Wireless Networking for MicroEDGE® Pro CNCs

Field Service Bulletin

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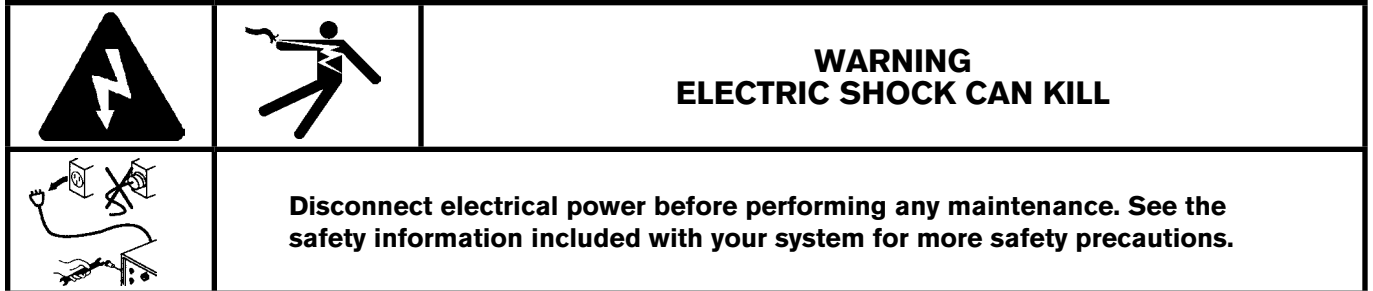
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		WARNING **ELECTRIC SHOCK CAN KILL**
	Disconnect electrical power before performing any maintenance. See the safety information included with your system for more safety precautions.	

Introduction

The Hypertherm MicroEDGE Pro CNC supports the addition of wireless networking for part downloads, Remote Help, and other network tasks. This Field Service Bulletin applies to kit number 228836 and provides instructions for:

- Installing the 141482 wireless network card into the motherboard of the MicroEDGE Pro.

- Mounting the antennas on a secondary CNC enclosure, if needed, and routing the antenna wiring to the wireless card.

- Verifying that Windows® has connected to the network card and wireless network.

- Mapping a network drive in Windows and in Phoenix.

Materials and tools

- #2 Phillips screwdriver

- Drill with 6.5 mm (.25 inch) bit (for installing antennas on the CNC enclosure)

- 8 mm (5/16 inch) wrench

The following procedures require operating knowledge of Hypertherm's computer numerical controls (CNCs). If necessary, refer to the system's instruction manual for detailed information on the CNC.

Kit 228836 Contents

- (1) 141482 wireless network card with antennas.

- (1) 229919 USB flash drive with Netis® driver.

- (2) 223251 3 m (10 ft) coaxial cable extensions with bulkhead-mount connectors.

NOTE: The CD enclosed with the wireless network card is not needed for this installation. The hardware drivers are on the USB flash drive stick provided with the kit.

Installing the Wireless Network Card

	STATIC ELECTRICITY CAN DAMAGE CIRCUIT BOARDS
	• **Put on a grounded wrist strap before handling PC boards.**

1. Remove AC power from the CNC.

2. Open the MicroEDGE Pro enclosure by removing the eight screws, then removing the cover.

3. Remove the screw holding the metal plate on PCI slot 2. Keep the screw and discard the metal plate.

4. Install the wireless network adapter into PCI slot 2 on the motherboard (second PCI slot from the CPU). DO NOT install the network card into PCI slot 1.

