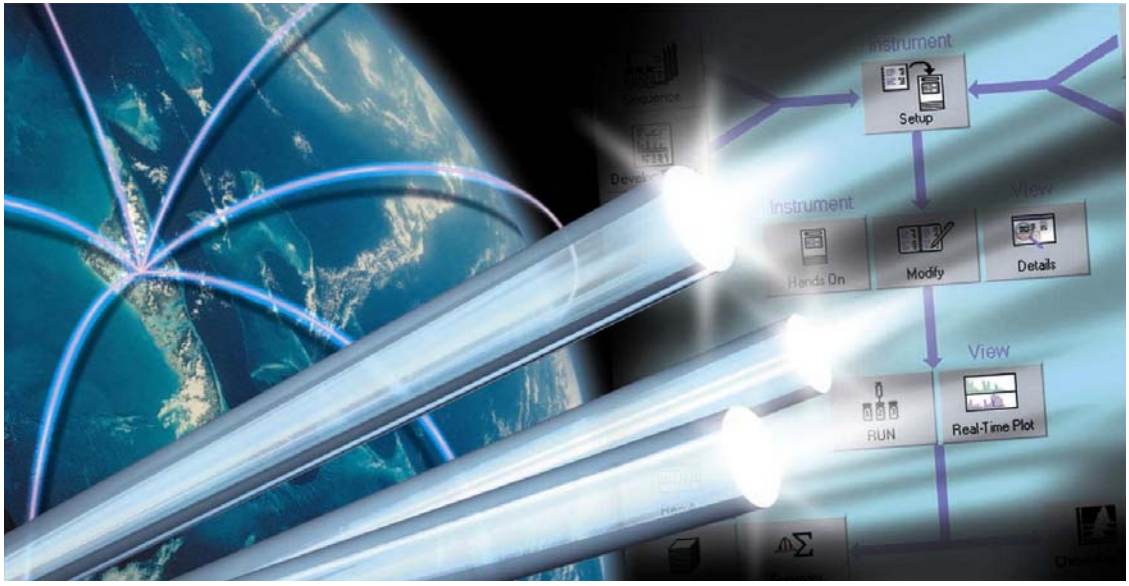
CHROMATOGRAPHY SOFTWARE

dotLINK



User's Guide

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As a registered PerkinElmer customer, you will be the first on our list to receive information on new products, enhancements, or software updates.

dotLINK
User's Guide

Release History

Part Number	Release	Publication Date
N515-6088	A	July 2005

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Notices

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Chapter 1
Introduction

The PerkinElmer dotLINK Interface is used with PerkinElmer software products to acquire and buffer digital data from laboratory instruments and to control the operating parameters of such instruments. The dotLINK Interface is available in two forms: standalone and integral. The standalone modules connect to the host computer directly or through a network hub or terminal server and to the controlled instrument. The Integral dotLINK is a version of dotLINK that is installed inside selected PerkinElmer GCs. Each standalone dotLINK module can simultaneously communicate with up to three instruments. Each Integral dotLINK module communicates with the single instrument in which it is installed. The operation of these various models is otherwise identical from the user perspective; only the cabling is different. Data acquired from each instrument are buffered within dotLINK until the data can be transmitted to the host computer.

The dotLINK device provides both instrument control capabilities as well as digital data acquisition for supported chromatographic instruments and modules. There will be no data processing occurring within the dotLINK itself, other than that required for secure data communications between the instrument and the TotalChrom Acquisition Server. This data communication will be controlled through a combination of the dotLINK O/S running in emulation mode and standard functionality of the Windows CE operating system and CPU. Data will be secure because there will be no user access allowed. There is no user interface for dotLINK; all user interaction is with the software running on the host computer.

Internal to dotLINK is a microprocessor that executes firmware located in an Instrument Personality Module (IPM). The IPM is copied to the dotLINK from the host computer by a Configuration Utility executed on the host computer. During execution of the Configuration Utility, you will provide information regarding the type of instrument connected to each port, allowing the host software to select one or more IPMs to be down-loaded. Once an IPM is installed in the dotLINK, you can interact with the PerkinElmer software running on the host computer to specify the instrument operating parameters. dotLINK then receives instructions from the host computer and formats and transmits commands to the connected instrument. Data and status information are received from the instrument by dotLINK, formatted as

necessary, and transmitted to the host. If the host or intervening network is unavailable, the dotLINK Interface will buffer the information until it can be transmitted.

Instructions from the host to dotLINK can be sent as methods or setpoints. Methods include an entire set of parameters sufficient to initiate and execute an analysis on an instrument. Setpoints are used to modify a single parameter during an analysis. dotLINK is capable of storing multiple methods for each connected instrument, allowing sequences of multiple methods to be executed, even when the host computer is not available.

The exact set of method parameters that can be controlled for a given instrument are dependent on the characteristics of that instrument. These parameters are described in the documentation that accompanies the IPM distribution media for the specific instrument.

Instrument Personality Modules are stored in non-volatile memory in the dotLINK Interface. Re-configuration is not required after cycling power on the Interface. However, buffered data will be lost if power is interrupted, as will method and sequence information stored in dotLINK for later analyses.

The amount of data that can be buffered by a dotLINK is dependent on several factors, including the instrument(s) connected to the dotLINK Interface, and the number of methods stored in the dotLINK Interface. As an example, a dotLINK or Integral dotLINK connected to a single PerkinElmer GC, with a single stored method, has buffer for approximately 195,000 data points. Each stored method reduces the buffer capacity by approximately 500 data points. Additionally connecting a Hewlett Packard 5890A GC reduces the buffer capacity by approximately 2500 data points.

Chapter 2
Installation

The dotLINK Interface is designed for easy customer installation. It uses a serial connection through an RJ45 port to a connector for your specific instrument. There are NO internal settings or adjustments for you to change.

The installation procedure requires three steps:

1. Install dotLINK hardware.
2. Configure dotLINK.
3. Configuring TotalChrom Acquisition Ports to use dotLINK

Details on each of these steps are provided in the following sections.

Safety and Site Data for dotLINK Standalone

NOTE: *dotLINK contains no user-serviceable parts. Therefore, there is no reason to remove the cover panels in normal usage. If you need to remove any cover panels, first disconnect the power cord from the AC mains outlet.*

FCC Compliance (United States and Canada)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which user will be required to correct the interference at their own expense.

NOTES: *1) Changes or modifications not expressly approved by PerkinElmer could void the user's authority to operate this product.*

2) The product is not designed for use in a residential environment.

EMC Directive (European Union)

All information concerning EMC standards is in the Declaration of Conformity, and these standards may change as the European Union adds new requirements.

The dotLINK standalone for use in the European Union is intended for the industrial environment. The product is to be connected to a main power network supplied from a high or medium-voltage transformer dedicated for the supply of an installation feeding a manufacturing or similar plant.

Industrial environments are characterized by the existence of one or more of the following conditions:

- industrial, scientific, and medical (ISM) apparatus are present
- heavy inductive or capacitive loads are frequently switched
- currents and associated magnetic fields are high

These are the major contributors to the industrial electromagnetic environment and as such distinguish the industrial from other environments. The dotLINK standalone is not intended for connection to a public mains network supplying residential, commercial and light-industrial locations.

