifications

Dependent upon operating conditions and demands expected. If used in a normal office environment with good read conditions, you could expect to read up to 60 tags per second. Tags located too far away or in poor locations, with respect to interfering objects, provides poor results.

Firmware Architecture

Firmware	Spec Detail
Protocol/Compatibility	Communicates in three modes: Application Peripheral Interface (API) and Basic Reader Interface (BRI).

General Specifications

Receiver	Spec Detail
Protocol	ISO 180006B
Tag data rates	40 kbps
Transmitter	Spec Detail
Protocol	Intellitag and EPC Gen2
Transmitter type	On/Off Keying
Frequency stability	<± 100 ppm from -25° to +55°C
RF Antenna Connections	Spec Detail
Number of antennas	up to 4, electronically switched
Antenna port isolation	≥22 dB
Physical Specifications	Spec Detail

General Specifications (continued)

Physical Specifications	Spec Detail
Size	8.25 in. x 5.30 in. x 2.9 in.
Weight	38.4 oz. (1.1 kg)
Frequency reference Source	Spec Detail
Frequency of operation	902-928 MHz
Usable channels	51
Transmitter	Spec Detail
Output power	1.00 Watt maximum
Occupied frequency bandwidth	<250 KHz

Environmental Specifications

Temperature	Spec Detail
Operating	-4°F to +131°F (-20°C to +55°C)
Storage	-31°F to +158°F (-35°C to +70°C)
Humidity	Spec Detail
Operating	95% Relative

Overall Performance

Dispatch Rates	Spec Detail
RFID tag identification rate	60 tags per second
RFID tag data exchange rates	Read a tag containing 8 bytes of data within 12 mS. Perform a verified write to a tag at an average rate of 31 mS per byte per tag.
Write Range	Spec Detail
Write range	Distances up to 70% of the read distance under the same conditions.

Reliability

Safety and Regulatory Approvals	Spec Detail
Reader module	UL 60950-1-UL Recognized Component.
Electromagnetic Compatibility	Spec Detail
Reader Module	EN55022 (CISPR 22) Class B digital emissions EN55024 Immunity EN61000-3-2, -3 AC Power Harmonic Emissions and Flicker
Radio Frequency Device Approval	Spec Detail
Reader Module	FCC Part 15.247 Industry Canada RSS 210

Global Services and Support

Warranty Information

To understand the warranty for your Intermec product, visit the Intermec web site at <http://www.intermec.com> and click **Service & Support**. The Intermec Global Sales & Service page appears. From the **Service & Support** menu, move your pointer over **Support**, and then click **Warranty**.

Web Support

Visit the Intermec web site at <http://www.intermec.com> to download our current manuals in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

Visit the Intermec technical knowledge base (Knowledge Central) at <http://intermec.custhelp.com> to review technical information or to request technical support for your Intermec product.

Telephone Support

These services are available from Intermec Technologies Corporation.

Service	Description	In the U.S.A. and Canada call 1-800-755-5505 and choose this option
Order Intermec products	* Place an order. * Ask about an existing order.	1 and then choose 2
Order Intermec media	Order printer labels and ribbons	1 and then choose 1
Order spare parts	Order spare parts	1 or 2 and then choose 4
Technical Support	Talk to technical support about your Intermec products.	2 and then choose 2
Service	* Get a return authorization number for authorized service center repair. * Request an on-site repair technician.	2 and then choose 1
Service contracts	* Ask about an existing contract. * Renew a contract. * Inquire about repair billing or other service invoicing questions.	1 or 2 and then choose 3

Outside the U.S.A. and Canada, contact your local Intermec representative. To search for your local representative, from the Intermec web site, click **Contact**.



Corporate Headquarters

6001 36th Avenue West
Everett, Washington 98203
U.S.A.

tel 425.348.2600

fax 425.355.9551

www.intermec.com

© 2004 by Intermec Technologies Corporation. All rights reserved.

IM5 Reader Module Installation and Quick Start Guide



P/N 962-054-121B