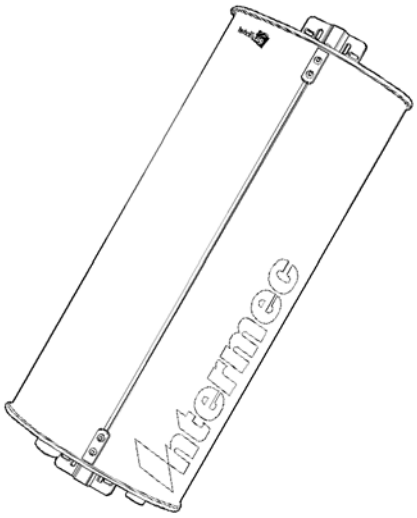
Intermec

Quick Start Guide



IV6 Portable Reader

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There are U.S. and foreign patents pending. This paroduct is covered by one or more of the following patents:

4,360,810	4,739,328	4,786,907	4,864,158
4,888,591	4,999,636	5,030,807	5,055,659
5,280,159	5,504,485	5,521,601	5,550,547
5,673,037	5,763,867	5,777,561	5,825,045
5,828,318	5,828,693	5,850,181	5,850,187
5,942,987	5,995,019	6,078,251	6,121,878
6,122,329	6,172,596	6,195,053	6,249,227
6,280,544	6,286,762	6,286,763	6,288,629
6,360,208	6,384,712	6,404,325	6,429,775
6,486,769	6,501,807	6,525,648	6,639,509
6,645,327	6,677,852	6,768,414	6,784,789
6,816,063			

Packing List

Ensure you have received these items:

- IV6 Portable Reader Quick Start Guide
- Two band clamps
- Warranty card
- Compliance statement

Introduction

The Intellitag IV6 Integrated Portable Reader Antenna provides the option for serial RS-232 and Bluetooth communications.

Host Requirements

Operating System Support

Microsoft Windows 98 or greater. This requires that Microsoft Foundation be installed. Microsoft Foundation files can be located at http://www.microsoft.com. Once configured your IV6 Portable Reader also works in Windows 95.

Compiler Support

MS-DOS Development

- Microsoft C compiler version 6.0 or greater
- Borland C ++ compiler version 4.5x or greater

DOS API Library Names (p/n A110015-01) are:

- <rfidl.lib> for large model development
- <rfidh.lib> for huge model development

Microsoft Windows Development

- IDK Kit ITRK915001, includes all necessary software, 915 MHz reader, training and documentation.

Minimum Hardware Requirements for Target Device

- 640K RAM
- Minimum Intel 386 compatible processor

General Requirements

This product conforms to government regulations. The user(s) of this product are cautioned to use power sources, accessories and peripherals approved by Intermec Technologies Corporation. The use of power sources and accessories other than those recommended, or changes to this product that are not approved by Intermec Technologies Corporation, may void the regulatory compliance of this product and may result in the loss of the users authority to operate the equipment.

Power Requirements

Your IV6 Portable Reader is powered by an external DC power applied to a dedicated connector. The IV6 can only be used with UL approved limited power supply (p/n: 851-070-001) and power cable kit (p/n: 203-714-001)

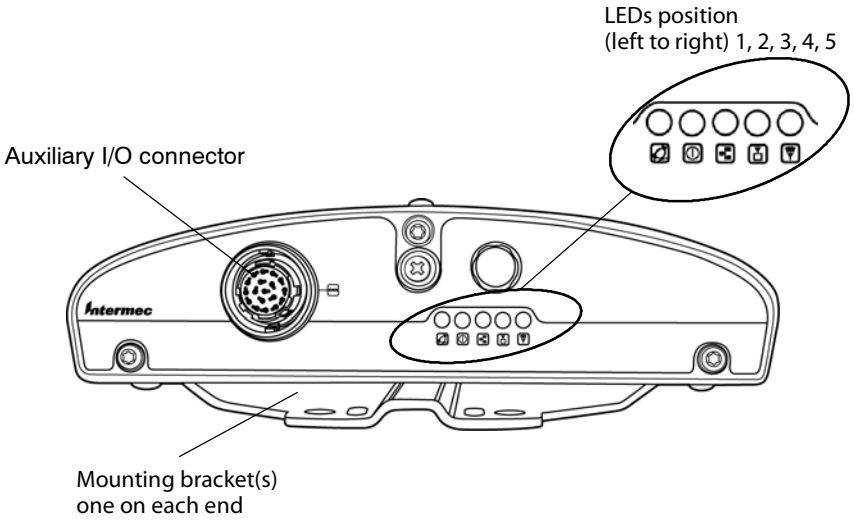
The external DC power configuration is intended to support primarily mobile applications for the IV6 Reader where no cabled network connection is possible.

