

Ethernet Interface

# Setup Guide



## Federal Communications Commission (FCC) Radio Frequency Interference Statement Warning

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Note

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 case the user will be required to correct the interference at his own expense.

### Information to the User

This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference to radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on, the user is encouraged to contact TPG immediately.

TPG is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by TPG. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

In order to ensure compliance with the Product Safety, FCC and CE marking requirements, you must use the power supply, power cord, and interface cable which are sold for use with this product or which meet the following parameters:

### Power Supply

UL Listed (QGGQ), Class 2 power supply with SELV (Secondary Extra Low Voltage), non-energy hazard output, limited energy source, input rated 100-240 Vac, 1.5/0.8 A, 50/60 Hz, output rated 24 Vdc, 2.3 A for 55 watt unit; 100-240 Vac, 2.0A, 50/60 Hz, output rate 24 Vdc, 3.125 A for 75 watt unit.

Use of this product with a power supply other than the TPG power supply will require you to test the power supply and TPG printer for FCC and CE mark certification.

### Communication Interface Cable

A shielded (360 degree) interface cable must be used with this product. The shield must be connected to the frame or earth ground connection or earth ground reference at EACH end of the cable.

Use of a cable other than described here will require that you test the cable with the TPG printer and your system for FCC and CE mark certification.

### Power Cord

A UL listed, detachable power cord must be used. For applications where the power supply module may be mounted on the floor, a power cord with Type SJT marking must be used. For applications outside the US, power cords which meet the particular country's certification and application requirements should be used.

Use of a power cord other than described here may result in a violation of safety certifications which are in force in the country of use.

### Industry Canada (IC) Radio Frequency Interference Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### Voluntary Control Council for Interference (VCCI) Radio Frequency Interference Statement

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

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### Web Site

<http://www.TPGprinters.com>

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## Ethernet terminology and default setup

For the printer to operate with Ethernet, a series of commands must be set within the printer. These commands can only be set through the host computer and are not configurable through the printer configuration menu.

Default setup instructions and sample Ethernet diagnostic printout are on the following page. Note the differences between an Ethernet and a standard RS-232C printout.

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### Ethernet Terminology

Before making command settings, review the following description of terms to fully understand their intended meaning.

**MAC address** a unique hexadecimal serial number assigned to each Ethernet network device to identify it on the network. Each printer communication board gets a unique number from TPG's assigned range of numbers. TPG numbers start with: 00:E0:70.

**IP address** a unique number that identifies each node on a network and to specify routing information. Each node must be assigned a unique IP address. The address is made up of two distinct parts: a network ID, which identifies the network; and a host ID, which is typically assigned by the administrator. These addresses are typically represented in dotted-decimal notation, such as 138.58.11.27. The default setting is: 192.0.0.192

**Net mask** a series of bits designed to "mask" certain portions of an IP address and is used primarily for subnetting. The standard netmask for a Class C network is 255.255.255.0, with the last octet (.0) directing the host to look there for the machine number. The rest (255) is the network number. The default setting is 0.0.0.0. The net mask is used to determine if a gateway is needed to reach an address.

**Gateway** a hardware or software set-up that translates between two dissimilar protocols. A gateway, even when the printer is on another subnet, is not always needed. The printer initiates no connection and obtains the gateway address from the host packets. The default setting is 0.0.0.0 (none)

**LP Daemon** an Ethernet protocol. The LP Daemon listens on port 515. Default is LP Daemon disabled.

**Telnet Daemon** a protocol for remote computing on the Internet. It allows a computer to act as a remote terminal on another machine, anywhere on the Internet. This means that when you telnet to a particular host and port, the remote computer (which must have a telnet server) accepts input directly from your computer (which must have a telnet client) and output for your session is directed to your screen. The telnet server listens on port 23. The default setting is enabled.

**Raw TCP/IP Port** enables the printer to listen for raw TCP/IP communications. Specifying this to zero will disable raw TCP/IP connections. Default value is 9001 enabled.

**BootP** a TCP/IP network protocol that lets network nodes request configuration information from a BOOTP "server" node. Use BootP to obtain the IP address at power-up. Default setting is disabled.