Information and Symbols Appearing on the Standalone dotLINK

Power Supply:	AC voltage symbol	
	DC voltage symbol	
	Indoor, Dry Location Use Only	
	No Serviceable Parts Inside	
	Refer to Instructions	
dotLINK Box:	DC voltage symbol	
	Do not put in trash (WEEE Directive)	

The symbol above indicates that Waste Electrical and Electronic Equipment (WEEE) is not to be disposed of as unsorted municipal waste. Equipment marked with this symbol is to be collected separately. The objectives of this program are to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally. Specific treatment of WEEE is indispensable in order to avoid **the dispersion of pollutants into the recycled material or waste stream. Such treatment is the most effective means of protecting the customer's environment.** The waste collection, reuse, recycling, and recovery programs available to PerkinElmer's customers vary by customer location. Please contact the responsible body (e.g., your laboratory manager) for information about local requirements.

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

EMC information

EN 55011–Class A, Group 1

Power supply module

The only power supply module authorized for use with dotLINK is supplied by PerkinElmer.

Cleaning the dotLINK Standalone

CAUTION: *Do not clean the power supply module.*

Exterior surfaces of the dotLINK box may be cleaned with a soft cloth, dampened with a mild detergent and water solution. Do not use abrasive cleaners or solvents.

Before using any cleaning method except that specified above, users should check with PerkinElmer that the proposed method will not damage the equipment.

CAUTION: *The protection provided by the dotLINK standalone may be impaired if the product is used in a manner not specified by PerkinElmer.*

The dotLINK standalone requires no specified inspection or preventive maintenance to ensure the continuous functioning of its safety features.

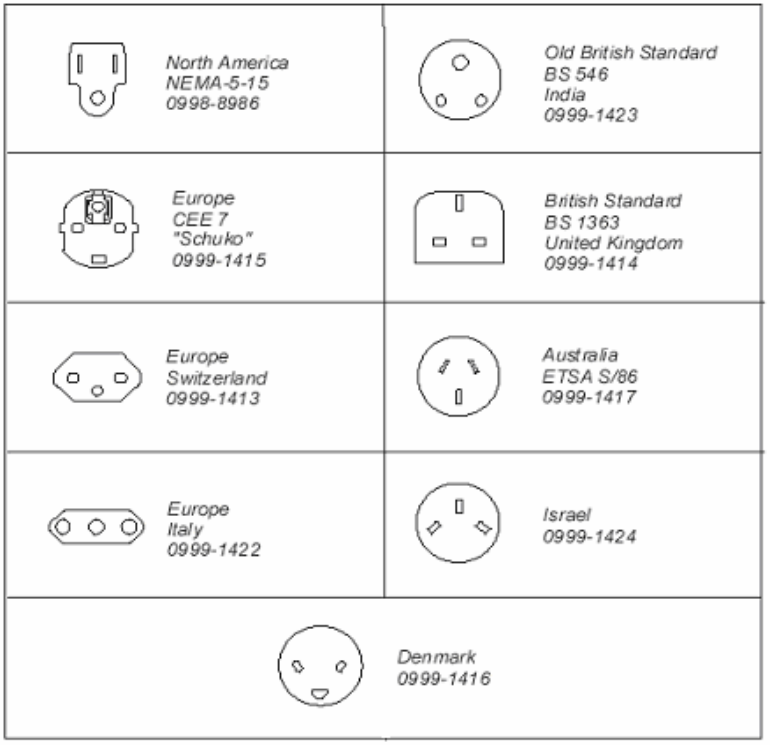
Power Connections

This section applies to standalone dotLINK Interfaces only.

The dotLINK Interface is a safety Class I apparatus and uses a three-conductor line cord. The line cord plug should only be inserted in a receptacle provided with a protective earth contact. The protective earth ground contact should not be disconnected for any reason. To do so may interfere with the proper operation of the dotLINK. The dotLINK will operate at any line voltage between 100 and 240 VAC.

The AC power plug is the disconnecting device for the dotLINK standalone. Do not position the dotLINK so that it is difficult to remove the power plug from the AC mains outlet.

Available Power Cords



NOTE: *Disconnect the power cord from the AC receptacle before proceeding.*

Cables

The communication cables required for dotLINK are serial cables and Ethernet cables.

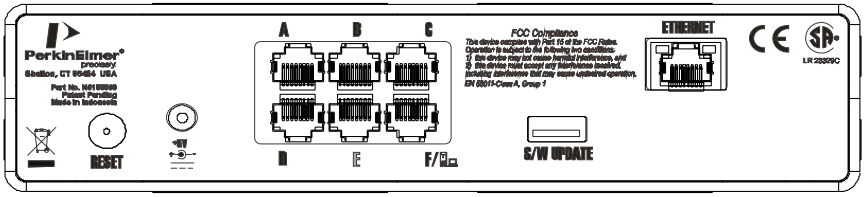
- The serial cable consists of RJ-45 plug (dotLINK end) and DB9 female (computer end). The serial cables are available in 5 ft, 10 ft, and 25 ft. lengths.
- The Ethernet cable has RJ-45 plugs on both ends.

Front Panel - Standalone

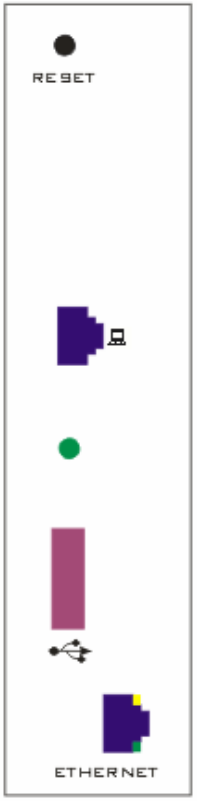
The standalone dotLINK front panel contains six status LEDs corresponding to the six possible connections to the rear of the box.

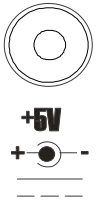
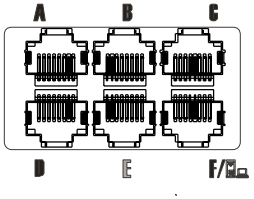
LEDs 	Each LED shows the status of a Serial port. The A-D LEDs work as follows: 1. Green – represents no errors or problems, IPM loaded 2. Blinking Green – transmitting data on that serial port, no error 3. Yellow – represents programming algorithms active (configuring firmware for upgrading or downgrading) 4. Blinking Yellow –transmitting data on that serial port, with error LED E is reserved for future use. LED F indicates the CPU status. ▪ Blinking Green – indicates normal CPU activity ▪ LED Off – indicates the CPU is busy

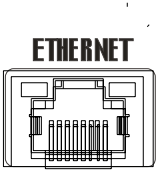
Back Panel - Standalone



Integral dotLINK - PerkinElmer Clarus GC Right Side Panel



Reset Button  	The reset button is a recessed momentary contact style located on the back of the box. You will need to use a non-metallic stylus to fully depress the button. **Clear IPMs:** While the dotLINK is running, you can clear the IPMs loaded in the dotLINK by pushing the reset button. **Clear IP Address:** Hold down the reset button while plugging the power cable into dotLINK. In the event that you need to clear the dotLINK IP address (for example, if a dotLINK has to be moved from one lab to another) you have to force dotLINK to not have an IP address so that it will not affect the operation of the customer's network.
 	The connection from the power supply to the dotLINK box is the same regardless of country and it is a standard low voltage connection to the box. The country cable plugs into an industry standard connection on the power supply, which is external to the dotLINK box.
 	The connectors for Serial ports are RJ-45 connectors. dotLINK has six serial ports. Four of these serial ports (ports A-D) are used for connections to instruments. Port E is reserved for future use. Port F can be used to connect the dotLINK to the host computer.
 	The Universal Serial Bus (USB) port is used for software updates. The update will be provided by PerkinElmer. The port is a standard USB 1.1 style "A" (host) type connectors. Simply plug a USB Type 10 flash key using WinCE compatible drivers into the USB S/W UPDATE port and the dotLINK software will download the update and handle switching over to the new code.