External DC Power

Input Current	1 Amp max.
Input Voltage	12V DC +/- 10%
Output Voltage	12V @ 250 mA max.

IV6 Reader LEDs

Review the front panel LEDs to become familiar with the status indications you will receive from your Reader.



IV6 Fixed Reader LED Explanation

LED	Meaning
1	IRI (Blue) Off -Default state, unit is not ready to operate. Either because it does not have power or fails internal checks. Blink - Unit ready but not connected to system. On - System OK, Ready.
2	Power Indicator (Green) On if Reader has appropriate external power and all internal supplies are functional.
3	Host Communications (Green) Blinks on when ever data is detected on the host interface.
4	RF Power (Green) LED is ON whenever the module is providing RF power.
5	Tag Identification (Green) LED blinks ON when a valid tag is detected.

Installation

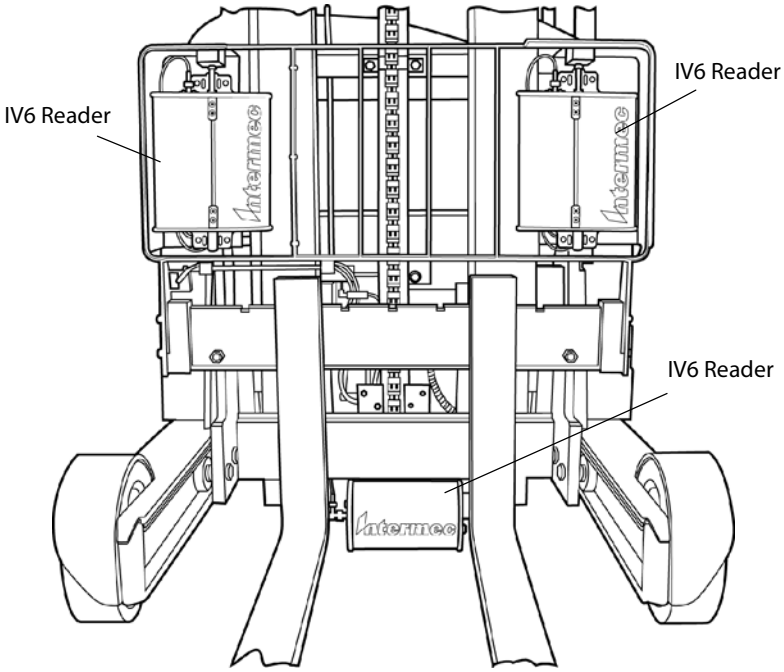
Your IV6 Portable Reader can be installed using several options. For example, you can use band straps and mount it to the front of the fork lift, or to the side of the beams supporting the lift mechanism. The illustration below shows placement in some typical configurations.

Installation Guidelines

Note: RF safety regulations require a 20 cm (8 in) distance from the antenna to any persons body or head. Do not touch the antenna while the transmitter is powered. Regulations do not allow co-location with other transmitters.

1 Position your Reader to ensure it will get the best read rate possible for your situation.

2 Attach your Reader to the bracket using band clamps. Attach one band to each mounting bracket.



RFID Performance

RFID Tag Depth of Field

The read range is dependent upon the type of tag and the transmitted output power, besides many other factors. The tag rates contained in this document are what could be expected using a theoretical free-space dipole tag at 915 MHz under U.S. FCC Part 15 rules and regulations.

Typical Read and Write Range

- Read Range: 6-10 feet
- Write Range: Writing distances are 60% of the read distance under the same conditions.