**DHCP** allows "leasing" of IP address for a limited time. If no IP address is found at start-up, the printer waits for two more minutes. If no address is found after two minutes DHCP will automatically set the default IP address. Default: enabled

## Ethernet Default Setup

To return the printer to the default settings, put the printer in the boot mode and hold down the feed switch until you hear the high-low-high tones (about 10 seconds).

The default settings are:

```

Bootp Disabled
DHCP Enabled
Default IP 192.0.0.192 (in use after 2 minute Bootp time-out)
Net mask of 0.0.0.0 (causes default mask of selected IP to be used)
LP Daemon disabled
Telnet Daemon enabled
Raw TCP/IP Port 9001 active
  
```

Whenever the printer is attempting to locate its IP address via Bootp or DHCP, or has the default IP address in use, the IP address can be set by pinging the printer. Do this by using the arp command to set a static MAC to IP mapping on your host. Then ping the printer by using the ping command. This will set the IP address to the address used in the ping command and stored for future use.

The printer can also be configured by letting the Bootp time-out using the default IP address (using the default IP address) when the printer is connected to a host on an isolated network. Setup commands can then be sent to the printer via TCP/IP port 9001.

```

*** A760 – Diagnostics Form ***

Model number       : A760-1125
Serial number      : A012451679

Boot Firmware
Revision           : V1.03
CRC                : FFDE
P/N                : 189-7600118A
Flash Firmware
Revision           : V1.05
CRC                : 7196
P/N                : 189-7600117A

H/W parameters
Flash Memory Size  : 1 Mbytes
Flash Logos/Fonts  : 320 kbytes
Flash User Storage : 0 kbytes
SRAM Size          : 256 kbytes
Head setting       : D
Paper Type Name    : Type 1, Version 0
Color Density Adj  : 100%
Max Speed          : 100 mm/sec
Max Power          : 55 W
Alternate Reset    : Disabled
Knife              : Enabled
Paper Low Sensor   : Disabled
MICR               : Enabled
MICR Dual Pass    : Disabled
MICR DC Offset    : 80
Check Flip        : Enabled

Comm. Interface
RX Buffer Size     : 4096
Interface type    : 10BaseT
Parameters
MAC Address       : 00:E0:70:00:50:2B
IP Address        : 10.1.2.10
Net Mask          : 0.0.0.0
Gateway           : 0.0.0.0
LP Daemon         : Disabled
Telnet            : Enabled
Raw TCP/IP Port   : 9001
DHCP              : Enabled
Inactivity Timeout : Enabled
Keep Alive Pings  : Disabled
On Error & Full   : Reject Data

Resident Code Pages : 437, 850, 852, 857, 858
                   : 860, 863, 865, 866
                   : 1252, 862, 737, 874

Logo(s) Defined   : YES
User Char(s) defined : NO
  
```

```

*** A760 – Printer Config Menu ***

This config menu allows you to set general printer
parameters

Sub-menus are entered and selections are made using
the Paper Feed Button

- short click : Feed Button is quickly depressed
                then released
- long click  : Feed Button is held down more than
                1 second then released

CAUTION !!
The settings are predetermined in factory and
should generally not be changed.
If you must change the settings do so carefully
to avoid changing other functions.

*****
* * * * * MAIN MENU * * * * *
* * * * *

Select a sub-menu :
- EXIT                -> 1 click
- Print Current Configuration -> 2 clicks
- Set Communication Interface -> 3 clicks
- Set Diagnostics Modes     -> 4 clicks
- Set Emulation/Software Options -> 5 clicks
- Set Hardware Options       -> 6 clicks
- Set Paper Type             -> 7 clicks

Enter code, then hold Button DOWN
at least 1 second to validate
  
```

**Sample diagnostic printout of an Ethernet printer**

Highlighted area shows Ethernet settings.

These settings can not be changed through the configuration menu and must be set by sending commands from the host. See commands, beginning on the following page.

To enter Printer Config Menu :

- 1) Flip DIP switch #1 down
- 2) Reset the printer, while holding the Paper Feed button down

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## Ethernet setup commands

The following commands are designed to set the required printer internal parameters for Ethernet operation. The commands can only be used in the Flash download (boot) mode.

