

IV7

Vehicle-Mount Reader



Instructions

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There may be other U.S. and foreign patents pending.

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About the IV7 Vehicle-Mount Reader

The IV7 is a rugged RFID tag reader designed to be mounted on a vehicle for mobile use. These instructions explain the ports on the IV7 and how to install it on your vehicle.

When you unpack the IV7, save the box and shipping material in case you need to ship or store the IV7. The IV7 documentation packet includes regulatory statements, a drilling template, and these instructions.



IV7 Vehicle-Mount Reader Out of Box Contents

To install the IV7, you also need these items (purchased separately):

- IV7 DC Power Cable Kit (P/N 203-713-002 with right-angle connector, or 203-713-003 with straight connector)
- Appropriate RFID antennas and cables
- Mounting hardware
- Data cable (choose one):
 - IV7 Data Cable Kit: 20-pin connector only, 12 ft (P/N 203-776-001 with straight connector, or 203-776-002 with right-angle connector). You need to supply your own connectors for the unterminated end of the cable.

- 20-pin connector to 9-pin serial and 25-pin D-sub connectors, 5 ft (P/N 236-089-xxx). Use this cable with the GPIO Terminal Block accessory (P/N 203-726-xxx).

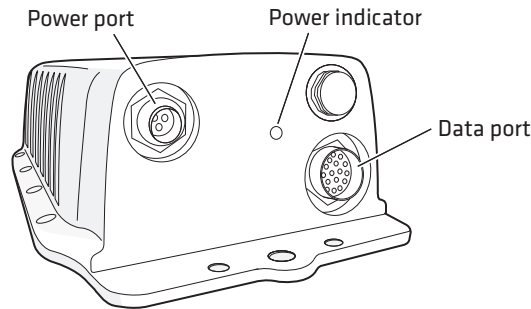
For more information on these and other accessories, contact your local Intermec sales representative.



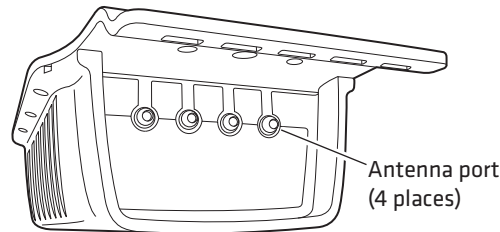
Government regulatory agencies require that this RFID reader only use approved antennas. Therefore, this reader uses a custom antenna connector. Do not use antennas not approved for use with this reader.

Understanding the Ports

These illustrations show the locations of the power indicator and the power, data, and antenna ports.



IV7 Power Indicator, Power Port, and Data Port Locations



IV7 Antenna Port Locations



Note: The IV7 ships with terminators installed on antenna ports 2, 3, and 4. Do not remove the terminator from any port unless you are installing an antenna on that port.

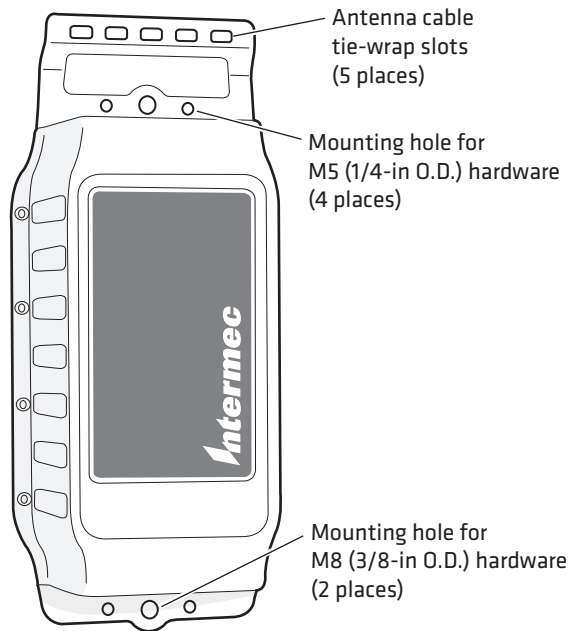
The 20-pin data port connector provides access to the IV7 serial communications and general purpose input/output (GPIO) interfaces. For pin assignments, see “**Port Pin Assignments**” on page 14.