Environmental Specifications

Operating Temperature	-20°C to + 55°C (-4°F to +131°F)
Storage Temperature	-30°C to +70°C (-22°F to +158°F)
Thermal Shutdown	70°C (158°F) measured on the power amplifier
Thermal Cycle	-20°C to + 50°C (-4°F to +122°F) ramp 5°C/ min.
Thermal Shock Non Operating	-30°C to +70°C (-22°F to +158°F) ramp 30°C/min.
Humidity, Storage and Operating	5% to 95% PH Non-condensing
Moisture Resistance	IP65 Compliant
Dust Resistance	IP65 Compliant
UV Radiation	ETSI EN 300 019-1-4 Class 4E
Solar	ETSI EN 300 019-1-4 Class 4E
Quasi-Random Vibration	Quasi-Random 20 G's RMS for 4 hours.
Shock	10g, 11ms, 1/2 Sin, (operating)
Vibration	1.0 GRMS., 10 to 500 Hz, 3 axis (operating)
Mechanical Shock	10 G, 11 msec, half sine pulse (operating)

Safety and Regulatory Approvals

Safety	IEEE 95.1 RF Safety Requirements. Approved to UL 60950, CE, Cenelec 210 and 211 safety requirements. UL listed, C22.2 No 950/ UL 60950. FCC Electromagnetic Fields per Bulletin 65. Health Canada, Safety Code 6.
Electromagnetic Emissions	FCC Part 15, Class A - verified EN 55022, Industry Canada ICES-003
High Efficiency Fluorescent	Reader will read at 150 V/m at 25 KHz.
Radiated Immunity	EN 55024
Radio Standards	FCC 15.247 Industry Canada RSS-210

Portable Reader Specifications

915 MHz Antenna Specifications

Frequency Range	902-928 MHz
Impedance	50 ohms
VSWR	< 1.3:1
Polarization	Circular
Front-to-Back Ratio	> 30 dB
Maximum Input Power	1 watt at 50°C
Far Field 3 dB Beamwidths (Nominal)	70° x 35°
Mounting Hardware	Band Clamps

General Purpose I/O

Your IV6 Portable Reader supports a GPIO interface that consists of an industrial circular style female connector supporting the interface to industrial type controls. The interface includes:

- Two optically isolated inputs.
- Two optically isolated low voltage DC outputs.
- Access to 12 V DC to power external relays for the control of AC loads, indicators, or other devices requiring up to 250 mA maximum current.

A cable assembly, Intermec part number 236-040-001 is required for use with the industrial circular style connector. The individual wires in the cable are color coded as indicated in the GPIO Pin Function/Assignment Table. The cable drain wire corresponds to the “PE” contact of the connector.

GPIO Pin/Function Assignment Table

Pin #	Function	Active Polarity	Cable Color
16	INPUT-1P	High 10-48V	Orange/White
14	INPUT-1N	Low-RTN	Brown/White
13	INPUT-2P	High 10-48V	Black/White
12	INPUT-2N	Low-RTN	Light Green
15	12 Volt OUTPUT-1		Red/White
4	OUTPUT-1 RETURN		Orange
6	OUTPUT-1P	High 0-12V	Green
5	OUTPUT-1N	Low-RTN	Yellow
17	12 Volt OUTPUT-2		Black/Yellow
11	OUTPUT-2 RETURN		Pink
9	OUTPUT-2P	High 0-12V	Gray
10	OUTPUT-2N	Low-RTN	White
1	RS232 TX		Black
2	RS232 RX		Brown
3	RS232 RTN		Red
8	12 Volt INPUT		Purple
7	INPUT RETURN		Blue

GPIO Pin/Function Assignment Table

Pin #	Function	Active Polarity	Cable Color
PE	Ground Return*		

*Ground Return electrically connected through cable assembly to INPUT, OUTPUT return Pins 4, 7, and 11.

GPIO Inputs

The GPIO inputs are rated for a 10-48 Volt input signal. Both the high and the low signal contact are exposed and are isolated to 1500 Volts. Input impedance is 1800 ohms minimum.