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### Restore default settings

**ASCII** US BS NUL  
**Hexadecimal** 1F 08 00  
**Decimal** 31 8 0

Restores the Ethernet settings to the preset values.

Default settings are:

IP address:	192.0.0.192 (in use after boot time-out of two minutes)
Net mask:	0.0.0.0 (default mask of selected IP is used)
Gateway:	none
Raw TCP/IP port 9001:	active
Telnet Daemon:	enabled
LP Daemon:	disabled
Bootp:	disabled
DHCP:	enabled
Inactivity timeout:	enabled
Keep alive pings:	disabled

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### Setting IP address

**ASCII** US BS SOH *n1 n2 n3 n4*  
**Hexadecimal** 1F 08 01 *n1 n2 n3 n4*  
**Decimal** 31 8 1 *n1 n2 n3 n4*  
**Default:** 192.0.0.192

Sets the IP address value specified by the values of *n1* to *n4*.

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### Setting Net Mask

**ASCII** US BS STX *n1 n2 n3 n4*  
**Hexadecimal** 1F 08 02 *n1 n2 n3 n4*  
**Decimal** 31 8 2 *n1 n2 n3 n4*  
**Default:** 0.0.0.0

Sets the Net Mask value specified by the values *n1* to *n4*.

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### Setting the Gateway

**ASCII** US BS ETX *n1 n2 n3 n4*  
**Hexadecimal** 1F 08 03 *n1 n2 n3 n4*  
**Decimal** 31 8 3 *n1 n2 n3 n4*  
**Default:** none

Sets the printer to the gateway having the IP address value specified by the values *n1* to *n4*. A gateway, even when the printer is on another subnet, is not always needed.

The printer initiates no connection and obtains the gateway address from the host packets. Image units must have the gateway specified to act as client when sending images to hosts on another subnet.

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**Setting raw TCP/IP port**

**ASCII** US BS EOT *n1 n2*  
**Hexadecimal** 1F 08 04 *n1 n2*  
**Decimal** 31 8 4 *n1 n2*

**n1:** Low order byte of port #

**n2:** High order byte of port #

**Default:** Port = 9001

Sets the port where the printer will look for raw TCP/IP communications. Setting port number to 0 disables raw TCP/IP communications.

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**LP Daemon**

**ASCII** US BS ENQ *n1*  
**Hexadecimal** 1F 08 05 *n1*  
**Decimal** 31 8 5 *n1*

**n1 = 0:** disabled

**n1 = 1:** enabled

**Default:** disabled

Enables or disables the printer LP Daemon. The LP listens on port 515.

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**Telnet Daemon**

**ASCII** US BS ACK *n1*  
**Hexadecimal** 1F 08 06 *n1*  
**Decimal** 31 8 6 *n1*

**n1 = 0:** disabled

**n1 = 1:** enabled

**Default:** enabled

Enables or disables the printer Telnet server. The Telnet server listens on port 23.

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**BootP**

**ASCII** US BS BELL *n1*  
**Hexadecimal** 1F 08 07 *n1*  
**Decimal** 31 8 7 *n1*

**n1 = 0:** disabled

**n1 = 1:** enabled

**Default:** disabled

Enables or disables the use of BootP at power-up to obtain an IP address. BootP is a subset of DHCP.

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**DHCP (auto-configuration)****ASCII** US BS BS *n1***Hexadecimal** 1F 08 08 *n1***Decimal** 31 8 8 *n1***n1 = 0:** disabled**n1 = 1:** enabled**Default:** enabled

Enables or disables the use of DHCP at power-up to obtain an IP address. If no address is found within two minutes, DHCP obtains the default IP address.

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**Inactivity timeout****ASCII** US BS HT *n1***Hexadecimal** 1F 08 09 *n1***Decimal** 31 8 9 *n1***n1 = 0:** disabled**n1 = 1:** enabled**Default:** enabled

Enables or disables resetting of open TCP ports after five (5) minutes inactivity.

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**Keep alive pings****ASCII** US BS LF *n1***Hexadecimal** 1F 08 0A *n1***Decimal** 31 8 10 *n1***n1 = 0:** disabled**n1 = 1:** enabled**Default:** enabled

Enables or disables sending of the keep alive pings (self arps). Keep alive pings may be required for use with such things as smart hubs; to remind the smart hub to which port a printer is connected.