	The Ethernet port supports 10Base-T and 100Base-T transfer rates. The Ethernet port uses an RJ-45 connector. The Ethernet connection will be via an automatic speed sensing Ethernet device that is capable of transporting data at either 10Mbps or 100Mbps.

In some installations, an instrument system may require connection to one or more Instrument Ports; for example, a gas chromatographic system may require one connection to the chromatograph and one connection to the autosampler. In cases where multiple connections are required for a single system, adjacent ports must be used. Detailed connection requirements are provided in the instructions that accompany each Instrument Personality Module distribution package.

The communication characteristics (baud rate, parity, handshaking, etc.) of each Instrument Port are controlled by the IPM installed for that port. Cables should be purchased for each instrument with the IPM package.

Installing the dotLINK Hardware

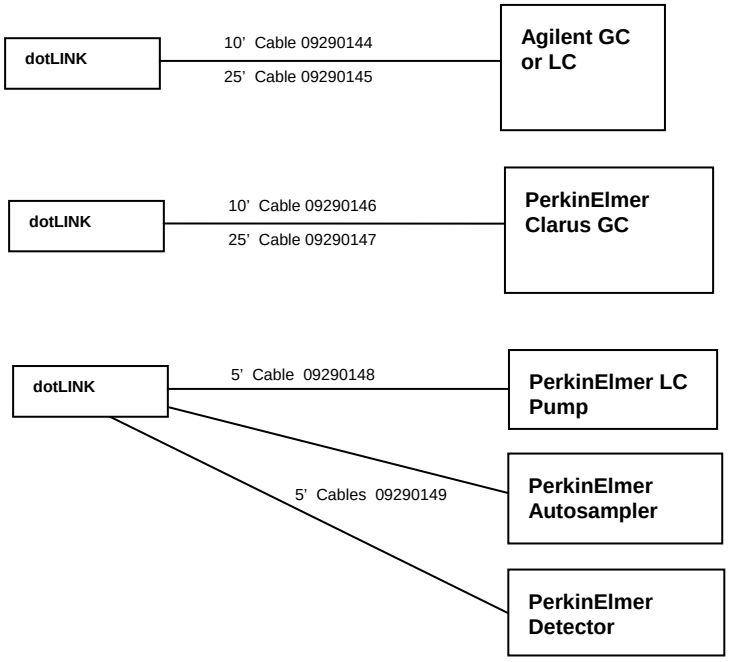
After removing dotLINK from its box connect it to your instrument and then connect it to a computer using one of the following three configurations:

- Cable Connection to Your Instrument
- Serial Connection to the Computer
- Ethernet Connection – No Lab Network
- Ethernet Connection to a Lab Network

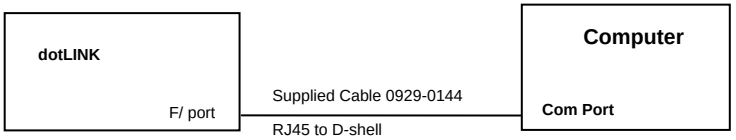
Cable Connections to Your Instrument

Depending on the type of instrument being used, dotLINK communicates to the instrument using one or more serial ports. The ports are on the dotLINK back panel or, in the case of a PerkinElmer Clarus GC, on the right side panel of the GC. The cables are specific to each instrument and should be purchased with the Interface. Connect the cable by inserting one end into the instrument or module connector and attach the other end of the cable to the appropriate port on the dotLINK.

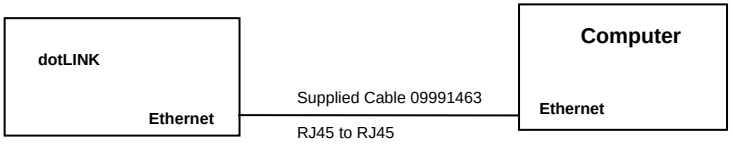
When using a PerkinElmer Clarus GC with an Integral dotLINK, all instrument connections are already made internally. The instrument will be connected to either a local area network or to a local host PC, using the appropriate cable connected to the serial or Ethernet port on the side panel of the GC.



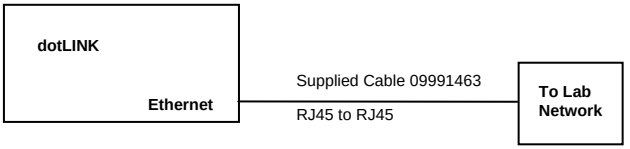
Serial Connection to the Computer



Ethernet Connection - No Lab Network



Ethernet Connection to Lab Network



Setting Up dotLINK for Ethernet

This describes how to set up dotLINK for an Ethernet connection to a local host computer or to a local area network.

The dotLINK uses an application called **IcarusIPConfigure** to perform the task of assigning an IP Address. The IcarusIPConfigure application using the dotLINK's MAC Address can search for an available **DHCP** Address or assign a **Static IP** address, including a Network Mask address. The IcarusIPConfigure application can also be used to assign a Device Name to the dotLINK.

Install the Applications on the Host Computer

The dotLINK Utilities and User Manual CD (P/N N515-2015) contains applications and the dotLINK User's Guide in Adobe Acrobat PDF format. Copy the User's Manual to a directory on your hard drive. Then run Setup on the CD to copy the IcarusIPConfigure application to your host computer's hard drive.

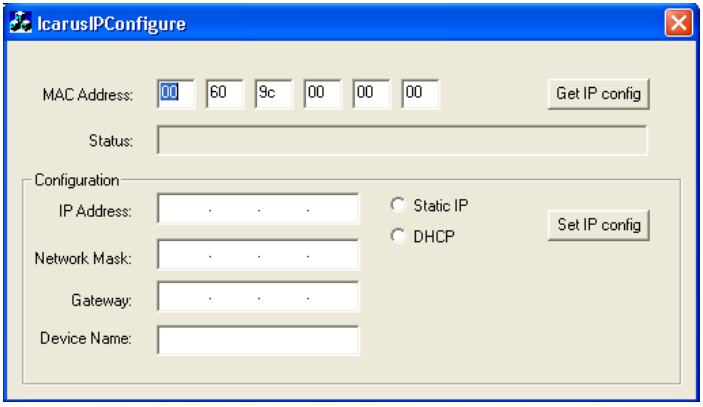
About Using DHCP

DHCP may be used when the dotLINK is on a network which has a DHCP server. This permits you to automatically obtain an IP address and subnet mask. Contact your network administrator to determine if DHCP is available and the preferred way to operate dotLINK.

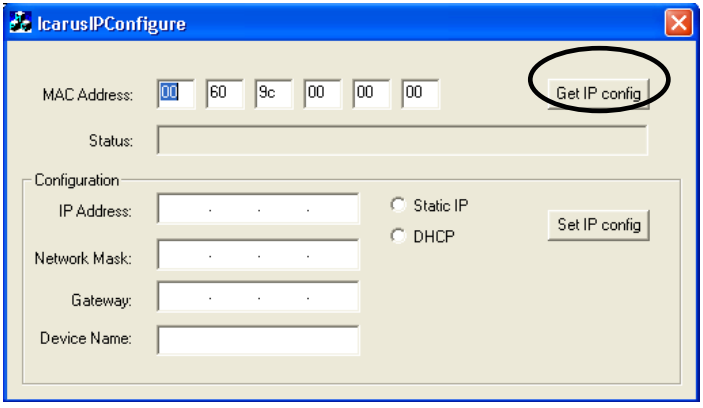
How to Configure dotLINK (DHCP)

NOTE: *The MAC Address, IP Address and Network Mask shown below are examples only.*

1. Connect the host computer to the source network subnet as the dotLINK.
2. Locate the directory on your computer's hard drive where you copied the files from the dotLINK CD.
3. Double Click the **IcarusIPConfigure.exe** application.
   The IcarusIPConfigure dialog appears.