Mounting the IV7

The IV7 baseplate includes holes for mounting hardware and slots for antenna cable tie-wraps.

Use either M8 (3/8-in O.D.) or M5 (1/4-in O.D.) hardware in the mounting holes.

Use the *IV7 Vehicle-Mount Reader Drilling Template* if you need to drill holes for your installation. The template is included in the IV7 documentation packet.



IV7 Mounting Hole Locations

Choosing a Mounting Location



Note: The IV7 requires six to 60 VDC at up to 4.5A for operation. Consult the vehicle manufacturer or your vehicle maintenance company for specific information on appropriate power connection and mounting locations.

You can mount the IV7 in any position on the vehicle. If you need to drill mounting holes, use the drilling template as a guide.

If you are mounting the IV7 to the vehicle exterior, leave adequate clearance for the vehicle to pass through doorways. For installations to the vehicle interior, leave enough room around the IV7 for the operator to enter and exit.

Following Cable Safety Guidelines

The IV7 requires power, data, and antenna cables to connect it to your vehicle-mounted RFID system. Keep these safety guidelines in mind:

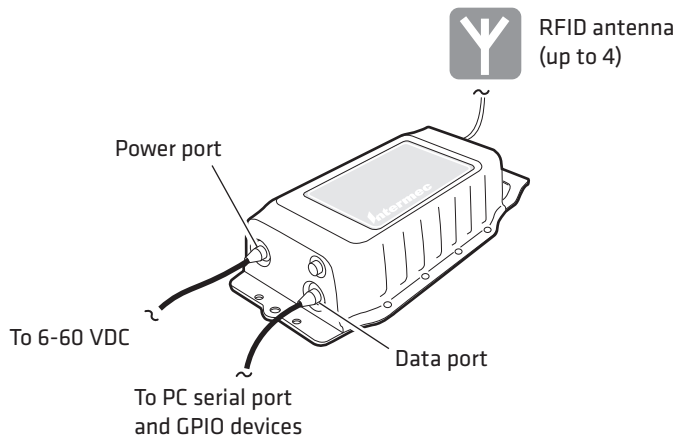
- Make sure that the cable routing does not interfere with other equipment or vehicle controls.
- Keep cables as short as practical and route all cables to minimize exposure to damage.
- Make sure the cables will not be pinched or rubbed by moving parts on the vehicle. You may need to sheath the cable to prevent it from being pinched.
- Secure the cables at least every 15 cm (6 in) throughout the length of the cable run. Use adjustable clamps or tie-wraps to secure the cables.
- Use a snap-in bushing if the cables pass through a firewall or other sheet metal.



Note: Most vehicle manufacturers offer pulley kits for installation of wiring with risers. Intermec recommends using these manufacturer-specific kits with any installation of the IV7 on a forklift load back rest assembly.

Installing the IV7

- 1 Choose a mounting location on the vehicle.
- 2 Mount the IV7 on the vehicle.
- 3 Prepare and install the IV7 power cable, but do not connect the cable to the IV7 yet. For help, see the *IV7 Vehicle-Mount Reader DC Power Cable Kit Instructions*.
- 4 (Optional) Install GPIO devices on the vehicle and connect the data cable to the devices.
- 5 Install the RFID antennas on the vehicle.
- 6 Connect the RFID antennas and cables to the IV7. Use tie-wraps if necessary.
- 7 Connect the data cable from the IV7 data port to the vehicle-mount computer:
 - For the CV30, connect the serial cable to COM3.
 - For the CV60, connect the serial cable to COM1 or COM2.



- 8 Connect the power cable to the power port on the IV7. The power indicator turns green. The IV7 is now ready to use.