If enabled, self arps are sent every ten (10) minutes.

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**Buffer full handling****ASCII** US BS VT *n1***Hexadecimal** 1F 08 0B *n1***Decimal** 31 8 10 *n1***n1 = 0:** Do not allow overflow**n1 = 1:** Allow overflow when printer in error**Default:** Overflow prevented

This allows overflowing communication buffer when printer is in an error state. This will allow processing of real time commands. It is not recommended to allow overflow.

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## Imager-only ethernet setup commands

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### Set image host address

**ASCII** US BS FF *n1 n2 n3 n4*  
**Hexadecimal** 1F 08 0C *n1 n2 n3 n4*  
**Decimal** 31 8 12 *n1 n2 n3 n4*

**Value of *n1 n2 n3 n4*:** IP address of the host to receive images

**Default:** 192.0.0.1

Configures the printer with the IP address of the host to receive the images. This is used when the printer is acting as a client and the host has a server running to receive the images. The gateway must be set to operate in this mode when the host is on a different subnet.

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### Set image TCP port

**ASCII** US BS CR *n1 n2*  
**Hexadecimal** 1F 08 0D *n1 n2*  
**Decimal** 31 8 13 *n1 n2*

**Value of *n1 n2*:** **n1** Low order byte of port number  
**n2** High order byte of port number

**Default:** 9000

Configures the printer with the TCP port to use for image transmission. This is used when the printer is acting as a client and the host has a server running to receive the images or when the image server is enabled.

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### Image server

**ASCII** US BS SI *n1*  
**Hexadecimal** 1F 08 0F *n1*  
**Decimal** 31 8 15 *n1*

**n1 = 0:** disabled

**n2 = 1:** enabled

**Default:** enabled

Enables or disables the internal image server. With this enabled the printer runs a server on the configured port which a remote host can contact to receive the images.

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## Installing an Ethernet Printer on a network with Windows XP/Vista

- 1) Plug the printer into the network and turn power on.
- 2) Run a diagnostic sample and get the printer IP address. If there is a problem with the IP address then reset the printer communication parameters and try again.
- 3) Locate the Windows program Telnet and go to the Start menu, use Run to open a command window; at the command prompt line, change directories to the Telnet location and type 'Telnet xxx.xxx.xxx.xxx' which corresponds to the printer IP address and press Enter.
- 4) Press Enter again and you should see 'Connected to TPG printer' at the IP address above. At the command prompt type Config and press Enter, press Enter again when asked for the Password.
- 5) The Ethernet configuration of the printer will be shown on the screen. Raw TCP Port must be disabled. If TCP Port is enabled, at the Enter Item Number prompt, press 9 and then press N to disable Raw TCP Port.
- 6) LPDaemon must be enabled. If disabled, press 6 and Y to enable LPD. Verify that the screen shows Raw TCP Port Disabled and LPD Enabled.
- 7) Press R, Y, and Enter to reset the printer. Close the command window.
- 8) Go to the Control Panel/Printers window.
- 9) Choose Add a Printer, Local printer (do not choose network printer), and choose Create a New Port.
- 10) Select Standard TCP/IP Port, and then TCP/IP Device in the device type selection box.
- 11) Input the printer IP address in the IP address box. Uncheck Query for Printer or Auto Query. In the next screen, Windows will attempt to detect the TCP/IP port and then ask for additional port information. Select Generic Network Card for Device Type/Standard.
- 12) At the Install Printer Driver Window, choose Have Disk and Browse to the appropriate TPG mini driver location and select the appropriate TPG mini driver.
- 13) Once the printer is installed, do not print the test page yet.
- 14) Go back to the Printers group and right click on the printer you just installed, choose properties.
- 15) Go to Ports and highlight the port for the printer you just installed and select Configure port. Choose LPR for protocol and under LPR settings, add any queue name you wish, but do not leave blank. Click OK and close the properties window.
- 16) Go to the printer group again and right click on the newly installed printer. Go to properties and print a test page.
- 17) If successful, you should now be able to use this printer from any Windows program.

