

TSAN 029 USB

Dataradio Technical Support

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Within the U.S.A.	1-800-992-7774	International	1-507-833-8819
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Products:

Dataradio DL-3400 analog radios
Dataradio RNet JSLM
Dataradio T-96SR wireless modems
Dataradio Integra-TR and H wireless modems

Third Party Products:

IOGEAR USB to serial adapter model GUC232A or similar
HP Omni Notebook with 1 standard RS-232 serial port

Application: Using a USB to serial adapter use for programming and communicating with Dataradio products (as listed above).

Overview: Universal Serial Bus (USB) is a serial hardware standard device and a protocol used by computers to provide a high speed connection in of lieu of a serial port (RS-232) connection.

The USB port allows for faster speeds and is not limited by interrupt (IRQ) programming routines. In the past most computers were equipped with at least one serial RS-232 port. As time passed, they also came equipped with a USB connection. Today, an increasing number of the notebook computers come equipped with only a USB port. Dataradio wireless modems and analog radios require a standard RS-232 serial port for programming and communication; hence an adapter must be used to convert a USB port into an RS 232 port.

There are many different models of USB to serial adapters. Dataradio has not tested each one but we can offer the reader information about how a typical adapter should behave in order to communicate with Dataradio units. This application note details the test performed with IOGEAR Model GUC232A available from [B&B Electronics](#).

Who needs the USB adapter? Dataradio units need only one standard serial COM port to permit proper programming and communication. If the computer has a standard RS 232 serial port available this adapter is not needed. If you are unsure of the available ports, refer to the owner's manual of the computer.

Set-up: The details of this application note apply only to the IOGEAR USB adapter model GUC232A.

Installing the USB adapter: The adapter will come with a CD-ROM or a floppy disk containing the drivers needed for the USB device. Place the CD or disk into the appropriate drive and plug the USB adapter into the USB port. The Windows operating system will display a pop up window stating that a new device has been found. If the USB device is recognized, follow the installation instructions provided in the manual for the USB adapter. Refer to the Windows help menu to install a driver for the USB controller if the device is not recognized by the Windows¹ operating system.

The installation program will automatically select the lowest COM port not allocated for the USB port to use. When installation of the USB adapter software is complete, it must be determined which COM port was selected.

Which COM port is it? In order to determine the USB adapter COM port location, go to the Windows start button.

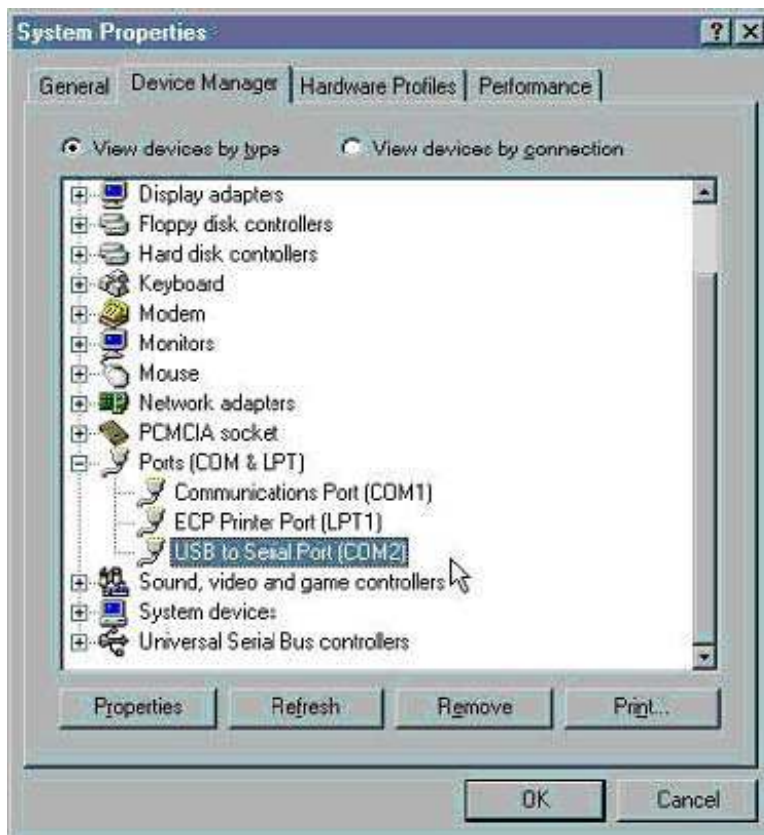


Figure 1: USB adapter installation selected COM2

Windows 98 select:

Start → Settings → Control Panel.
Double click the System icon.
A System Properties window will appear.
Select the Device Manager tab.
Select Ports to expand the list to show all port devices in use.