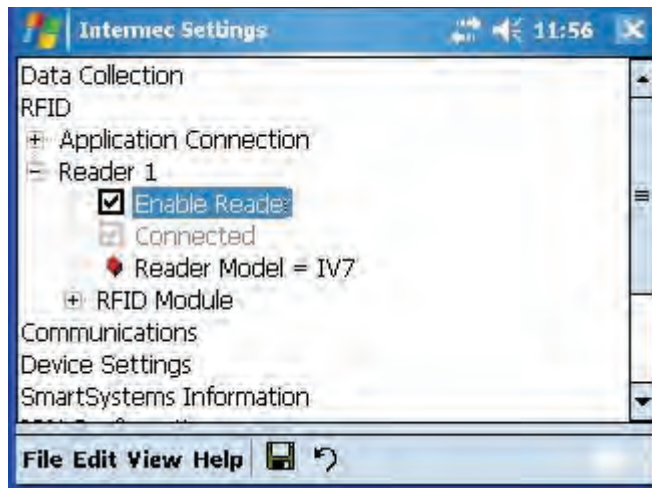
Enabling the IV7

The IV7 can be connected to the Intermec CV30 Fixed Mount or CV60 Vehicle-Mount computers:

- For the CV30, connect the IV7 data port to COM3.
- For the CV60, connect the IV7 data port to COM1 or COM2.

To enable the IV7

- 1 Make sure there is power to the IV7.
- 2 On the computer, in Intermec Settings, tap **RFID > Reader > Reader 1**. The Reader 1 module appears.
- 3 Select the **Enable Reader** check box.
- 4 Tap **File > Save Settings**.
- 5 Tap **View > Refresh**. The **Enable Reader** check box should be selected and the **Connected** check box should be selected and grayed out.



Upgrading the IV7 Firmware

You can upgrade the IV7 firmware as follows:

- You can use the SmartSystems Foundation Console to upgrade the IV7 connected to a CV30 computer.
- You can use an installer package in Windows XP to upgrade the IV7 connected to a CV60 computer.

To download IV7 firmware

- 1** Go to www.intermec.com and choose **Support > Downloads**.
- 2** In the **Product Category** list, choose **RFID**.
- 3** In the **Product Family** list, choose **Vehicle Mount Readers**.
- 4** In the **Product** list, choose **IV7 Vehicle Mount** and click **Submit**. The IV7 Vehicle Mount Downloads page appears.
- 5** In the OS/Firmware/Drivers list, click **IM5 RFID Firmware update ver. 10.xx** and follow the prompts to download the Zip file to your desktop PC. You are required to register with Intermec before you can download the file.
- 6** After the download is complete, double-click the Zip file and extract the contents. The Zip file includes the files for upgrading the IV7 through a CV30 with SmartSystems Foundation, or through a CV60 running Windows XP.

Upgrading With SmartSystems Foundation

You can use the SmartSystems console to upgrade the firmware on your IV7. The console is part of SmartSystems Foundation, which is available from the Intermec web site.



Note: Before you can upgrade the IV7 firmware, make sure that the IV7 is connected to COM3 on the CV30.

To upgrade firmware using SmartSystems Foundation

- 1** Download the IV7 firmware upgrade files as described in the previous procedure.

- 2 Double-click the application file (CV30_IV7_xx.xx.exe, where xx.xx is the firmware version) to install it. The application file should appear in the software vault.
- 3 From the SmartSystems console in the software vault, locate the upgrade file, and drag-and-drop the file onto the CV30 that is connected to the IV7.



Note: The SmartSystems console does not report download errors. Verify the new firmware version shown on the BRI startup banner or by using the BRI “ver” command. For more information, see the *Basic Reader Interface Programmer’s Reference Manual*.

Upgrading With Windows XP

Before you can upgrade the IV7 firmware:

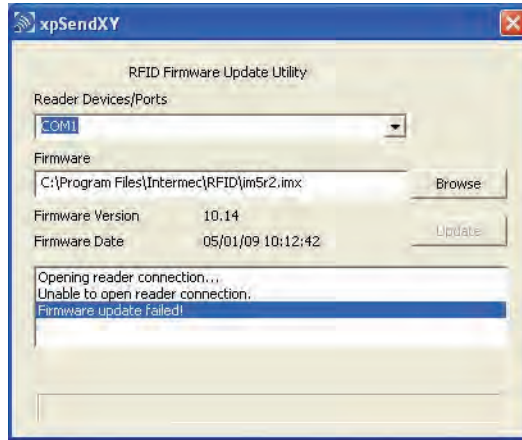
- connect the IV7 to a serial port on the host CV60.
- close all applications using the serial port.

