Ethernet Interface

Setup Guide

COGNITIVETPG

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 B 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 CognitiveTPG immediately.

CognitiveTPG 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 CognitiveTPG. 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 (QQGQ), Class 2 power supply with SELV (Secondary Extra Low Voltage), non-energy hazard output, LPS (limited power source), input rated 100-240 Vac, 1.6 A, 50/60 Hz, output rated 24 Vdc, 2.5 A for 60 watt unit.

Use of this product with a power supply other than the CognitiveTPG power supply will require you to test the power supply and CognitiveTPG 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 CognitiveTPG 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 B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B 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 B 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.

Disclaimer

Information in this document is subject to change without notice. Consult your CognitiveTPG sales representative for information that is applicable and current. CognitiveTPG reserves the right to improve products as new technology, components, software, and firmware become available.

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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.

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 CognitiveTPG's assigned range of numbers. CognitiveTPG 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)

HTTP an application protocol for connection to the Internet. With HTTP, the printer's Ethernet settings can be configured with a Web GUI. The HTTP server listens on port 80. The default setting is to have HTTP 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.

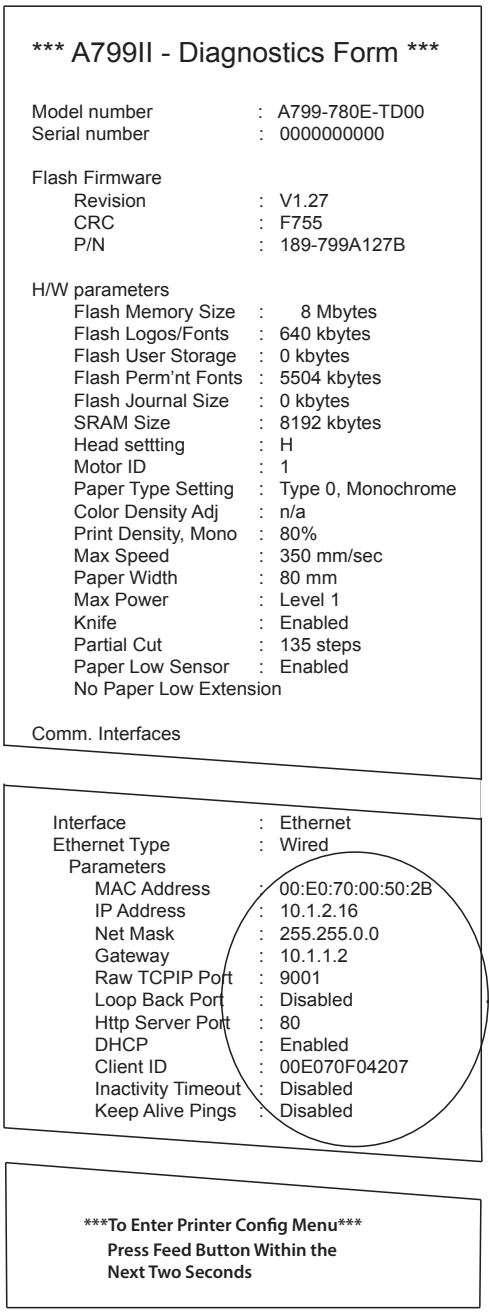
DHCP allows "leasing" of IP address for a limited time. If no IP address is found at start-up, the printer waits for two more minutes. If no address is found after two minutes DHCP will automatically set the default IP address. Default: enabled

Ethernet Default Setup

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

The default settings are:

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)
HTTP Server Port 80 active
Raw TCP/IP Port 9001 active



*** A799II - Diagnostics Form ***

Model number : A799-780E-TD00
Serial number : 0000000000

Flash Firmware
Revision : V1.27
CRC : F755
P/N : 189-799A127B

H/W parameters
Flash Memory Size : 8 Mbytes
Flash Logos/Fonts : 640 kbytes
Flash User Storage : 0 kbytes
Flash Perm'nt Fonts : 5504 kbytes
Flash Journal Size : 0 kbytes
SRAM Size : 8192 kbytes
Head settting : H
Motor ID : 1
Paper Type Setting : Type 0, Monochrome
Color Density Adj : n/a
Print Density, Mono : 80%
Max Speed : 350 mm/sec
Paper Width : 80 mm
Max Power : Level 1
Knife : Enabled
Partial Cut : 135 steps
Paper Low Sensor : Enabled
No Paper Low Extension

Comm. Interfaces

Interface : Ethernet
Ethernet Type : Wired
Parameters
MAC Address : 00:E0:70:00:50:2B
IP Address : 10.1.2.16
Net Mask : 255.255.0.0
Gateway : 10.1.1.2
Raw TCPIP Port : 9001
Loop Back Port : Disabled
Http Server Port : 80
DHCP : Enabled
Client ID : 00E070F04207
Inactivity Timeout : Disabled
Keep Alive Pings : Disabled

To Enter Printer Config Menu
Press Feed Button Within the
Next Two Seconds

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.