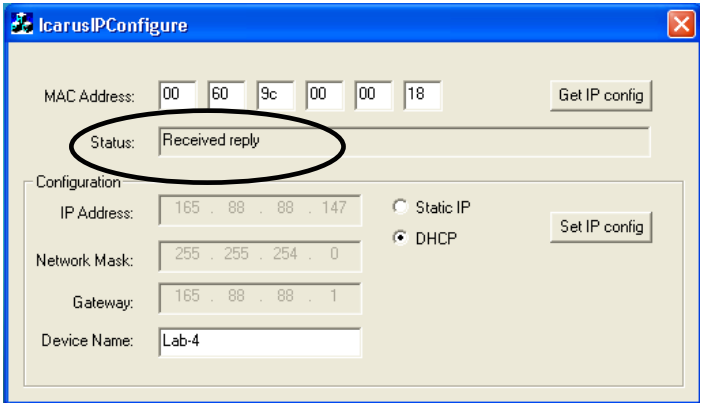


4. Enter the MAC Address of the dotLINK that you wish to configure into the MAC Address edit field. This number is printed on a tag on the dotLINK.
5. Click the **Get IP config** button located next to the MAC Address edit field.



When a DHCP Address is found the IP Address and Network Mask edit fields will be populated and the Status will read “Received Reply”.

The Configuration section fills in the following: IP Address, Network Mask, Device Name and selects either Static IP or DHCP.



- If Status comes back “No reply received” click the **Get IP Config** button until Status reads “Received Reply”. If this does not happen, see Troubleshooting.
- If Static IP is selected, change it to **DHCP**.
- Enter a **Device Name** unique to the network and click the **Set IP config** button. Write down the Device Name since you will need it to configure TotalChrom.

The dotLINK has now been configured for a DHCP IP address.

About Using Static IP

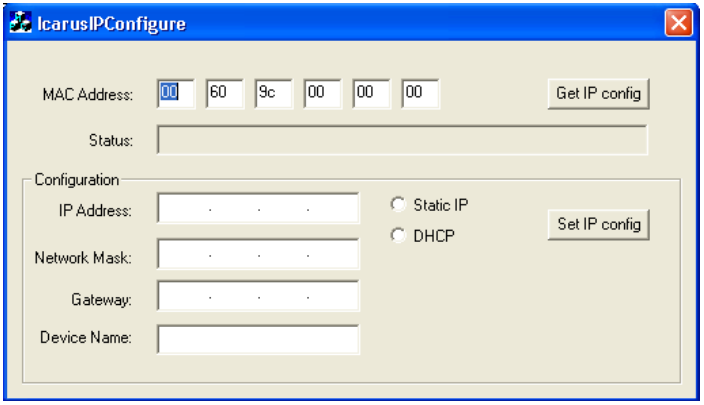
Static IP address is used when the dotLINK is connected directly to the host computer or if it is connected through a hub or switch. It may also be used if your network administrator provides a valid static IP address and subnet mask.

How to Configure dotLINK (Static IP) on a Network

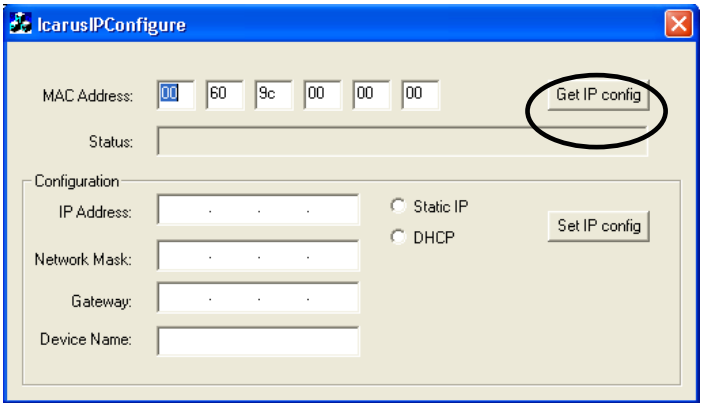
You will configure the dotLINK with a Static IP address. This is done by clicking the Static IP radio button and entering the desired Static IP Address into the IP Address edit field and the Network Mask for the Static IP address that you are using into the Network Mask edit field.

NOTE: *(MAC Address, IP Address and Network Mask shown below are examples only)*

1. Setup installed the IcarusIPConfigure.exe application in the **C:\Program Files\PerkinElmer\dotLINK** directory.
2. Double-click **IcarusIPConfigure.exe** (or from **Start>All Programs**, click **Configure dotLINK**).
   The IcarusIPConfigure dialog appears.



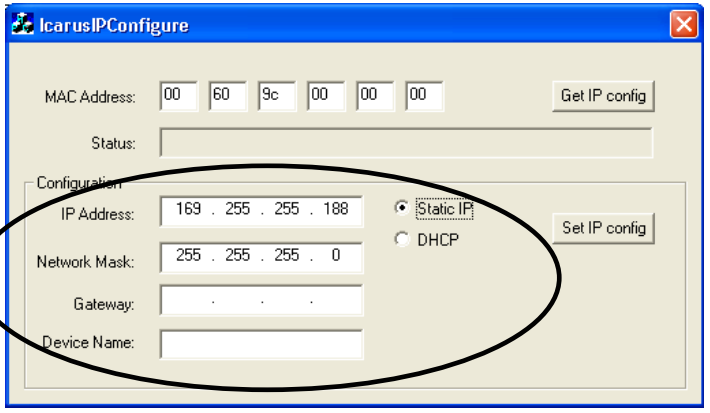
3. Enter the **MAC Address** of the dotLINK that you wish to configure into the MAC Address edit field. **This number is printed on a label on the dotLINK.**
4. Click the **Get IP config** button located next to the MAC Address edit field.



This returns a DHCP address from the network.

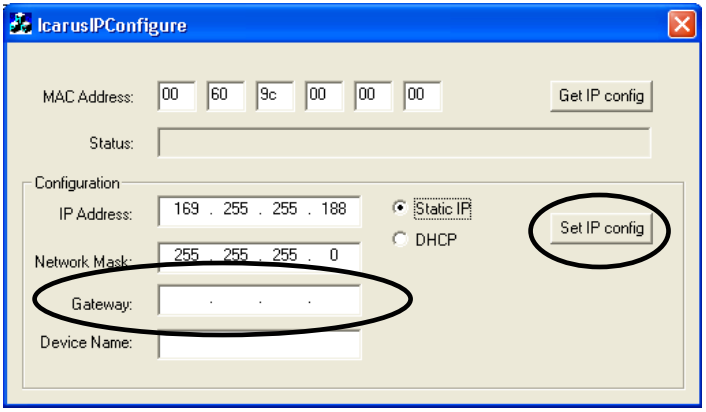
NOTE: *DHCP addresses cannot be used as Static IP addresses. You must delete the displayed DHCP address and enter your Static IP address.*

5. Enter the **Static IP Address**, **Network Mask**, and a unique **Device Name** (supplied by your Network Administrator) and select **Static IP**.



If you are connecting between two networks, sub networks, or virtual LANs, contact your Network Administrator for a **Gateway** address and enter it in the space provided.

If you are not connecting between two networks, sub networks, or virtual LANs, leave the Gateway field blank.