PCI 2
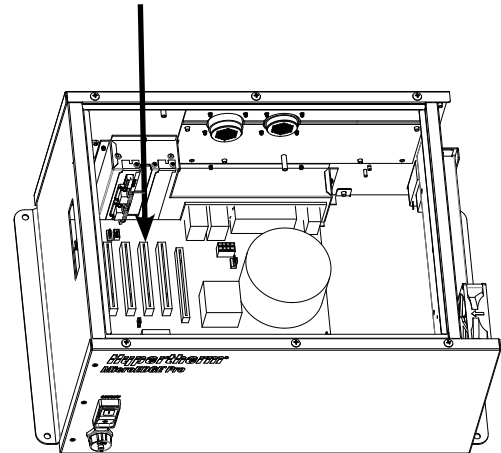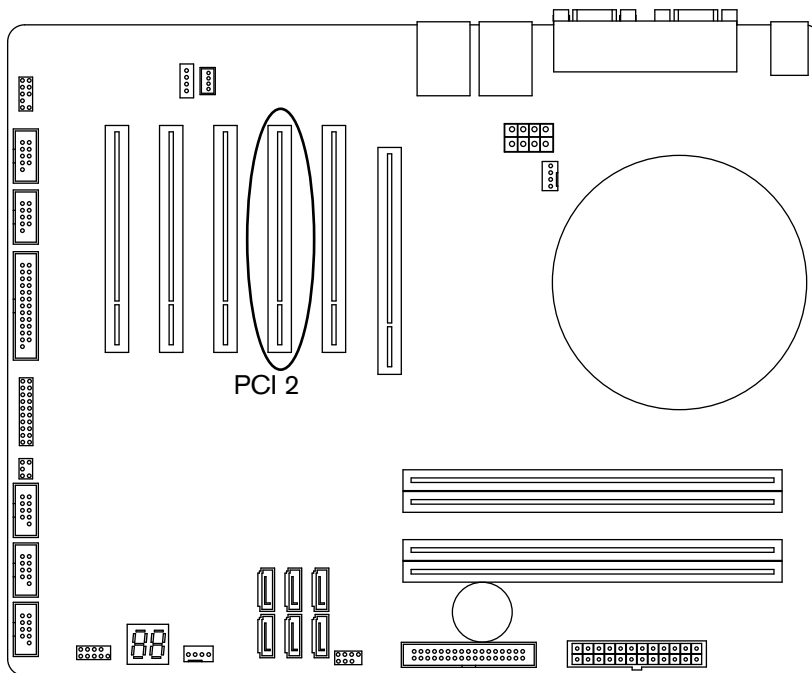
5. Secure the network card to the MicroEDGE Pro using the screw from the metal plate that was removed earlier.

6. Replace the cover on the MicroEDGE Pro and replace all screws.

7. Connect the antennas onto the back of the network card. Adjust their angles so that they click into the 45 degree position.

Note: If the MicroEDGE Pro is installed within a secondary enclosure, continue to the next section for information on how to route the antennas with the 3 m (10 ft) extension cables.

Preparing to install the antenna

Follow these guidelines before mounting the antennas on a CNC enclosure:

- The antennas must exit to room air, preferably without metallic obstructions blocking signal transmission (such as equipment cabinets, circuit breaker panels, transformers, etc).

- Antennas should not be located near the floor.

- Use a plastic protective barrier if necessary to prevent accidental bumping of antenna orientation.

- When mounting the antennas on a secondary CNC enclosure, you will need to drill two holes to accommodate the threaded, bulkhead-mount antenna connectors. Be sure the connectors make contact with the metal on the enclosure, or use a lock washer to penetrate any coating on the enclosure. Metal-to-metal contact ensures that the antennas are grounded to the chassis.

- The antenna connections are not waterproof.

Installing the antenna

When the MicroEDGE Pro is installed within a secondary enclosure, the antennas may be extended up to 3 m (10 ft) from the wireless network card. When using the 3 m antenna extension cables, only 2.4 GHz frequency can be used at the router or access point.

- Make sure not to twist or kink the extension cables.

- The extension cables should reside entirely inside the enclosure. Only the antenna itself should be on the outside of the enclosure.

- Route the cable away from noise generating sources such as power supplies, motor amplifiers, and AC circuits.

- Use a service loop of at least 10 cm (4 in) diameter to coil excess coaxial antenna cable.

1. After selecting a suitable antenna mounting location, drill two 6.35 mm (.25 inch) holes into the secondary CNC enclosure as shown below (drawing not to scale).

   - Prevent metal fragments from entering the enclosure.

   - Remove any metal burrs on the inner and outer surface of the enclosure.

6.35 mm (.25 inch)
diameter

36 mm (1.4 inch)

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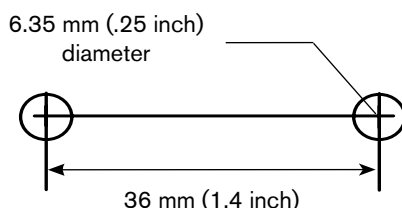
2. Remove the lock washer and nut from the bulkhead-mount of each cable end.

3. Thread each bulkhead-mount cable end through a hole and secure it with the lock washer and nut tightened to 10 inch-pounds.

    ▪ Use an 8 mm (5/16 inch) wrench to tighten the nut to the enclosure.

    ▪ Verify that the antenna base makes contact with unpainted metal on the enclosure to ensure proper grounding.

4. Connect the antennas to the bases and orient them vertically.

5. Connect the cables to the coaxial connectors on the wireless network card.

    ▪ Finger-tip tighten the nut on each cable to the coaxial connector.

    ▪ Avoid twisting or kinking the cables.

    ▪ The entire extension cable should be within the CNC enclosure. Only the antennas are mounted on the outside of the enclosure.

Loading the wireless card driver

Load the driver from the USB flash drive if prompted.

1. Plug in the USB memory stick from the kit.

2. Plug in a USB keyboard.

3. Restore AC power to the CNC.

4. If the "Found New Hardware Wizard" message pops up, click Cancel. Do NOT interact with the pop-up.

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5. Load the driver as follows:

    a. Press ALT+F4 to exit Phoenix.

    b. Click the Windows Start icon (or the Windows key on the keyboard).

    c. Choose Windows Explorer > My Computer.

    d. Choose USB disk (E:).

