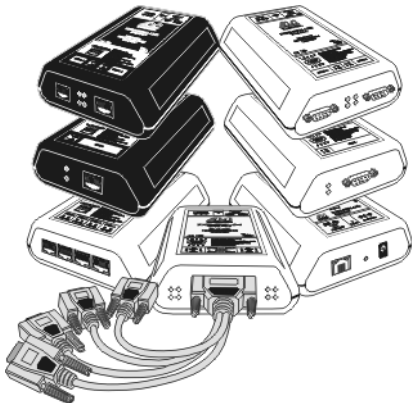# LAVA Ether-Serial Link One/Two/Four Port Quick Installation Guide

Getting Started

Congratulations on your purchase of a LAVA Ether-Serial Link. Ether-Serial Links connect serial devices to Ethernet networks. Any serial device—POS equipment, factory machinery, monitoring hardware, or security devices, for example—can send its information to the Ether-Serial Link. The Ether-Serial Link places the serial data in a TCP/IP wrapper and sends it out its Ethernet port. Data moving the other direction, from the Ethernet side of the Ether-Serial Link to the serial device, undergoes the same process in reverse. LAVA Ether-Serial Links use industry-standard hardware interfaces and are supported in Windows® NT4, Windows®2000, Windows® XP, Windows® 2003, Linux, and QNX.

With a LAVA Ether-Serial Link, you can:

- Network serial devices
- Make devices available to multiple users
- Manage multiple serial devices from a single PC
- Eliminate long dedicated serial runs
- Stop using costly PCs as dedicated serial port servers
- Remotely access and control serial devices
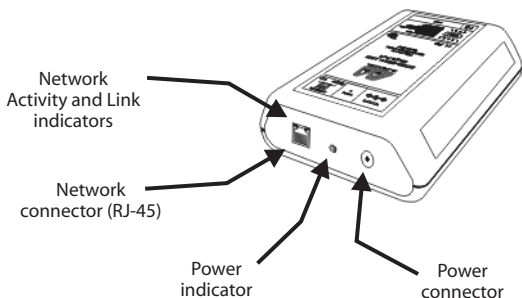- Eliminate long-distance phone-modem charges

Included with your package, you should have the following:

- LAVA Ether-Serial Link
- Power supply
- Quad DB-9 cable (4-DB9 Cabled version only)
- Installation diskette
- Quick Installation Guide
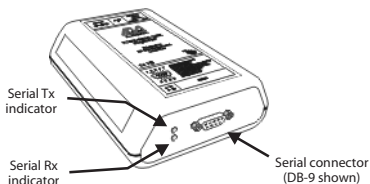
(2) **Hardware Setup**

1. Connect the power supply to the Ether-Serial Link and to AC power.

2. The power (red) LED will light to indicate that the unit is receiving power.

3. Connect a network cable to the Ethernet RJ-45 jack of the Ether-Serial Link. The other end of the network cable can be attached to either:

   • an Ethernet hub or switch, using a length of standard Ethernet network cable

   • a host PC directly, using an Ethernet cross-over cable.

Network
Activity and Link
indicators

Network
connector (RJ-45)
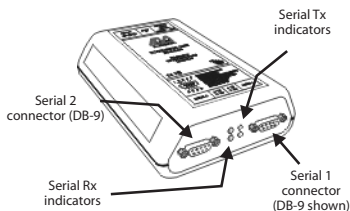
Power
indicator

Power
connector

Network status is indicated by two LEDs on the RJ-45 connector. The left (yellow) LED indicates network activity. It is on by default, turning off when network activity occurs at the Ether-Serial Link. The right (green) LED indicates a network link. It is off by default, but lights when a network link exists.

3

4. Connect a serial device to the Ether-Serial Link.

Serial port activity is indicated by two status LEDs per port. The yellow LED lights when the serial port is transmitting data. The green LED lights when the serial port is receiving data.