6. Next click the **Set IP Config** button. All configuration fields should remain populated.

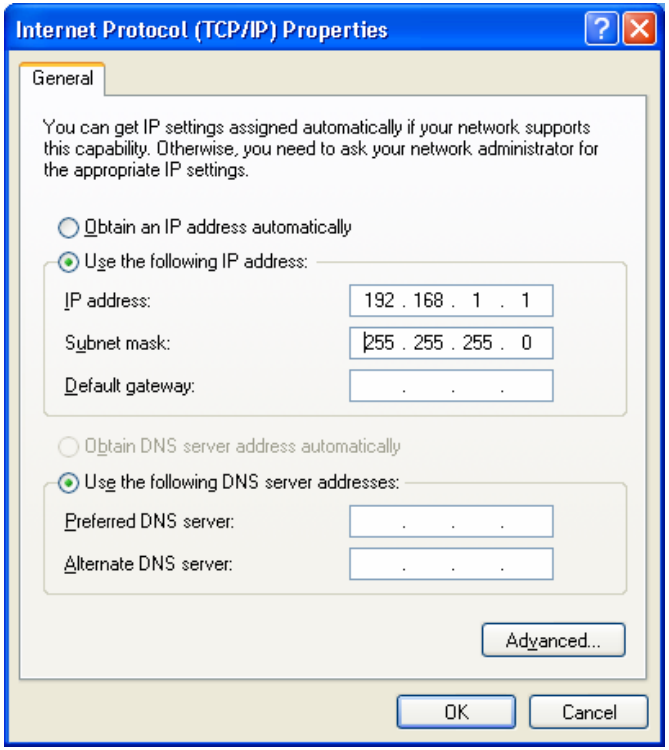
If the **Status** displays **Received reply**, the dotLINK is now configured with a Static IP Address.

How to Configure dotLINK for Direct Ethernet Connection to a Computer

When you connect directly to a host computer, not on a network, you will need to set the host computer to a static IP address. The following procedure describes how to set a static IP address in Windows XP.

To set your computer to a static IP address, follow this procedure:

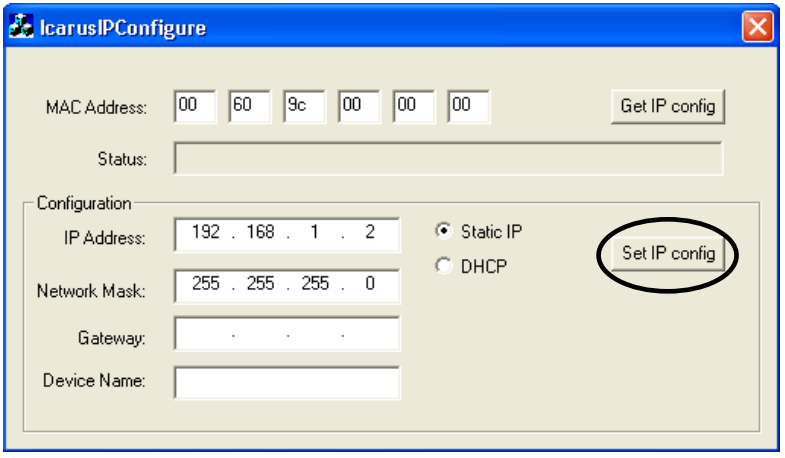
1. Open **Control Panel** from the Windows **Start** button.
2. Double-click on **Network Connections**.
3. Right-click on **Local Area Connection** and select **Properties**.
4. In the General tab, select **Internet Protocol (TCP/IP)** the click the **Properties** button.
5. In the General tab, click **Use the following IP address**, and type the static **IP address:** 192.168.1.1 and **Subnet mask:** 255.255.255.0 as shown below.



6. Click **OK** to close each dialog box.
7. Open **IcarusIPConfig** and set the following:
    - **IP Address:** 192.168.1.2

***NOTE**: Use a different IP Address for each additional dotLINK.*

    - **Subnet mask:** 255.255.255.0



8. Then click the **Set IP config** button.

Configuring TotalChrom Acquisition Ports to use dotLINK

In order to use a server computer to acquire chromatographic data, you must associate that server computer with one or more data connections, referred to as acquisition ports. An acquisition port is a communication port through which chromatographic data are acquired from a dotLINK or other device, such as terminal server or PerkinElmer's NCI interface.

Adding a New Acquisition Port

For Client Server only: Before you can add an acquisition port, you must configure the desired acquisition server computer as a valid TotalChrom server (for more information see "Configuring Servers" in the TotalChrom Application Manager's Guide).

In order to use a dotLINK in TotalChrom, it must either be connected to a serial port, or configured in TotalChrom using the terminal server selection. To configure a dotLINK In TotalChrom using the terminal server selection, you must know dotLINK's network name, DHCP or Static IP address, and **you must use 3001** as the four-digit port number of the specific dotLINK (terminal server port) you want to use.

NOTE: *dotLINK in not a terminal server even though it is using the terminal server selection in TotalChrom.*

If you are using a serial port to connect dotLINK, you must know the COM port number. Only one COM port can be used per computer, and the port itself must either be COM port 1 or COM port 2.

To set up and configure dotLINK as a new Terminal Server acquisition port, follow this procedure:

1. Select **Add Acquisition Port** from the **Ports** menu to open the Add Acquisition Port dialog box.

   Initially, only the Device Type list is shown.

2. Select **Terminal Server** from the Device Type list.

   After you select **Terminal Server**, the appropriate entry controls for that device are displayed. The following briefly describes each of the entry controls, by device type:

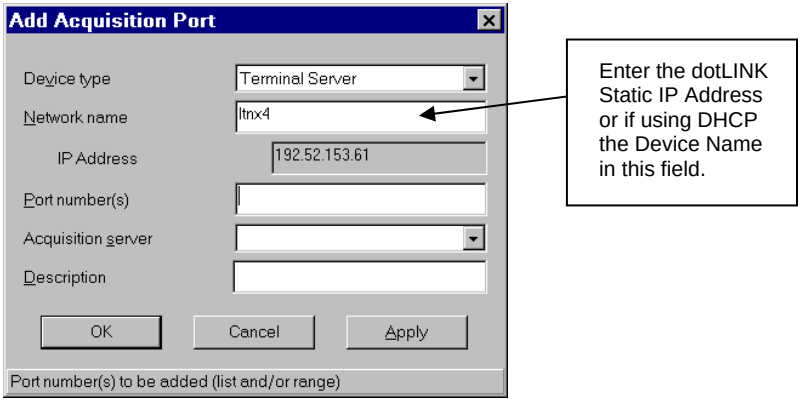
3. Enter the following information in the **Network name** field:

   - **DHCP** - Enter the **Device name** of the dotLINK (the name by which the device is known to your network, assigned as described above) in the **Network name** text box. If the name is valid, the dotLINK's IP address is displayed. If the name is not valid, a warning message appears, but you can continue. However, communication with the

dotLINK cannot be established until the valid IP address for it is determined.

- **Static** – Enter the IP address of the dotLINK in the **Network name** text box. It will be copied to the IP Address field.

4. Enter **3001** as the port number in the **Port Number(s)** text box.



5. **For Client Server only:** Select the server computer you want to associate with the port from the **Acquisition server** list.

   You can select any valid Acquisition Server that is part of your TotalChrom system configuration. After you select a server to associate with an acquisition port, that server is designated as an acquisition server in the System tab.

