ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

**Artisan Technology Group**
(217) 352-9330 | sales@artisantg.com | artisantg.com

**Full-service, independent repair center**
with experienced engineers and technicians on staff.

**We buy your excess, underutilized, and idle equipment**
along with credit for buybacks and trade-ins.

**Custom engineering**
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

**Expert team | Trust guarantee | 100% satisfaction**

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Intelligent Interfaces MicroPrint 45CH* at our website: *Click HERE*

**INTELLIGENT**

**INTERFACES**

# MICROPRINT 45CV/

# MICROPRINT 45CH(VERSION 1.9)

## VARIABLE RESOLUTION

## HP-GL MODE

## INSTRUCTION MANUAL

REFERENCE MANUAL FOR MODEL 51-6205

First Edition March 1995 Printed in U.S.A.

Copyright 1995 by Intelligent Interfaces, Inc.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## SAFETY CONSIDERATIONS

### GENERAL

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation.

This product is a Safety Class 2 instrument.

### BEFORE APPLYING POWER

**Verify that the product matches the available line voltage. Refer to the INSTALLATION PROCEDURE and SPECIFICATIONS sections of the MicroPrint 45CV/CH manual.**

**POWER MODULE - The power module cannot be repaired; if it is defective it should be discarded or returned to the supplier.**

---

## GENERAL DESCRIPTION

The MicroPrint 45CV/CH interface converter allows parallel printers with Centronics parallel interfaces to be used with the IEEE-488 (HP-IB/GPIB) bus. The device supports the IEEE-488 subsets: SHO, AHI, TO, TEO, L1, LEO, SRO, RLO, PPO, DCO, DTO, and CO.

This MicroPrint 45CV/CH is equipped with the **Variable Resolution and HP-GL (HP Graphics Language)** features. **Variable resolution** allows you to adjust the size of raster(bit mapped) graphics output in **portrait** orientation when using HP dot matrix, DeskJet, & LaserJet printers. Variable resolution allows adjustment of the raster graphics size in **landscape** orientation when using HP LaserJets only. See the Variable Resolution section below for more information. The **HP-GL mode** allows HP LaserJets which use PCL 5 (Printer Control Language, version 5 or later) to be used as plotters. See the HP-GL section below for more information.

**The MicroPrint 45CV/CH is an interface converter, not a printer emulator. Your software must send the correct data format to the MicroPrint and printer. HP computers and test instruments send text and raster graphics data to printers in PCL format, and vector graphics data in HP-GL format. All HP printers accept PCL data and all HP plotters accept HP-GL data. Unless you are printing text only, you must use an HP-compatible printer with the above HP (or comparable) equipment. Consult your computer or software manual to ensure the printer you wish to use is supported before connecting the MicroPrint.**

The input connector is a 24 pin IEEE-488 female "D" connector with metric screw lock hardware. The output connector is a female 25 pin "DB25" type connector with screw lock hardware. The pinout of the parallel port is compatible with the IBM PC-type parallel printer interface cable. The MicroPrint 45CV/CH is powered by a 9V AC or DC wall-mounted power adapter.

**The MicroPrint 45CV/CH is a one-way converter: from HP-IB to Parallel. DO NOT ATTEMPT TO USE IT IN THE OPPOSITE DIRECTION** (i.e., with the MicroPrint 45CV/CH Centronics output connected to a computer parallel output port).

## VARIABLE RESOLUTION

HP printers use Printer Control Language, or PCL, to control printing features (fonts, graphics resolution, print quality, etc.). With the exception of default settings, most of the printing features are available only by sending commands, or "Escape Sequences," to the printer via the I/O interface. This does not present a problem when using the unit

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

with computers since most application software provides automatic or manual control of the required features. However, when the printer is used in conjunction with products that do not provide control, such as most test equipment, erratic results are sometimes encountered. In particular, the graph may be to large resulting in graphs over running the page ; or too small resulting in unreadable plots.

The Variable Resolution Option for the MicroPrint 45CV/CH HP-IB to Centronics converter allows owners of HP ThinkJet, PaintJet, QuietJet, DeskJet, and LaserJet printers (or compatibles) with Centronics parallel interfaces to select the raster graphics resolution of their printer by setting switches on the MicroPrint before powering on the unit. Once the resolution has been set, it remains in effect until the switch settings are changed and power reapplied or the reset switch on the side of the MicroPrint is pushed and released. **Note that the VR option sends the resolution commands to the printer only when the MicroPrint is first turned on or reset; any subsequent graphics resolution control characters sent to the printer by the computer or test equipment will override the commands sent by the MicroPrint. Also, turning the printer off and then on without resetting the MicroPrint, will result in the printer being reset to its default condition. If you wish to change the printer resolution, always power on or reset the MicroPrint after the printer has been turned on and is in the ready state. To reset the MicroPrint, push the momentary-contact reset switch, wait a few seconds, and release. The power indicator will go out while the switch is pressed.**