       Note: Your drive letter may vary. Be sure to choose the USB disk.

    e. Locate and double-click on the 081333.exe file.

    f. Follow the prompts to install the driver.

    g. Wait for the pop-up "Install shield wizard complete" and then click finish.

    h. Restart the CNC for the driver to take effect.

Verifying the Wireless Network in Windows

The MicroEDGE Pro comes from the factory with the wireless network card drivers installed. To verify the wireless network in Windows:

1. Turn on the MicroEDGE Pro.

2. Choose Setups > Password and enter the Special Setups password.

3. Choose System > Network Tools. The Network Connections dialog opens showing all network connections.
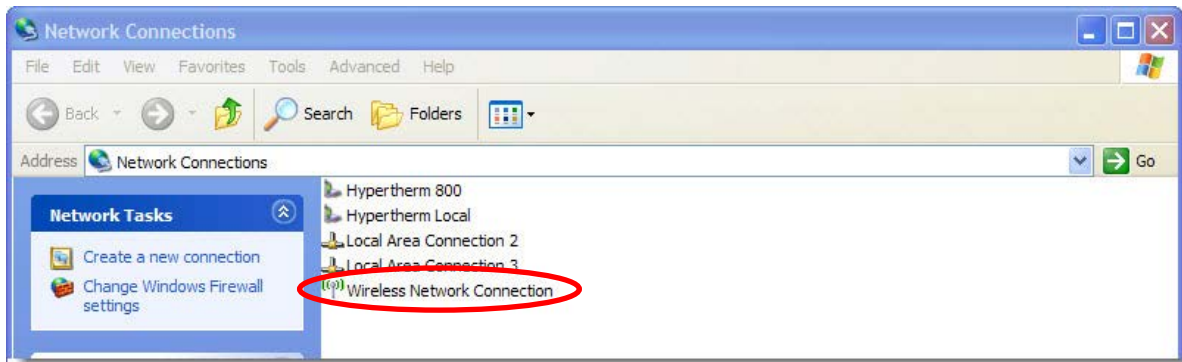
Disabling unused network connections

If you have a wired network that is set up for automatic configuration but is not connected, you must disable the adapter for this network to prevent connection delays for the CNC.

> **NOTE:** If you have a Hypernet connection, DO NOT disable it. Hypernet is used to communicate with a plasma system or the ArcGlide THC, but not with other computers on a network.

1. Press ALT+F4 to exit Phoenix.

2. Choose Start > Settings > Network Connections.

3. Right-click a network adapter that is not being used and choose Status. The status window for the adapter opens.

4. Choose Disable, then Close to disable the network adapter.
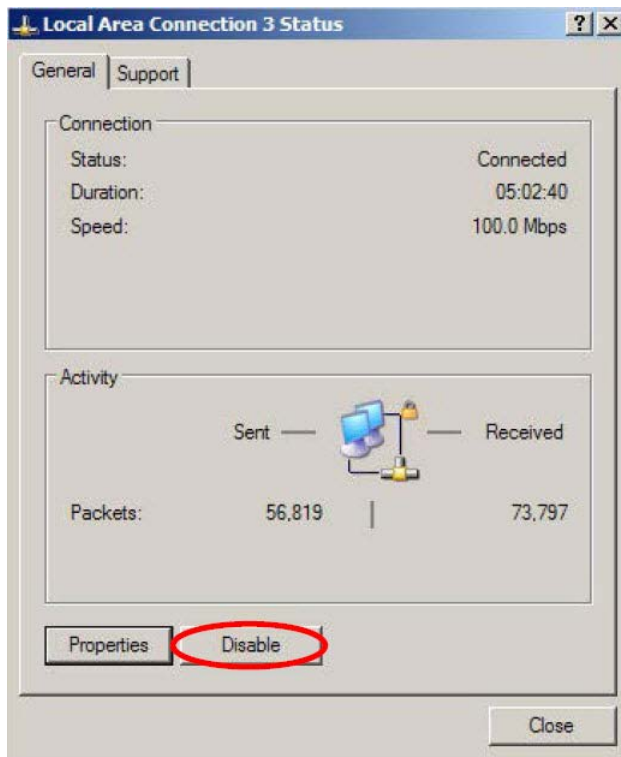
Mapping a Network Drive

Phoenix requires a network drive to be defined in Windows. After you define the network drive, you can add it as a folder in Phoenix.

Before you begin, connect a USB keyboard to the MicroEDGE Pro.