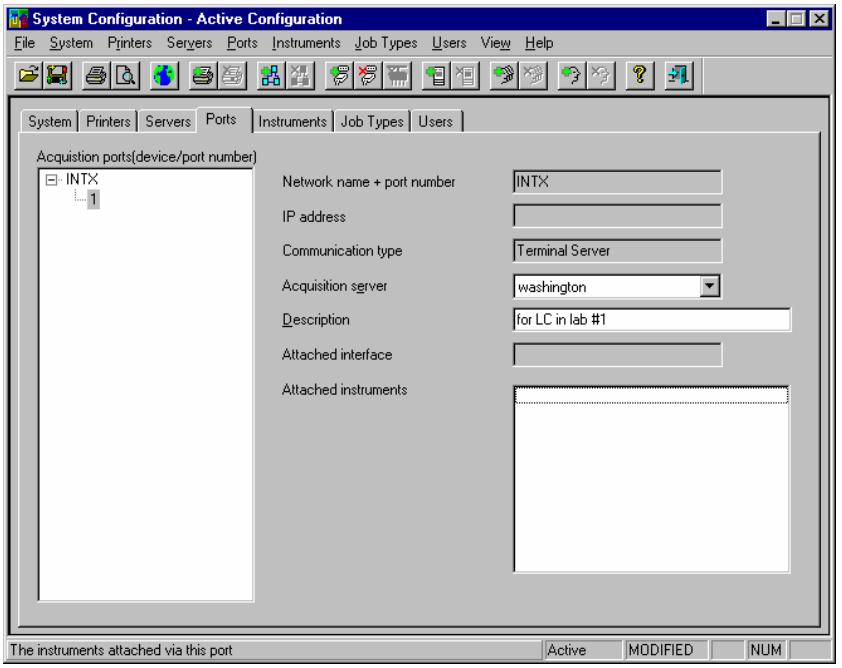
6. Enter a description of this port in the **Description** text box, if desired. The port description is intended to assist TotalChrom users in identifying this port during the physical instrument configuration process.

7. Add this port to the system and close the dialog box, or continue to add additional dotLINK's:

   - To add this port to the system without closing the dialog box, choose Apply. This adds the port to the system but does not clear the dialog box. You can then add another port to the system.
   - To add this port to the system and close the dialog box, choose OK.
   - A serial port can be added and configured similarly by selecting Serial as the Device type and entering 1 or 2, as appropriate, for the COM port number.

Ports Tab Display

The following example shows a TotalChrom Ports tab in System Configuration.



The Acquisition Ports list displays all configured acquisition ports. The device names and port numbers are displayed in a hierarchical tree format, similar to the directory display in the Windows Explorer. To access a shortcut menu of functions, right-click anywhere in the Acquisition Ports list.

When you select a specific port number from the acquisition ports list, you can display detailed configuration information on the port and any devices that are attached to the port is displayed.

- **For Client Server only:** You can change the acquisition server for a terminal server port by selecting the desired server from the Acquisition Server list.
- You can change any port description by modifying the data in the Description field.
- To change any other configuration information about a port (such as its name or port number), you must delete the port, re-add it, and substitute the new information. See “Deleting an Acquisition Port” for information.

Chapter 3
Operation

The operation of the dotLINK Interface is directed via the TotalChrom software executing on the host computer. The manuals associated with the TotalChrom software provide detailed instructions on configuring and operating the dotLINK interface. The status of the dotLINK Interface is monitored through the use of the TotalChrom software.

Each standalone dotLINK provides a simple indication of its status using a set of LEDs located on the front panel (the Integral dotLINK only has one LED). During routine operation, these LEDs provide an indication of the activity on each Instrument Port, as described in “Status LEDs” below.

Status LEDs

After the completion of the Self-Test, when communication between the host computer and the dotLINK Interface occurs, the LEDs will blink. Each LED shows the status of a Serial port. There is a total of six LEDs in the standalone version and one LED in the Integral dotLINK version.

Green – represents no errors or problems, IPM loaded

Blinking Green – transmitting data on that serial port, no error

Yellow – represents programming algorithms active (configuring firmware for upgrading or downgrading)

Blinking Yellow –transmitting data on that serial port, with error

***NOTE**: The **F** LED will light green when dotLINK is on and blink to show CPU activity.*

Resetting dotLINK

Before reusing dotLINK with another IP address or a new instrument configuration, reset dotLINK as follows.

Removing IPMs

1. Using a non metallic stylus, press and hold the Reset button in for 10 sec. and release it.
2. Power cycle the dotLINK, by unplugging the power cord from the dotLINK and then plugging the power cord back into the dotLINK. (If you have an Integral dotLINK, power cycle the PerkinElmer Clarus GC by turning it OFF then ON.)

Resetting an IP Address

1. Using a non metallic stylus, press and hold the Reset button on the back of the dotLINK.
2. While holding the Reset button power cycle the dotLINK, by unplugging the power cord from the dotLINK and then plugging the power cord back into the dotLINK. (If you have an Integral dotLINK, power cycle the PerkinElmer Clarus GC by turning it OFF then ON.)

Updating dotLINK

***NOTE**: Only use a Type 10 USB key with WinCE compatible drivers to update dotLINK. If you have questions about the USB key, contact PerkinElmer.*

Updating dotLINK is performed using a USB key via the USB port on the back of the dotLINK. This Update capability enables you to change the version of the dotLINK firmware to either a new version or a previous version of the dotLINK software.

Checking the Software Version

Before updating the dotLINK, check and note the software version on the dotLINK box.

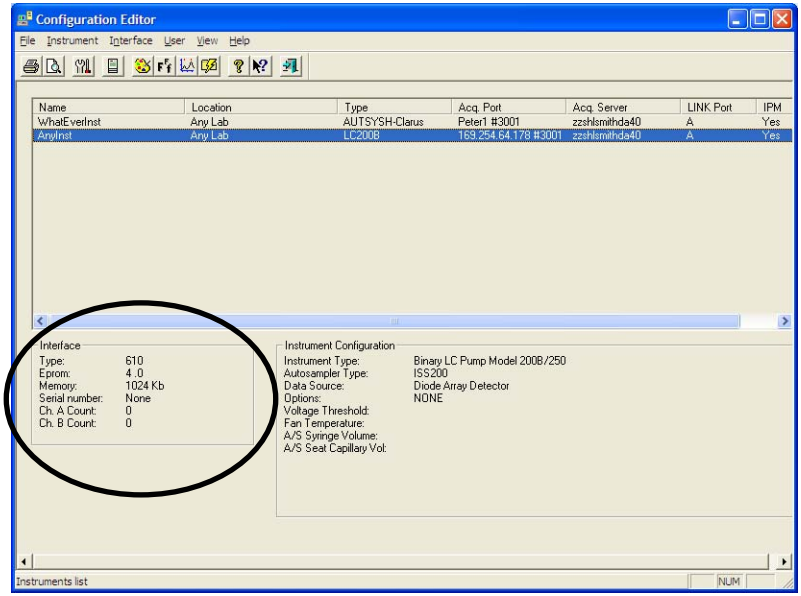
***NOTE:** When dotLINK is connected to TotalChrom it displays dotLINK as Interface Type 610 EPROM 4.x*

NOTE: *dotLINK* ***Must*** *Be Connected and Configured to TotalChrom.*

1. Refer to Chapter 2 in this manual if necessary.
2. In the TotalChrom Navigator, choose Instrument Configuration from the Build menu.

   The Configuration Editor opens.
3. Highlight the dotLINK that you wish to get the version from.

   The version will appear in the lower left corner of the Configuration Editor window.

