



PCL5 and HP-GL/2 COMPATIBLE LAN PRINTERS AND INSTRUMENTS For ICS's Model 4872 GPIB-to-LAN Printer Interfaces

INTRODUCTION

Most of the 4872's applications involve connecting the 4872 between an instrument, such as an analyzer or oscilloscope, and a printer so the user can directly print or plot the instrument's output without the use of a computer or a GPIB Bus Controller. Originally, the instrument was directly connected to a printer or plotter with a GPIB interface. Printing or plotting is done by simply pressing a button on the instrument's front panel. As these older printers and plotters wear out, GPIB versions are no longer available, so users have wanted to replace them with new, low-cost printers.

Originally this problem was solved by ICS's 4892 series of GPIB-to-Parallel Printer Interfaces. The 4892s connected the instrument's GPIB output to the printer's parallel port (Centronics interface). As printer and PC technology evolved, printer manufacturers dropped the parallel interface in favor of USB and now Ethernet connections.

ICS's Model 4872 GPIB-to-LAN Printer Interface is a newer interface that connects the older instruments' (analyzers, oscilloscopes, etc.) GPIB interface to a compatible printer with an Ethernet interface. Because the output from these older instruments is HP-GL/2 graphical data, the problem is reduced to finding HP-GL/2 compatible printers for the test instruments. This application note lists some of these older instruments and some compatible printers.

HP-GL/2 and PCL5

Hewlett-Packard (then Agilent, now Keysight) developed a graphics language for their test instruments to use when communicating with printers and plotters. This graphics language is known as HP-GL/2 and has become a de facto standard. HP-GL is included in many of today's more expensive standalone test instruments made by Agilent, Anritsu, etc.

HP-GL/2 COMPATIBLE TEST INSTRUMENTS

The following is a partial list of instruments that have been used with the 4892s and their HP-GL/2 capability. They should work also with the 4872. This list is updated as we get feedback from other 4872 users.

Advantest R3767BH Analyzer HPGL Agilent (Hewlett-Packard) HP875/A **HPGL** HP1631D Logic Analyzer HP35066A Spectrum Analyzer **HPGL** HP3561A Spectrum Analyzer **HPGL** HP3563A Control System Analyzer HPGL HP3585B Spectrum Analyzer **HPGL** HP3753 Network Analyzer HPGL HP4195A Analyzer⁽³⁾ **HPGL** HP8357 Network Analyzer **HPGL** HP8510, C Network Analyzer⁽²⁾ HPGL HP8562E Spectrum Analyzer **HPGL** HP8563, E Spectrum Analyzer⁽⁶⁾ HPGL HP8565E Spectrum Analyzer **HPGL** HP8566B Spectrum Analyzer **HPGL** HP8567 Spectrum Analyzer HPGL HP8591A/E Spectrum Analyzer **HPGL** HP8593E Spectrum Analyzer HPGL HP8591A/E Spectrum Analyzers **HPGL** HP8719 Analyzer HPGL HP8720D Analyzer HPGL HP8751A Analyzer **HPGL** HP8753C, E Analyzers (2) **HPGL**

List continued on next page

Anritsu MS2663B Analyzer MS2667C Spectrum Analyzer⁽¹⁾ MT4701A Microwave Tester

Marconi Instruments 2380 Display

Tektronix TDF685 Oscilloscope⁽³⁾ TDS3014 Oscilloscope⁽³⁾

PRINTER REQUIREMENTS

Hewlett-Packard has incorporated HP-GL/2 capability as part of their Page Description Language for their printers starting with PCL level 5 (PCL5). The latest PCL revision, PCL6 is backward compatible with PCL5 and includes the HP-GL/2 graphics capability.

Some other printer manufacturers are now including PCL conversion capability in their printers' firmware. When buying a printer, verify that it is 1) PCL5 or later and HP-GL/2 compatible and 2) that the PCL/HP-GL compatibility is internal to the printer. Avoid printers that do the PCL emulation and HP-GL conversion in PC drivers as they will not work with the 4872.

The 4872 uses the SNMP protocol to report printer status so check for SNMP support with new printers. The 4872 will function without SNMP if you have an otherwise compatible printer that does not support SNMP.

PCL5 and PCL6 PRINTERS

The following is a partial list of PCL5 and PCL6 compatible printers with Ethernet interfaces that natively handle HP-GL/2. This list includes some printers that are out of production for reference purposes and others that are in current production. While every effort has been made to assure the data listed herein is correct, the user should verify the printer's specifications and its native support for HP-GL before buying a printer.

A recommended inexpensive color printer for new applications is the HP CP1525NW.