Serial Tx
indicator

Serial Rx
indicator

Serial connector
(DB-9 shown)

Single Port

Serial Tx
indicators

Serial 2
connector (DB-9)

Serial 1
connector
(DB-9 shown)

Serial Rx
indicators

Dual Port

④ <u>**Configuration**</u>

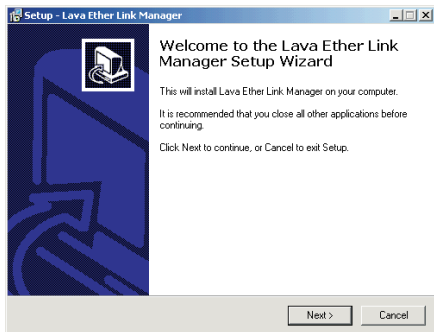Software installation and configuration consists of the following:

A. Running the Ether Link setup software
B. Configuring network settings
C. Activating and deactivating Ether Link ports
D. Optional advanced port configuration
E. WAN configuration
F. Upgrading software

<u>A. Running the Ether Link setup software</u>

The installation diskette has files to install Ether Link drivers on your PC and to detect Ether Links on your network. To run the installation software, insert the installation diskette and run "Setup.exe". The Setup Wizard will ask you to supply basic installation information.

The Setup Wizard will finish by opening the Lava *Ether Link Manager*. By default the *Ether Link Manager* will display Lava Ether Link devices that it has detected on your network.

Before Proceeding: The Ether-Serial Link is factory preset with an IP address of 192.168.0.35. If this IP address cannot be used on the network (it may already in use, for instance), do not initially connect the Ether-Serial Link to the network. Instead, either:

1) connect the Ether-Serial Link to a network segment that is not already using the Ether-Serial Link default IP address for another device or,

2) connect the Ether-Serial Link directly to a host PC using an Ethernet crossover cable.

Follow the procedure described in the "Configuring network settings" section of this manual to set the IP address to a usable address for the network onto which the Ether-Serial Link will be installed.

B. Configuring network settings

The Lava *Ether Link Manager* displays Ether Link information in a Windows Explorer-like interface. Any Lava Ether Links that are discovered on your network are displayed in the "Ether-Links Near Me" branch of the "My Ether Link Network" tree.

Ether Link devices installed on your network will need unique IP addresses. These can be set by using either the *Ether Link Manager,* a web browser, or a Telnet client.

The factory default network settings for the Ether-Serial Link are:

IP address:	192.168.0.35
Subnet mask:	255.255.255.0
Gateway address:	0.0.0.0
Name:	[empty]
Workgroup:	[empty]
DHCP detection:	disabled

⑥

Configuring Ether Link network settings using the **Ether Link Manager**

To set an Ether Link's network settings using the *Ether Link Manager*, right-click on it in the Ether Link tree and select "Properties". If the Ether Link is accessible on the network, a dialog will open that allows you to give it a new name, IP address, subnet mask, and gateway address. If your network assigns IP addresses using a DHCP server, DHCP detection can also be enabled.

The *Ether Link Manager* can also auto-configure a link when a DNS server is used.

Changes made using the *Ether Link Manager* will be updated to both the local PC and to the Ether Link.

NOTE: Changing the network settings of an Ether Link device may make that device unavailable to other stations that have activated a connection to that device using older network settings.

NOTE: The *Ether Link Manager* is the recommended method of changing all Ether-Serial Link settings.

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00 02 31 Properties

Device Settings

Name: 00 02 31

Network Settings:
- IP Address: 192 . 168 . 0 . 35
- Netmask: 255 . 255 . 255 . 0
- Gateway: 0 . 0 . 0 . 0
- DNS IP: 0 . 0 . 0 . 0
- ☐ Use DHCP
- HTTP port: 78
- Telnet port: 22

Device Information:
MAC Address: 00:04:3b:00:02:31
Revision Code (Date): TAP 1.00.00 (06/07/2005)

Host Information:
Host IP: 192.168.0.13
Host Subnet Mask: 255.255.255.0
Host Gateway: 192.168.0.201
DNS Server IP: 192.168.0.201   [AutoConfig]

[OK]   [Cancel]   [Apply]

Configuring Ether Link network settings using a web browser

To set an Ether Link's network settings using a web browser, open the browser and enter the IP address of the Ether Link into the browser's location bar. The embedded web server running on the Ether Link will display the opening screen of the Ether-Serial Link configuration menu.

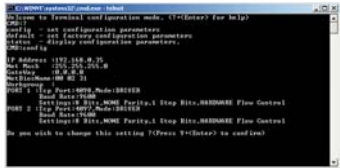Choose the setting you wish to change.