## RASTER GRAPHICS RESOLUTIONS FOR VARIOUS PRINTERS

In general, all HP **DeskJet** printers, as well as **LaserJets** with 300 dpi(dots per inch) maximum resolution, have raster graphics resolutions of 75, 100, 150, and 300 dpi. Exceptions are the members of the **LaserJet 4** family that also implement 200 and 600 dpi and the DeskJet 540 which implements 75, 150, and 300 dpi only. **ThinkJet and QuietJet** printers have 96 and 192 dpi (set MicroPrint to 75 or 150 dots/in respectively); **PaintJet** printers have 90 and 180 dpi resolutions(set MicroPrint to 75 or 150 dots/in respectively). With the exception (to date) of the **DeskJet Portable**, all printers default to their lowest resolution on power up. The **DJ Portable** defaults to 300 dpi.

Since the LaserJet is a page printer and the entire image is loaded into memory before it is printed, landscape mode is implemented by rotating the image 90 degrees. **The landscape mode is NOT available for HP DeskJet or dot matrix type printers since they are line printers and the total image is not available for rotation.**

## HP-GL MODE

The MicroPrint 45CV/CH allows **HP LaserJets** to be used as plotters by sending commands to the LaserJet that enable the HP-GL subset of the **PCL 5** command set (To date, PCL5 is available on the **LJIII and IV Series Printers**). Both portrait and landscape orientations are available. This is particularly userful when connecting a LaserJet to a test instrument that supports only plotters or when the extra speed of HP-GL (vector graphics) is desired in lieu of the relatively slow raster (bit-mapped) graphics.

Once the HP-GL image has been transferred to the LaserJet through the MicroPrint, the **RESET switch** located next to the power connector must be pushed for 1 or 2 seconds and then released. This resets the MicroPrint microprocessor (and causes the power

indicator lamp to turn off) which in turn resets the printer causing the page to be ejected from the printer. **The page will not be ejected until the RESET switch is pushed and released. Alternately, an Interface Clear(IFC) signal sent from the test instrument or computer will reset the MicroPrint and printer and cause the page to be ejected.** Some test equipment automatically sends the IFC signal at the end of each plot or allows the operator the option specifying that it be sent. Consult your equipment manual to determine if you need to push the RESET switch at the end of each plot.

**Note that some instruments require a response to be returned by the plotter when sending HP-GL data. The MicroPrint will not work in this case since it is a one-way converter - HPIB ->Centronics.**

**SETTING THE MicroPrint SWITCHES**

The configuration switch on the side of the MicroPrint, next to the power connector, has 8 positions. Positions 1 through 4 are used to set the 14 possible HP-IB addresses plus "Listen Always." Positions 5 through 8 set the graphics resolution of the printer, disable the Variable Resolution feature, or select HP-GL mode on the MicroPrint. To "shrink" the graphics size, raise the resolution; to expand the graphics size, lower the resolution.

In the table below, a "0(zero)" indicates the switch is turned OFF; a "1" indicates the switch is turned ON("ON" direction is shown on the switch). Positions 5 through 8 OFF is the printer "default" condition; i.e. Variable Resolution and HP-GL modes are disabled.

As mentioned above, the **HP-GL** mode can be used **ONLY** with HP-compatible **LaserJet** printers that implement the PCL 5 or higher command set. This includes, to date, the LaserJet III and IV series printers.

| Switch Position | | | | Function | | Switch Position | | | | Function |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **Address** | | **5** | **6** | **7** | **8** | **Dots/Inch** |
| 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | Default |
| 1 | 0 | 0 | 0 | 1 | | 1 | 0 | 0 | 0 | 75 **P** |
| 0 | 1 | 0 | 0 | 2 | | 0 | 1 | 0 | 0 | 100 **P** |
| 1 | 1 | 0 | 0 | 3 | | 1 | 1 | 0 | 0 | 150 **P** |
| 0 | 0 | 1 | 0 | 4 | | 0 | 0 | 1 | 0 | 200 **P** |
| 1 | 0 | 1 | 0 | 5 | | 1 | 0 | 1 | 0 | 300 **P** |
| 0 | 1 | 1 | 0 | 6 | | 0 | 1 | 1 | 0 | 600 **P** |
| 1 | 1 | 1 | 0 | 7 | | 1 | 1 | 1 | 0 | HP-GL **P** |
| 0 | 0 | 0 | 1 | 8 | | 0 | 0 | 0 | 1 | Undefined |
| 1 | 0 | 0 | 1 | 9 | | 1 | 0 | 0 | 1 | 75 **LS** |
| 0 | 1 | 0 | 1 | 10 | | 0 | 1 | 0 | 1 | 100 **LS** |
| 1 | 1 | 0 | 1 | 11 | | 1 | 1 | 0 | 1 | 150 **LS** |
| 0 | 0 | 1 | 1 | 12 | | 0 | 0 | 1 | 1 | 200 **LS** |
| 1 | 0 | 1 | 1 | 13 | | 1 | 0 | 1 | 1 | 300 **LS** |
| 0 | 1 | 1 | 1 | 14 | | 0 | 1 | 1 | 1 | 600 **LS** |