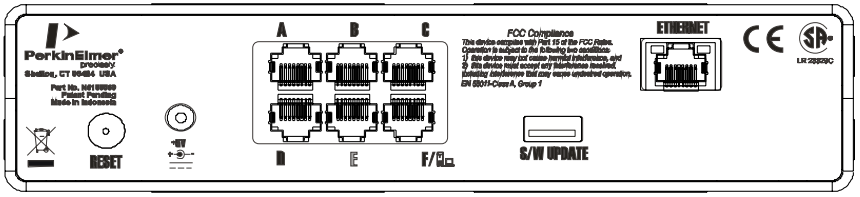


Updating dotLINK Software

To update the dotLINK software, follow this procedure:

1. Unplug the dotLINK power cord from the back of the dotLINK. (If you have an Integral dotLINK, turn OFF the PerkinElmer Clarus GC.)
2. Plug the Type 10 USB key with WinCE compatible drivers containing the updated dotLINK software into the S/W UPDATE USB port on the back of the dotLINK (or on the side panel of the PerkinElmer Clarus GC containing an Integral dotLINK) .
3. With the Updated USB key plugged into the dotLINK, plug the power cord back into the dotLINK. (If you have an Integral dotLINK, turn ON the PerkinElmer Clarus GC.)

Back View



4. With the USB key still plugged into the dotLINK and the dotLINK powered on, the update will now proceed automatically.

   Anytime within 90 seconds, the LED's on the front of the dotLINK will begin to blink as the update is being downloaded. The LEDs will remain blinking as long as the update is downloading. The download could take several minutes.

5. When the LED lights on the front of dotLINK stop flashing (this could take several minutes) all the update files have been transferred.

Verifying the Software Update

To verify that the dotLINK software has been successfully updated, follow this procedure:

1. With the Configuration Editor still displayed, choose the dotLINK that you just updated.
2. Choose Configure from the Instrument menu.
3. Click the plus sign + to expand the display to show the ports and select the data acquisition port to which the dotLINK is connected.
4. When the port is highlighted, click the **Query Port For Type** button.

   The version is displayed in the **Interface type** box on this dialog.
5. After verifying that dotLINK has been updated, click the cancel button.

Chapter 4
Technical Data

Functional Description

The descriptions in this section are not intended to be a technical definition of the dotLINK interface. Rather, they are provided for those situations in which a better understanding of the interface may aid in its application. The dotLINK is a dedicated processor system acting as an instrument interface. It will contain a processor board, Ethernet interface, RS-232 interfaces, a USB interface, on-board voltage regulators, reset button, and external LED indicators.

dotLINK Personality board

The dotLINK personality board carries the electronics necessary for the operation of the dotLINK. This allows the processor board to function as it supplies necessary connections and power.

The Ethernet chip is (the SMSC 91C111) is a non-PCI Ethernet Mac and PHY.

Connections

The dotLINK personality card has 6 serial ports, 1 Ethernet port, and 1 USB port. Both the Serial ports and Ethernet ports use an RJ-45 connector. The USB connector is a standard “A” type USB connector. The processor board is connected to the dotLINK personality board by using a fine pitch board to board connector.

Electronics

The dotLINK personality board has all necessary electronics including, Ethernet MAC and PHY, Ethernet Magnetics, 6 UARTS, RS-232 drivers, and power supplies.

Microprocessor

SH4 7760 highly integrated, 32-bit processor. This microprocessor has on-chip peripherals ranging from serial ports, to USB, to an LCD controller.

Permanent Storage

The processor board has 32MB of flash in which to store the Boot loader, OS, and application.

Temporary Storage

There is 32MB of SDRAM on the card engine.

Ethernet

Ethernet is provided by an SMSC 91C111 non-PCI Ethernet MAC and PHY. This provides one port of switchable 10/100 Base-T Ethernet.

Serial

There are three serial ports that are integral to the processor.

Troubleshooting Guide

If the dotLINK Interface is not operating correctly, power cycle it by unplugging the standalone dotLINK from the power then plug it back in, or if you have Integral dotLINK use the GC power switch. Wait a few seconds then switch the Power ON again. If one or more of the following symptoms occur, perform the described action.

1. Failure to Communicate With Host Computer (RS-232 Serial Communications)

RS-232 communication to the host computer is generally accomplished through a direct connection to the PC com port or Ethernet port, or through a terminal server attached to a network, thereby introducing several points for potential communication problems. A typical problem is inconsistencies in the configuration information that is provided to the terminal server, to the server software on the host computer and to the host application (*e.g.*, SYSCONFIG for TotalChrom C/S). Inconsistencies in this data can result in an Interface that does not respond. Problems can also arise from unexpected sources, such as an inappropriate request for a port connection from an application running on another network node.

If you are using a Terminal Server, disconnect the dotLINK from it and connect the dotLINK directly to the COM port or Ethernet port of the PC. Newer PCs can handle this connection with a regular cable. If you have an older PC you may need to connect a crossover cable between the PC and the dotLINK.

2. No Front Panel LEDs On (standalone dotLINK) or No GC Side Panel LEDs On (Integral dotLINK)

a. Check the power cord for proper connection to an operative power receptacle.

b. Try to configure the instrument, the LED may light when the configuration is complete.

3. LEDs Continue to Blink After Self-Test (standalone dotLINK only)

This indicates an error occurred during the self-test. Reinstall the dotLINK software using the USB update key.

4. All LEDs Blinking Rapidly -or- All LEDs Remain ON (standalone dotLINK only)

If the problem recurs after cycling power, contact the Service Department as described in “Warranty/Service” . If the problem does recur, there are two possible explanations.

- The dotLINK Interface has extensive shielding against electrostatic discharge (ESD), the integrity of which may have been compromised or bypassed. Make sure that nothing has been added to the Interface other than the approved connections.

- A second possibility is that some component is intermittently failing for reasons other than ESD degradation. Use the Interface only when its operation can be isolated and observed. If the problem is caused by a component failure, it should quickly become reproducible.

5. Power is ON But Self-Test Not Executed (standalone dotLINK only)

Reinstall the dotLINK software using a USB update key.

Return the Interface for service as described in “Warranty/Service”.

6. IcarusIPConfigure returns “No Reply Received”

DotLINK must be on the same subnet as the PC running the IcarusIPConfigure process. Try connecting a crossover Ethernet cable between dotLINK and the PC (some older PCs may require an Ethernet crossover cable if dotLINK is connected directly to the PC.

dotLINK Error Messages

The following errors may be reported by the host software. Following each error is a description of potential problems that may result in the error message. Additional IPM-specific errors are documented in the various IPM Installation Manuals.

0 No error occurred.

ERROR command was given and no error had occurred.

1File already exists.

A Task tried to create a file, but it already exists.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

2 File does not exist.

A Task tried to access a non-existent file.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

3 PCB is already open.

A Task tried to open a Pipe Control Block that was already being used.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

4 File is already open.

A Task tried to open a file that was already open.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

5 File is protected (read only) !

A Task tried to write to a file that is read only.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

6 PCB has no open file. No file was open.

A Task tried to read from or write to a file that had not been opened yet.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

7 File not open for write.

A Task tried to write to a file that had not been opened yet.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

8 File not open for read.

A Task tried to write to a file that had not been opened yet.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

9 Illegal calling parameters.

A Task tried to write to a file that had not been opened yet.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

10 Ran out of memory.

dotLINK is not supposed to begin a run if there would not be enough space to hold all the data.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

11 Ran out of directory entries.

dotLINK has a limit of 512 files. This error could result from a lot of very short runs.
Probably result of connecting too many instruments to dotLINK.
Could be result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

12 Ran out of Task Control Blocks.

This is probably the result of a task which creates new tasks but fails to return Task Control Blocks to system when done. May require that the rogue task execute several times before error occurs.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

13 Memory Pool does not exist for this file.

This error should never occur.