In the configuration screen that appears, enter the network settings you wish for that Ether Link. Once the new values are entered and accepted, the Ether-Serial Link will reboot to implement the new network settings.

Changes made using a web browser will be updated to the Ether Link but not to the local PC.

NOTE: Changing the network settings of an Ether Link device may make that device unavailable to other stations that have activated a connection to that device using older network settings.

Configuring Ether Link network settings using a Telnet client

To set an Ether Link's network settings using a Telnet client, open a Telnet session to the IP address of the link whose settings you want to change. Details on Telnet connection can be found in the "telnet.pdf" file on the Installation diskette.

Note on subnet configuration

If the Ether-Serial Link is on a different subnet from a client station that is attempting to access it, the Ether-Serial Link will be visible in an instance of the LAVA Ether Link Manager running on the client station, and its ports can be activated on that client station, but applications running on the client station will not be able to open a serial port on the Ether-Serial Link.

For example, if the IP address of the Ether-Serial Link is 192.168.0.35 and the IP address of the client station is 192.168.1.1, the two devices are on different subnets (as indicated by the difference between the "0" and the "1" in the third portion of the two IP addresses).

Two solutions exist:

• change the subnet of the either the Ether-Serial Link or the client station so that they are both on the same subnet or,
• change the subnet mask of the Ether-Serial Link to encompass both subnets. By default, the Ether-Serial Link has its subnet mask set to 255.255.255.0. This setting excludes all but the fourth portion of the IP address when assessing IP addresses. In the example above, a subnet mask of 255.255.0.0 will include the Ether-Serial Link in both subnets.

C. Activating & Deactivating Ether Link ports

Ether Link ports that have been detected as existing on the network are not initially activated for your PC. To access an Ether-Serial port it must be activated. You may wish to activate on a given computer some, all, or none of the Ether Link ports that are available on the network. To activate a particular port, right click on the port where it is displayed in the right panel of the *Ether Link Manager*, and select "Activate". To activate all ports on a particular Ether-Serial Link device, right click on that device in the left panel of the *Manager* and select "Activate All".

Before activation, Ether Link ports only appear under the "My Ether Link Network" branch of the Ether Link Desktop. Once they have been activated for a local system, they will also appear under "My Computer" in the *Ether Link Manager*.

To deactivate ports individually, right-click on the port where it is displayed in the right panel of the *Ether Link Manager*, and select "Deactivate". To

deactivate all ports on a particular Ether-Serial Link device, right click on that device in the left panel of the *Manager* and select "Remove All".

Icons depict the states of Ether Link devices and ports as follows:

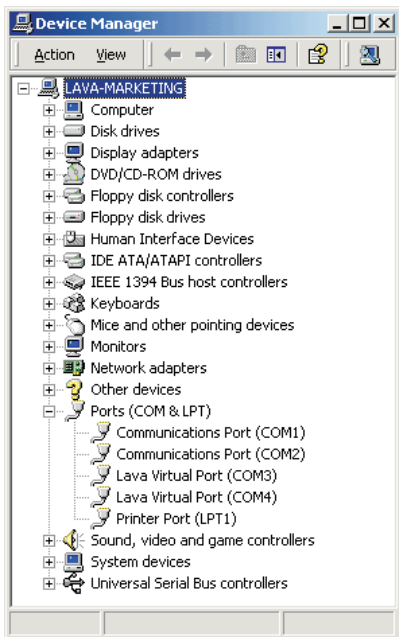| Device available on the network	Device not available on the network	Under "My Computer": Port available Under "My Ether Link Network": Port activated locally	Under "My Computer": Port not available Under "My Ether Link Network": Port not activated locally

Activated ports appear in Windows' Device Manager under the "Ports (COM & LPT)" branch as "Lava Virtual Port" ports, with their associated COM numbers.

Activating and deactivating Ether Link ports on one computer does not affect the operation of those ports on other systems.

D. Optional advanced port configuration

Ether-Link ports that have been activated on your PC can generally be used immediately without further configuration. Additional configuration options can however be accessed through the *Lava Ether Link Manager*. These configuration options are discussed in detail in the "advanced.pdf" readme file on the Installation diskette.