1. Press Alt+F4 to exit the Phoenix software.

2. Choose Start Menu > Windows Explorer > Tools > Map Network Drive.

3. Choose a drive letter, then the folder. Make note of the folder path. When you connect to the folder in Phoenix, you will need to enter the folder path.

4. Choose Reconnect at Logon.

5. Choose Finish to save the mapped network drive.
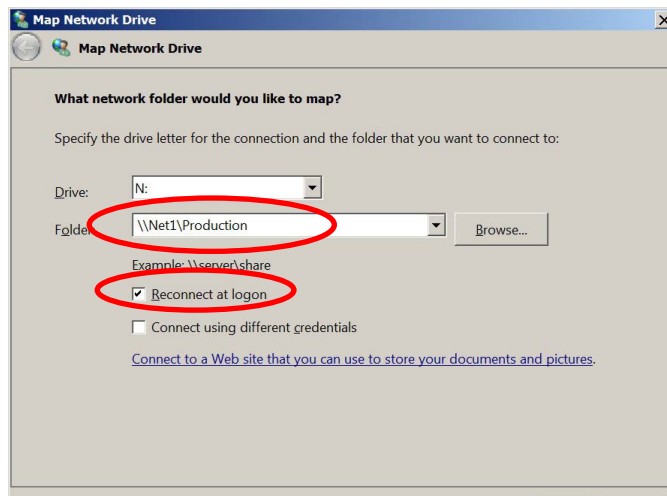
Adding a Folder in Phoenix

NOTE: The Add Folders feature must be enabled in the Special Setups screen before you can perform these steps.

1. Restart the Phoenix software.

2. From the Main Screen, choose the Files soft key.

3. Double-click the blue message to add a folder.

4. Choose Mapped Drive.

5. Enter a Drive Name. This is the name that appears in the Load Files list.

6. Enter the path to the folder that contains the files. The path is formatted \\servername\foldername.

7. Choose OK.
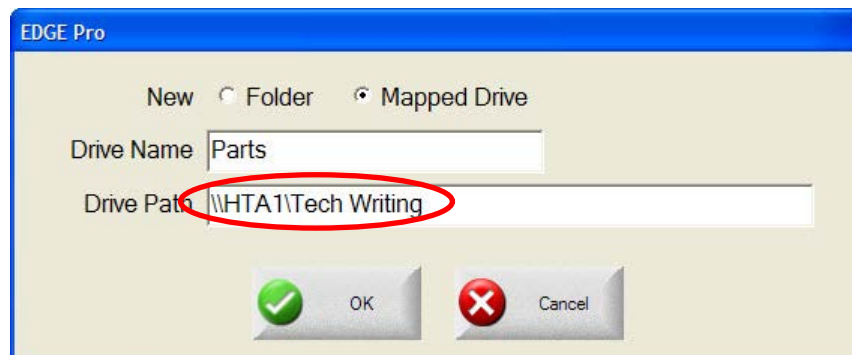
Wireless Troubleshooting

Follow these guidelines if you are experiencing problems using the wireless network on your CNC.

- The wireless network card requires a bus mastering slot on the motherboard. On the MicroEDGE Pro motherboard (141110), PCI slot 1 is *not* a bus mastering slot. Make sure the wireless card is installed in PCI slot 2.

- The wireless network card conforms to 802.11N and 802.11G standards and connects to either a wireless G or N local area network (LAN). It provides wireless G or better performance for part program downloads, remote help, or other network tasks.

    - An 802.11G wireless network can operate at reasonable speeds up to 38 m (125 ft) from the wireless router or access point, even if the path between the CNC and the access point is obstructed with a wall or door.

    - An 802.11N wireless network can operate at reasonable speeds up to 70 m (230 ft) from the wireless router or access point. However, 802.11N requires a clear line of sight between antennas.

    - When in doubt, use the 802.11G wireless network connection.

    Note: The network must be set to broadcast its SSID for it to be visible as a connection.

- Make sure the wireless network card appears in the Windows Device Manager under the "Network Adapters" heading, and does not have a yellow ! or ? next to it.

- Use the Windows Network Connections Manager to locate your router or wireless network access point. Choose Start, Settings, Network Connections.

- If the network connection wizard does not list any company wireless networks, check the network availability using a Windows XP laptop or other wi-fi device to verify the router or access point connection is available at that physical location.

- Signal strength diminishes with distance. A wireless network connection does not require 100% signal strength to be effective (shown as four solid bars on the screen). If the Network Connections Manager shows two or three signal strength bars, the network connection is reasonable.

- If the connection speed frequently dips below 24 Mbs or signal strength dips below two bars, move the wireless router or access point closer to the CNC, or add another access point closer to the CNC.

- For best network performance, minimize the number of clients on the wireless network.

- Avoid connecting slower wireless devices to the network (for example, 802.11B devices) as the entire network may downshift to that level of performance.

Contact your network administrator for additional support.