Windows XP Professional, select:

Start → Settings → Control Panel
Double click the System icon.
A System Properties window will appear
Select the Hardware tab.
Click the Device Manager button.
Select Ports to expand the list to show all port devices in use.

¹ Windows 95 does not readily support USB.

In our test COM2 is the port selected by the USB installation program. It is advisable to note the devices connected to each COM port. If USB does not appear in the port device list, close all windows and make sure the Windows operating system supports USB protocol before repeating the procedure.² If, after repeating the installation process, USB still does not appear in the port device list, refer to the Windows help menu and the computer owner's manual for suggestion on how to proceed.

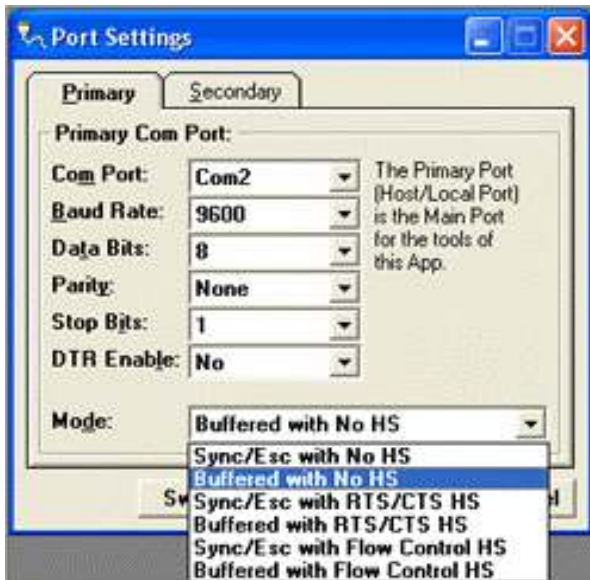


Figure 2: Select Com2 to match the USB adapter port

Using the USB serial port for programming and setup

COM port settings for the Dataradio software (see Figure 2) must match that selected for the USB to serial Port (see Figure 1). Dataradio software defaults are COM1 and COM2. Ports 3 and 4 may be selected also. Refer to the appropriate equipment manual in order to select and utilize the COM ports from within the appropriate software. Table 1 shows the appropriate part numbers as well as the section needed to modify the port settings for the COM port in the Dataradio programming software. COM port selection will be limited to those available to the user. Available ports can be observed in the above procedure.

² Certain versions of Windows 98 will not support the USB protocol.

Table 1:

Product	Technical Manual	Program w/ USB Adapter	USB Adapter differs from standard port?
Integra-TR	001-4006-001; sec 2.4.2	Y	N
Integra-H	001-4099-101; sec 3.2	Y	N
T-96SR	001-4006-101; sec 2.4.2	Programming cable needed*	N
RNet JSLM	001-2040-101; sec	Y	N
DL-3400	001-4000-101; sec 3.3.6.1	Only those modes which do not utilize Flow Control	N

*To program the T-96SR with the USB adapter, a programming cable, supplied in programming kit (p/n 250-4006-001) must be used. Refer to the technical manual for the appropriate cable.

Using the USB serial port as an operational COM port with the Integra



Figure 3: Integra TX Control: RTS

The USB to serial COM port may be used as an operational port to communicate with the Integra-TR and the Integra-H. Mode selection for port settings is shown in Figure 2. These settings must be compatible with the Modem/Radio Parameters as found in the Dataradio programming software. In the Integra, Transmit Control default is DOX (data activated transmit). In DOX mode, the unit begins a transmission as soon as data is presented to the COM port. RTS/CTS signal lines are ignored. If the optional mode RTS is to be used, select one of the RTS/CTS HS modes. Refer to Figure 2 for Port Settings Modes. When using RTS, DCD Control is no longer active in the Modem/Radio Parameters Com/Analog tab. This is illustrated in Figure 3 left.

Using the USB serial port as an operational COM port with the T-96SR

When using the USB serial port as an operational COM port with the T-96SR, a data cable (p/n 697-0000-001) must be used in place of the programming cable. If using the USB adapter port to communicate, the T-96SR will come up in transmit mode when first turned on. The transmit light will be on until the transmitter times out. Transmitter time out is programmable, with default time at 30 seconds. The transmit light will turn off and data can be sent.

Note: The first time data is sent an RTS/CTS timeout error will occur. Click OK to clear the window and send the data again. Data can now be sent because the USB port has been internally reset to the proper mode. This RTS/CTS timeout error will occur first time data is sent each time changes to the port settings.

To eliminate this behavior, A DOX to RTS conversion device be used. This device allows the USB port to "see" a DOX connection. Dataradio [TSAN001](#) provides interface information for this device.

The USB serial COM port as an application port is not applicable for a DL-3400 or the RNet JSLM.