Advanced settings include passwords; port binding options that can associate a port with a specified IP address, NetBios name, or MAC address; port modes for raw server or client connection, Ethernet modem operation, RFC 2217 communications, data connect operation, or RAS server communications; and a COM port number reassignment feature.

E. WAN activation

Activating an Ether-Serial Link on a WAN is be done in two different ways, depending on the network location of the Ether-Serial Link:

- • Ether-Serial Link located externally – Ether-Serial Link is directly accessible on the Internet.
- • Ether-Serial Link located internally – Ether-Serial Link is located behind a gateway or router and is not directly accessible.

Configuration & installation when Ether-Serial Link is external:
NOTE: All steps assume the Ether-Serial Link has already been configured and is working on a public IP address.

1. Obtain the IP address of the Ether-Serial Link.
2. Open the embedded web page of the Ether-Serial Link from your browser by typing in its IP address in the address bar.
3. Ensure that the port(s) to create the WAN activation on are configured for "Driver Mode".
4. Record the TCP port number of the port(s) to be accessible.
5. Close your browser.
6. Open the LAVA *Ether Link Manager* and click on the "WAN Activation" button, located on the main toolbar.
7. This will open the "WAN Port Settings" window.
8. Enter the IP address of the Ether-Serial Link and the TCP port number of the first port you wish to create the WAN activation on, then click OK.
9. This will create a new COM port that you can configure and connect to as you would a standard Ether-Serial Link COM port. Verify this by clicking on "My Computer" in the LAVA *Ether Link Manager*. In the right hand pane you should find a new port titled "LAVA Ether-Serial Port (COMXX)" resembling the WAN activation icon.

10. Repeat step 8 for any additional WAN activations you wish to create.

Configuration & installation when Ether-Serial Link is internal:
NOTE: All steps assume the Ether-Serial Link has already been configured and is working on a public IP address.

1. Obtain the IP address of the gateway/router that the Ether-Serial Link is located behind.
2. To configure the Ether-Serial Link yourself you will need to reconfigure the gateway/router to allow HTTP port redirection to the Ether-Serial Link to access the embedded web page of the Ether-Serial Link. To do this please consult either your system administrator or the technical documentation that accompanied your gateway/router. If you would rather not turn on HTTP port redirection you can easily have another user with direct access to the Ether-Serial Link perform the next three steps.
3. Open the embedded web page of the Ether-Serial Link from your browser by typing in its IP address, or the IP address of the gateway/router, in the address bar.
4. Ensure the port(s) to create the WAN activation on are configured for "Driver Mode".
5. Record the TCP port number of the port(s) to be accessible.
6. Close your browser.
7. With the IP address and TCP port number(s) of the Ether-Serial Link in mind, enable port forwarding on your gateway/router for each port to be made remotely accessible. This will require you to create a port forwarding association between the IP address/TCP ports on the Ether-Serial Link and the TCP ports on the gateway/router (i.e. A rule specifying that all incoming connections received by the gateway/router on TCP port x will be forwarded internally to IP address 192.168.0.35 and x). To do this please consult either your system administrator or the

technical documentation that accompanied your gateway/router.

NOTE 1: Every TCP port that is accessible externally MUST be unique and may not be shared between multiple internal targets.

NOTE 2: Certain gateways may allow for port redirection (i.e. Any external available TCP port may be redirected to any IP address and TCP port on the network). If however your gateway doesn't support port redirection, then all external TCP port connections will need to be matched to the exact same internal TCP port number. As a result, if you wish to make multiple devices accessible over the gateway/router then you will be required to reconfigure the Ether-Serial Link to prevent multiple Ether-Serial Links from using the same TCP port numbers.

8. Open the LAVA *Ether Link Manager* and click on the "WAN Activation" button, located on the main toolbar. The "WAN Port Settings" window will open.
9. Enter the IP address of the gateway and the externally accessible TCP port of the first port you wish to create the WAN activation on, then click OK.
10. A new COM port will be created that you can configure and connect to as you would a standard Ether-Serial Link COM port activation. To verify this simply click on "My Computer" in the LAVA *Ether Link Manager*. In the right hand pane you should find a new port "LAVA Ether-Serial Port (COMXX)" resembling the WAN activation icon.
11. Repeat step 9 for any additional WAN activations you wish to create.

F. Upgrading Software

New versions of Ether-Serial Link software and firmware may be found at www.lavalink.com.

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