BROTHER (4)	Graphics	PCL Lvl
HL-7050N	HP-GL	PCL6

HP	Graphics	PCL Lvl
LaserJet III (all)	HP-GL	PCL5
LaserJet 4 (all)	HP-GL	PCL5e
LaserJet 5 (all)	HP-GL	PCL5e/6
LaserJet 6 (all)	HP-GL	PCL5e/6
LaserJet 1100	HP-GL	PCL5e
LaserJet 1200	HP-GL	PCL5e/6
LaserJet 1320	HP-GL	PCL5e/6
LaserJet 2xxx	HP-GL	PCL5e/6
LaserJet 3000	HP-GL	PCL5e/6
LaserJet 3700, 3800	HP-GL	PCL5e/6
LaserJet 4xxx	HP-GL	PCL5e/6
LaserJet 5xxx	HP-GL	PCL5e/6
LaserJet 8xxx	HP-GL	PCL5e/6
LaserJet 9xxx	HP-GL	PCL5e/6
LaserJet P2025dn	HP-GL	PC15c/6
LaserJet P3015dn	HP-GL	PC15e/6
LaserJet P4014	HP-GL	PC15e/6
LaserJet P1606	HP-GL	PC15e
LaserJet CP1525NW ⁽⁵⁾	HP-GL	PC15c/6
LaserJet CP2025n, CP2025dn	HP-GL	PC15c/6
LaserJet CP3525dn	HP-GL	PC15e/6
LaserJet CP4025n	HP-GL	PC15e/6
LaserJet CP5220	HP-GL	PCl5e/6
LaserJet Pro M402n	HP-GL	PCL5/6
LaserJet Pro M252dw	HP-GL	PCL5c/6
LaserJet Pro M452nw	HP-GL	PCL5c/6
LaserJet Pro M452dw	HP-GL	PCL5c/6
LaserJet Pro M4553dn	HP-GL	PCL5c/6
NEC Printers (4)	Graphics	PCL Lvl
NEC SuperScript 660	HP-GL	PCL5e
NEC SuperScript 660i	HP-GL	PCL5e
NEC SuperScript 660 Plus	HP-GL	PCL5e
NEC SuperScript 1450	HP-GL	PCL5e/6
NEC SuperScript 1450N	HP-GL	PCL5e/6
NEC SuperScript 1800	HP-GL	PCL5e/6
NEC SuperScript 1800N	HP-GL	PCL5e/6
NEC SuperScript 4200	HP-GL	PCL5e
NEC SuperScript 4200N	HP-GL	PCL5e
NEC SuperScript 4400	HP-GL	PCL5e
NEC SuperScript 4400N	HP-GL	PCL5e
NEC SuperScript 4600N	HP-GL	PCL5e
NEC SuperScript 4650	HP-GL	PCL5e
NEC SuperScript 4650N	HP-GL	PCL5e
NEC SuperScript 4650NX	HP-GL	PCL5e
NEC Silentwriter 1760	HP-GL	PCL5e
NEC Silentwriter 1765	HP-GL	PCL5e

SHARP

MX2600N	HP-GL	PCL5c/6
MX3100N	HP-GL	PCL5c/6

USING NON-NATIVE PCL5 and PCL6 PRINTERS

Some printer manufacturers like Dell, Xerox, and others, provide PCL5 and HP-GL compatibility in their drivers. To use these printers, set the 4872 so that it sends the Analyzer or Instrument output to the PC. Use ICS's Data Logger to save the instrument output as a file in the PC. Then you can print the HP-GL file using the printer's driver.

If you use a 3rd party conversion program to convert the HP-GL file to a .jpg file, you can then print it on almost any printer.

SUMMARY

This application note has listed some printers with native support for HP-GL that can be successfully used with ICS's 4872 GPIB-to-LAN Printer Interface and test instruments that output HP-GL coded data. This application note has also described how to use the 4872 with printers that provide HP-GL capability in their drivers and how to convert the HP-GL file to a jpg file for printing on virtually any printer.

If you have printing problems, read the following notes, check the troubleshooting section of the 4872 manual or contact support@icselect.com.

NOTES

(1) Set the MS2667C to Printer output, to HP2225 and drawing size to 1x 1.

(2) Use the HP8753C with formfeed set On. Set the HP8753C's GPIB address to match the 4872's GPIB address.

(3) Set 4872 to Listen-only

(4) These BROTHER, EPSON and NEC printers are discontinued and listed for reference purposes only. However these printers may still be available from distributors on the Internet.

(5) Highly recommended for new purchases. Its low cost, just over \$200 USD, good performance and crisp color make it an good buy.

(6) The HP8563E appears to not set the ink colors correctly when used with a HP Color LaserJet CP2020. White prints black background and black prints a red grid and graph.