To upgrade firmware using Windows XP

- 1 Download the IV7 firmware upgrade files as described in “Upgrading the IV7 Firmware” on page 11.
- 2 Double-click the installer package (XP_x86_IV7_yy.yy.exe, where yy.yy is the firmware version). The opening screen appears. Follow the steps in the wizard to upgrade the IV7 firmware.



If an application is already using the serial port, the following error appears:



Close the application and retry the upgrade.

Sending Commands to the IV7

You send commands to the IV7 using the Basic Reader Interface (BRI) protocol. For more information on BRI commands, see the *Basic Reader Interface Programmer's Reference Manual*.

To develop RFID applications, you can use the Intermec RFID Resource Kit, which is part of the Intermec Developer Library. This resource kit includes C# and Java tools for application development, including reader control and data manipulation. For more information, go to www.intermec.com/idl.

Understanding the GPIO Interfaces

The IV7 has four input and four output interfaces. You can connect external controls to the GPIO interfaces, which can then trigger IV7 operations.

All GPIO interfaces should be restricted to a maximum operating input voltage of +5 VDC. To use higher input voltages, you need to use an external voltage conditioning network, such as resistor dividers or active regulators.



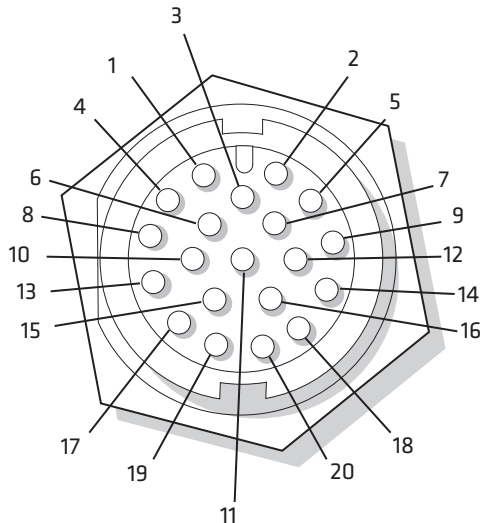
Although all interfaces include transient protection, the interfaces are not protected from continuous over voltage or over current conditions. The IV7 will be damaged if a low impedance source greater than +6.5 VDC is connected directly to either the inputs or the outputs.

GPIO Interface Specifications

Interface	DC Voltage	Maximum Current
Input	0 to +5 VDC	10 mA per input 40 mA for all inputs combined
Output	0 to +5 VDC	50 mA for all outputs combined

You can access the GPIO interfaces through the data port. For pin assignments, see the next section.

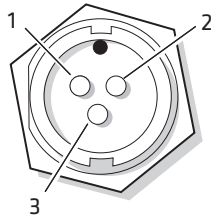
Port Pin Assignments



IV7 Data Port

Data Port Pin Assignments

Pin	Description	Pin	Description
1	TXD from IV7	11	GPIO RTN1
2	RXD to IV7	12	GPIO RTN2
3	Ground	13	GPIO RTN3
4	CTS from IV7	14	GPIO RTN4
5	RTS to IV7	15	GPIO RTN5
6	+5VDC	16	NC
7	GP Input 0	17	GP Output 0
8	GP Input 1	18	GP Output 1
9	GP Input 2	19	GP Output 2
10	GP Input 3	20	GP Output 3



IV7 Power Port

Power Port Pin Assignments

Pin	Description
1	-VDC
2	+VDC
3	Ground

Where to Go for More Information

Visit the Intermec web site at www.intermec.com to download PDF versions of our current manuals.

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

Specifications

Dimensions	9.5 cm x 23.6 cm x 34.3 cm (3.75 in x 9.3 in x 13.5 in)
Weight	3.08 kg (6.8 lb)
DC Electrical Rating	⎓ 6 to 60 V, 4,5A maximum
Environmental Rating	IP65
Operating Temperature	-25°C to 55°C (-13°F to 131°F)
Storage Temperature	-30°C to 75°C (-22°F to 167°F)
Humidity	10% to 90%, non-condensing

Notification

The Japanese government recognizes the certification of this product through the modular approval of the RFID radio model designation IM5; Certification number 003AFA080976.



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