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 flash download mode (1B 5B 7D).

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
HTTP port 80:	active
DHCP:	enabled
Inactivity timeout:	disabled
Keep alive pings:	disabled

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*.

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*.

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.

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.

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.

Inactivity timeout

ASCII	US	BS	HT	*n1*
Hexadecimal	1F	08	09	*n1*
Decimal	31	8	9	*n1*

n1 = 0: disabled
n1 = 1: enabled

Default: disabled

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

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: disabled

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.

Set HTTP Port

ASCII	US BS SO *n1 n2*
Hexadecimal	1F 08 0E *n1 n2*
Decimal	31 8 14 *n1 n2*

n1: Low order byte of port #
n2: High order byte of port #

Default: Port = 80

Sets the port where the HTTP server will listen. Setting port number to 0 disables HTTP communications.

Get Ethernet configuration

ASCII	US VT *nn*
Hexadecimal	1F 0B *nn*
Decimal	31 11 *nn*

nn	**value**
00	Return all
01	Return IP address
02	Return net mask
03	Return gateway
04	Return TCP/IP port
08	Return DHCP status
09	Return inactivity timeout status
0A	Return keep alive pings status
0E	Return HTTP port

Returns *rr record1...recordr* for the selected value of *nn*, where *rr* is the number of records being returned (always 1 except when *nn* = 00). Each returned *record* is in the format of *id s0 s1 d0...ds*.

id: Identifying value of configuration setting type reflecting *nn* values (01-0E)
s0: Low byte of data size
s1: High byte of data size
d0...ds: Data bytes representing value

Example:
Sending 1F 0B 08 (*nn* = 08, return DHCP status) returns 01 08 01 00 01. The first 01 is the *rr* (1 record) and the rest is the *record* (08 01 00 01), where 08 is the *id* (DHCP), 01 00 is the size as *s0 s1* (1 byte), and the final 01 is the data as *d0...ds* (enabled).

Installing an Ethernet Printer on a network with Windows 7/8

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) Make sure Raw TCP/IP is enabled and the port is set. If using a web server, ensure HTTP is enabled and the port is also set. (Default configuration of the printer is sufficient for installation).

4) Go to the Control Panel, then Devices and Printers.

5) Choose Add a Printer, Add a Local printer (do not choose network printer), and choose Create a New Port. Select Standard TCP/IP Port and click next.

6) Input the printer IP address in the Hostname or IP address box. Uncheck Query the Printer. In the next screen, Windows will attempt to detect the TCP/IP port and then ask for additional port information. Select Generic Network Card.

7) At the Install Printer Driver Window, choose Have Disk and Browse to the appropriate CognitiveTPG mini driver location and select the appropriate CognitiveTPG mini driver.

8) Name the printer and select preferred sharing options. Once the printer is installed, do not print the test page yet.

9) Go back to the Printers and right click on the printer you just installed, choose Printer Properties.

10) Go to Ports and highlight the port for the printer you just installed and select Configure port. Choose Raw for protocol and under Raw settings, add the port number (9001 is the default configuration setting). Click OK and close the properties window.

11) Go to the printers again and right click on the newly installed printer. Go to printer properties and print a test page.

12) If successful, you should now be able to use this printer from any Windows program.

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) Make sure Raw TCP/IP is enabled and the port is set. If using a web server, ensure HTTP is enabled and the port is also set. (Default configuration of the printer is sufficient for installation).

4) Go to the Control Panel/Printers window.

5) Choose Add a Printer, Local printer (do not choose network printer), uncheck Automatically detect, and choose Create a New Port. Select Standard TCP/IP Port.

6) Input the printer IP address in the IP address box. Uncheck Query for Printer or Auto Query if applicable. 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.

7) At the Install Printer Driver Window, choose Have Disk and Browse to the appropriate CognitiveTPG mini driver location and select the appropriate CognitiveTPG mini driver.

8) Name the printer and select preferred sharing options. Once the printer is installed, do not print the test page yet.

9) Go back to the Printers group and right click on the printer you just installed, choose properties.

10) Go to Ports and highlight the port for the printer you just installed and select Configure port. Choose Raw for protocol and under Raw settings, add the port number (9001 is the default configuration setting). Click OK and close the properties window.

11) Go to the printer group again and right click on the newly installed printer. Go to properties and print a test page.

12) If successful, you should now be able to use this printer from any Windows program.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