Signal	Description	Min.	Typical	Max.
Vin(High)	Input Voltage High	10V	24V	48V
Vin (Low)	Input Voltage Low	-1V	0V	1V

GPIO Outputs

The GPIO outputs consist of a power MOSFET photovoltaic relay. This high and low contact are exposed and are isolated from the reader by 1500 Volts. Transient suppression limits output voltage spikes to 65 V DC.

Signal	Description	Min.	Typical	Max.
Leakage Current (High)	Switch Output Leakage current High (micro amps)	0	1	10
Vsat(Low)	Switch Output ON saturation voltage with .25 Amp load (volt)	0.5	1	1.5

GPIO Power

The interface includes access to 12 Volt power. This supply current limits at 0.25 Amps. This supply return is common to the unit input return power. The intended purpose of this supply is to power local loads such as relays or indicators.

Serial Port

Your IV6 Portable Reader has a serial port used in conjunction with external DC power. The serial lines are connected through the circular GPIO/Power/Serial connector. The default data rate is 115.2k baud, with 8 data bits, no parity bit, 1 stop bit, no flow control. The maximum distance from the product to a host, modem, or other physical controller interface is 50 ft (15.2 m) for RS-232.

Bluetooth

The main application for Bluetooth is to support wireless operation back to the terminal or the host in applications where coaxial cables are undesired such as with vehicle mount terminals.

The Bluetooth antenna is integral to the radio module and no options are provided.

The Bluetooth module features:

- Class I Transmitter (+14 dBm) range 10 meters
- TX power: +17 dBm maximum, +14 dBm typical
- RX sensitivity: -70 dBm to -80 dBm maximum

Setting up Bluetooth Communications

Communications from a PC to the IV6 is done through a COM port or a virtual COM port. Serial Bluetooth adapters use COM ports while USB Bluetooth adapters use virtual COM ports. For virtual COM ports (USB), you only need to ensure you are setup to talk to the correct COM port (i.e. COM1 or COM2).

For serial COM ports (RS-232), you need to specify the COM port number, baud rate, number of data bits, parity, number of stop bits, and type of flow control. The configuration of the serial COM port on the PC needs to be the same as the configuration for the Bluetooth serial adapter plugged into the serial connector.

There are five configuration settings that can be changed in the IV6 Reader. The default settings are as follows:

IV6 Reader Configuration Default Settings

Parameter	Default	Description
Bluetooth Name	IV6-XXXX	XXXX= Bluetooth Address least significant digits
Authentication	Disabled	
PinCode	1234	
Encryption	Disabled	
Config Timer	60	Seconds

If these parameter settings are acceptable you do not need to use the IV6 Configuration Utility. If you need to change one of these parameters you need to use the IV6 Configuration Utility to make that change.

The Configuration Utility is available at www.intermec.com.

To download the Configuration Utility:

1. Under Service & Support click on “Downloads”.
2. Select a Product drop down box to display products.
3. Scroll down to “RFID: IV6 Mobile RFID Reader” and click on it.
4. Click the link for “RFID IF6/IV6 Configuration Utility”.

The utility runs on Windows 98 or greater and you need to have Microsoft Windows.net framework installed on your PC to run the utility. The .net framework can be loaded using Windows Update. The Configuration Utility works with either Bluetooth serial adapters or Bluetooth USB adapters. If you are using an Intermec CV60 Vehicle Mount Computer it has an internal USB adapter.

The Configuration Utility configures both the IF6 and IV6 Readers. So after starting the Configuration Utility select the IV6 tab and follow the instructions. When you have made the changes click the Apply button. If there no more changes to make, click on the Exit Bluetooth Config Mode button and close the Configuration Utility.

Now you should be able to use the Intermec IDK applications or your own RFID application to read RFID tags.

Troubleshooting

Troubleshooting

Doesn't Recognize Tag
1. Check that the reader is powered. 2. Use the Bluetooth utilities in your PC to ensure that the reader has been discovered and that a Bluetooth connection has been established. 3. Ensure tag is within range of antenna. 4. Call Intermec Technical Support 1-800-755-5505 (option 2).

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