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | *Listen<br><br>Always | | 1 | 1 | 1 | 1 | HP-GL **LS** |

****P => PORTRAIT *** LS => LANDSCAPE**

*In the **Listen Always** mode, the MicroPrint will respond to any command or data sent over the bus. Use this setting only in a "stand alone" configuration where the computer or test equipment is to talk to only one device( via the MicroPrint).

** Can be used with all HP-compatible printers.

*** Can be used **ONLY** with HP-compatible LaserJet printers

**HP-GL** Mode can be used **ONLY** with PCL 5 **LaserJet** Printers

If you set a resolution number that is not recognized by the printer, the printer will default to the next highest resolution. If you obtain these, or other, strange results recheck the switch settings and **remember to turn the MicroPrint power off before setting the switches; and turn it back on after the switches are set or press the reset switch after the switches have been set. Remember to push the RESET switch (or send an IFC signal) to eject the page in HP-GL mode.**

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## INSTALLATION PROCEDURE

1) Set the MicroPrint 45CV/CH to the correct HP-IB address and resolution using the eight position switch on the side of the MicroPrint. The MicroPrint is set at the factory for a listen address of 1 - Positions 1 ON and 2 through 4 OFF; and Variable Resolution and HP-GL are disabled - Positions 5 through 8 OFF. Refer to the **SETTING THE MicroPrint SWITCHES** section of this manual.)

2) Attach the HP-IB cable from the computer/controller to the "HP-IB" connector on the MicroPrint. Attach the cable from the printer or other peripheral to the "Centronics" connector on the MicroPrint.

   **NOTE:** Ensure that both connectors are on securely BEFORE tightening the retaining screws. The latter should screw into the connectors easily and be "finger tight."

3) Plug the wall mount power supply connector into the female connector located on the side of the MicroPrint. Plug the wall mount power supply into an AC outlet which will activate the LED indicator next to the Centronics connector. The MicroPrint is now ready for use.

   **NOTE:** Since the MicroPrint reads the address switch setting only during power-up, it is necessary to interrupt the DC input power to the MicroPrint or push the RESET switch after any change to the switch settings. Also, it is advisable to "power up" the MicroPrint 45CV/CH after other devices on the HP-IB bus.

## IN CASE OF DIFFICULTY/TROUBLE ISOLATION

If no output is obtained on the printer, or the output is incorrect, after the MicroPrint 45CV/CH is installed, check the following before calling your Intelligent Interfaces representative:

1) Check that the MicroPrint 45CV/CH is connected to the "low speed" HP-IB output port on the computer.

2) Check that the MicroPrint 45CV/CH is set to the correct HP-IB address.

3) Check that the MicroPrint is connected to the printer with a 25 pin male to 36 pin male parallel printer cable(see PRINTER CABLE/SIGNAL WIRING table below).

4) Ensure that all cable connections at the computer, MicroPrint, and printer are seated correctly and tight.

5) For HP-UX applications, use driver #21 (primitive 8 bit driver) with the MicroPrint. For HP RISC computers, use the INSTR0 "driver."

6) **Check that your computer has a "driver" (software routine, usually listed in a set-up or configuration menu) that supports the printer you are using.** The MicroPrint is an interface converter, not a printer emulator. The computer must be configured for the parallel printer with which it is to be used. A configuration error is usually evidenced by "stray" or strange characters being printed. Consult your software documentation to properly "set-up" your printer with your computer.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## APPLICATION SUPPORT

For application support, contact Intelligent Interfaces Inc. by mail, phone or FAX at:

INTELLIGENT INTERFACES INC.