14 Unexpected end of file or device timed-out.

Probably result of communications failure via Serial Port.
Could be result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

15 Ran out of Pipe Control Blocks.

This is probably the result of a task which requests Pipe Control Blocks from System but fails to return them when done. May require that the rogue task execute several times before error occurs.
Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

16 Pipe Control Block not assigned to Task yet.

Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

17 Illegal filename.

Illegal characters were given in a filename.
Probably result of bug in Host control program.
Could be result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

18 File is erased.

19 This is a DEVICE not a file.

An operation was attempted on a device that only applies to a file.

20 File is too large.

This error results if you try to download an IPM that is larger than 16K bytes.
Probably result of bug in Host control program.
Could be result of a corrupted IPM file at Host computer.

21 BIN failed verification during write operation.

When you download an IPM, dotLINK always verifies that it got written correctly. If verification fails then this error would result.
Probably result of missing SRAM chip(s).

Could be result of defective SRAM chip(s).
Could be result of bug in Host control program.

22 Syntax error on command line.

Although dotLINK recognized the command, the parameters on command line do not make sense.
Probably result of bug in Host control software.
Could be result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

23 Cable not connected.

Probably result of cable not plugged into dotLINK port.
Could be result of an improperly wired RS-232 cable.

24 STOP command was given.

The STOP command does not apply to instrument control and thus should never be issued to an IPM.
Probably result of bug in Host control software.

25 Binary data not allowed here.

Probably result of bug in Host control software.

26 Not allowed in an INVOKE file.

Probably result of bug in IPM.
Could be result of corrupted IPM.
Could be result of bug in dotLINK OS EPROM.

27 BIN library is not compatible.

Probably result of using an out of date dotLINK EPROM or an out of date IPM.
Could be result of corrupted IPM.

28 BIN library is corrupted or not available.

Probably result of corrupted IPM.

29 Command line parameter is out of range.

Probably result of bug in Host software.
Could be result of bug in IPM or dotLINK EPROM.

30 BIN module not found in any of the libraries.

dotLINK could not find the IPM given in the INSTALL command.
Probably result of bug in Host software.

31 Device expected here, not file.

An operation was attempted on a file that is only allowed for a device, such as setting Baud rate with the MODE command.

32 Illegal character found in string.

Probably result of bug in IPM or dotLINK EPROM.

33 BIN is in use.

This error results if the Host computer tries to erase (BINERASE) or download to (BINCOPY) an IPM while it is in use (still INSTALLED).
Probably result of bug in Host software.

34 Circular input buffer overflowed.

Probably result of data arriving at port before the IPM was installed.
Could be result of bug in IPM.

35 Instrument does not respond.

Probably result of instrument being turned off.
Could be result of disconnected RS-232 cable.

36 Command is out of sequence.

This error results when certain commands are given before prerequisite commands are given.
Probably result of bug in Host software.

37 Interrupt not serviced fast enough.

Too much data arrived at instrument port for the CPU to handle.
Probably result of bug in dotLINK EPROM or bug in IPM.

38 Handle does not exist.

Probably result of bug in Host software.

50 Command not recognized.

Probably result of bug in Host software.
Could be result of corrupted IPM.

51 Record is too long for buffer.

Probably fault of RS-232 communications.

52 Ran out of Handles.

This is probably the result of a task that asks for handles from the dotLINK Operating System, but neglects to give them back when done with them.
Probably result of bug in IPM.

53 Ran out of Chores.

This is probably the result of a task that asks for chores from the dotLINK Operating System, but neglects to give them back when done with them.
Probably result of bug in IPM.

54 Extra Acknowledgement was received.

Results when dotLINK receives a packet protocol acknowledgement it was not expecting.
Probably result of bug in Host software.

60 Communications error.

Probably result of incorrect Baud rate.
Could be result of noise on RS-232 line.

61 Instrument reports an error.

Probably result of a problem at the instrument.
Could be result of an improper configuration.
The instrument that dotLINK is controlling has reported an error.
The error message is instrument specific. Refer to the IPM Installation Manual for further details.

62 IPM was already installed.

An INSTALL command was issued when an IPM had already been installed at that port.
Probably result of bug in Host software.

63 Parameter cannot be changed in this mode.

This error typically occurs when the host system attempts to send a non-setpoint parameter while the chromatograph is in the midst of a run.

64 This is a read only parameter.

This error typically occurs when the host system attempts to change a parameter that cannot be edited.

65 dotLINK has not taken control of the instrument yet.

Many instrument commands require that the instrument be seized.
This error results if SEIZE command was not issued first.
Probably result of bug in Host software.
Could be result of someone releasing control of instrument with dotLINK-TALK and then restarting the Host software.

66 Autosampler not installed.

Probably result of improper configuration.

67 Data segment has not been released with OC command.

Probably result of bug in Host software.

99 The subroutine that was called is not finished yet.

Probably result of bug in IPM.

255 Fatal system error.

This error will result on recovery from a Fatal System Error.
A Fatal System Error is signified by all of the LEDs blinking. Follow the Reset Procedure to have dotLINK recover (reset itself). Afterwards, an error 255 will be obtained. Please write down the register values reported with this error so factory engineers can trace the cause of the malfunction.

Warranty/Service

If repair is required please contact your local PerkinElmer service office.

Specifications

Dimensions:

dotLINK Box: 8.0 L x 4.0 W x 2.0 H (in.)

203.2 L x 101.6 W x 50.8 H (mm)

Power Supply:

3.3 L x 1.8 W x 1.3 H (in.)

85.0 L x 46.0 W x 33.0 H (mm)

Mass (Weight):

dotLINK Box: 0.652 kg (23 oz.)

Power Supply: 0.136 kg (4.8 oz.)

Power Supply: Input: 100 – 240 VAC ± 10%, 50/60 Hz ±1%, 0.3 A max. current

Output: +5 VDC, 2 A maximum

Temperature (Indoor use only):

	+10° to +35° C (operating)
	+5° to +40° C (safe operating) -20° to +60° C (storage, non-operating)
Altitude:	0 to 2,000 meters (operating)
	0 to 12,000 meters (non-operating)
Relative Humidity:	20% to 80% (non-condensing)
Pollution Degree:	The dotLINK will operate safely in environments that contain nonconductive foreign matter up to Pollution Degree 2 in EN/IEC 61010-1.

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WEEE Instructions for PerkinElmer Products

or

A label with a crossed-out wheeled bin symbol and a rectangular bar indicates that the product is covered by the Waste Electrical and Electronic Equipment (WEEE) Directive and is not to be disposed of as unsorted municipal waste. Any products marked with this symbol must be collected separately, according to the regulatory guidelines in your area.

The objectives of this program are to preserve, protect and improve the quality of the environment, protect human health, and utilize natural resources prudently and rationally. Specific treatment of WEEE is indispensable in order to avoid the dispersion of pollutants into the recycled material or waste stream. Such treatment is the most effective means of protecting the customer's environment.

Requirements for waste collection, reuse, recycling, and recovery programs vary by regulatory authority at your location. Contact your local responsible body (e.g., your laboratory manager) or authorized representative for information regarding applicable disposal regulations. Contact PerkinElmer at the web site listed below for information specific to PerkinElmer products.

Web address: **http://www.perkinelmer.com**

Customer Care: **1-800-762-4000 (inside the USA)**
(+1) 203-925-4602 (outside the USA)

0800 40 858 (Brussels)
0800 90 66 42 (Monza)

Products from other manufacturers may also form a part of your PerkinElmer system. These other producers are directly responsible for the collection and processing of their own waste products under the terms of the WEEE Directive. Please contact these producers directly before discarding any of their products.

Consult the PerkinElmer web site (http://www.perkinelmer.com) for producer names and web addresses.