P.O. Box 99  Mill Spring, NC 28756

1-800-842-0888  (828)863-1210  FAX: (828) 863-1209

Email: service@intelligentinterfaces.com

## UNIT REPAIR

During the one(1) year Warranty period, defective units will be replaced or repaired at no cost. After the one(1) year Warranty period, Intelligent Interfaces will repair or replace the defective unit, at Intelligent Interfaces' option, at the customer's expense. Contact Intelligent Interfaces at the number above to obtain a return authorization number before returning the unit for repair.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# SPECIFICATIONS

## DATA RATE: *30,000 Bytes/sec

## MECHANICAL

Size (cm): 5.75"(14.6)L X 3.6"(9.1)W X 1.12"(2.8)D

Weight(kg): Approximately 8 ounces (0.23)

## ENVIRONMENTAL

Operating Temperature: +10 to +40 degrees C

Humidity: 5% to 80% RH, Non-Condensing

## ELECTRICAL

Input Connector(HP-IB): 24 Pin Female "D", metric screw locks

Output Connector(Parallel): 25 Pin Female Sub-D

Power Adapter-Domestic/Canada/Japan:

Input: 120Vac, 60Hz, 10W; Output: 9Vac or 9Vdc, 300-600 mA

Power Adapters - Europe / Intercon

| Country | Input | Output | HP Model # |
|---|---|---|---|
| **So.Africa** | 240Vac,50Hz,.3A | 12Vdc, .75A | F1011A ACQ |
| **Australasia** | 240Vac,50Hz,.3A | 12Vdc, .75A | F1011A ABG |
| **U.K.** | 240Vac,50Hz,.3A | 12Vdc, .75A | F1011A ABU |
| **Europe** | 220Vac, 50 Hz, .3A | 12Vdc, .75A | F1011A ABB |

*Maximum data rate possible. Actual data throughput will vary depending on computer/controller hardware, software, and peripheral used.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## Warranty

Intelligent Interfaces Inc. certifies that the product purchased was carefully inspected and tested at the factory prior to shipment, and has been found to meet all published specifications.

**ONE-YEAR LIMITED WARRANTY:** In the U.S. and abroad, all products purchased from Intelligent Interfaces Inc. are warranted against defects in materials and workmanship for one year from the date of purchase. If you transfer ownership, this warranty is automatically transferred to the new owner and remains in effect for the original one year period.

**WHAT IS NOT COVERED UNDER THE WARRANTY:** This warranty does not apply if the product has been damaged by accident or misuse, or as a result of service or modification by other than an authorized Intelligent Interfaces Inc. representative, or by hardware, software, interfacing, or peripherals or cables not provided by Intelligent Interfaces Inc.. Intelligent Interfaces Inc. shall have no obligation to modify or update hardware or software products once manufactured. Modifications or updates to Intelligent Interfaces Inc. hardware or software products will be according to the agreement between the parties

EXCEPT AS OTHERWISE SPECIFICALLY PROVIDED HEREIN, THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE CONDITION OR PERFORMANCE OF INTELLIGENT INTERFACES INC.'S PRODUCTS, IT'S MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. INTELLIGENT INTERFACES INC. SHALL HAVE NO LIABILITY TO IT'S CUSTOMERS FOR ANY CLAIM, LOSS OR DAMAGE OF ANY KIND OR NATURE WHATSOEVER, NOR SHALL THERE BE ANY ABATEMENT OF PURCHASE PRICE, ARISING OUT OF OR IN CONNECTION WITH (1) THE DEFICIENCY OR INADEQUACY OF THE EQUIPMENT FOR ANY PURPOSE WHETHER OR NOT KNOWN OR DISCLOSED TO INTELLIGENT INTERFACES INC., (2) ANY DEFICIENCY OR DEFECT IN THE EQUIPMENT, (3) THE USE OR PERFORMANCE OF THE EQUIPMENT, (4) ANY INTERRUPTION OR LOSS OF SERVICE OR PERFORMANCE OF THE EQUIPMENT, OR (5) ANY LOSS OF BUSINESS OR OTHER CONSEQUENTIAL LOSS OR DAMAGE, EXPENSES, LOST PROFIT, LOST SAVINGS, OR OTHER DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, WHETHER OR NOT RESULTING FROM ANY OF THE FOREGOING.

The repair or replacement of a product or a refund of purchase price is your exclusive remedy. The implied warranty of merchantability or fitness is limited to the One-Year duration of this written warranty.

Some states or provinces do not allow limitations on the length of an implied warranty. Therefore, the above limitation or exclusion may not apply in your state. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, or province to province.

**Intelligent Interfaces, Inc.**
P.O. Box 99
Mill Spring, NC 28756
PH: 1-828-625-0800
FAX: 1-828-625-4700
Web: http://www.intelligentinterfaces.com
Email: service@intelligentinterfaces.com


Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Artisan Technology Group** is an independent supplier of quality pre-owned equipment

## Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

## We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

## Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP