



TAMS 63488 USB/GPIB Controller for Windows



Installation & Operation

TAMS 63488 USB/GPIB Controller Installation & Operation

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Introduction

The TAMS 63488 USB/GPIB controller is intended to add IEEE-488 (General Purpose Instrument Bus - GPIB) capabilities to any computer with a USB port running Windows 2000 or Windows XP.

The TAMS USB/GPIB Controller takes full advantage of the High Speed USB 2.0 bus performance and delivers the highest possible level of throughput.

Whether you are using Agilent-VEE, BASIC for Windows, or programming in C with the SICL or VISA library, your code will now run at full performance.

Unpacking Your Product

When you open your TAMS 63488 USB/GPIB Controller shipment, examine its contents. Make sure your shipment contains the following items.

488-66531	63488 USB/GPIB Controller
USB2-06-AB	6 foot USB Cable
63488-90002	Installation & Operation Instructions for Windows
63488-0101	63488 Driver Software for Windows on CDROM

Hardware Warranty

All TAMS products use the highest quality components and are assembled to the highest specifications. Should a defect exist, or a failure occur, we apologize.

Please follow the instructions below for service response.

- In the US please return it to TAMS. Please call or Fax for return instructions.
- Internationally, please contact the local distributor for return instructions.

Any customer may contact TAMS, or return products directly to TAMS, but for customers outside the US, this may cause a delay, which could be avoided by working with the local distributor listed in Appendix F.

The complete hardware warranty information is in Appendix B.

For software warranty information see the Software License in Appendix A.

Installing the USB/GPIB

This section describes the installation process.

Software Installation

Please install the TAMS 63488 software *before* connecting the USB/GPIB Controller to the computer's USB port. The TAMS 63488 software is supported on Windows 2000 (Service Pack 4) and Windows XP. The TAMS 63488 software depends upon the Agilent IO Libraries. You need to have installed the Agilent IO Libraries M.01.00 or later release, before you can install the TAMS 63488.

Software installation requires you to have Administrator privileges.

Installing the software first ensures that Windows will be able to find the correct driver that is associated with the TAMS 63488 USB/GPIB Controller.

Hardware Installation

Once the TAMS 63488 software installed, the TAMS 63488 USB/GPIB Controller can be connected to the computer. Connect the usb cable to the TAMS 63488 USB/GPIB controller and to the host computer's USB port.

ESD WARNING: Most interfaces contain components that are sensitive to damage from electrostatic discharge. Use protective measures including anti-static workstation and personal grounding devices, if possible.

If there are not enough USB ports on the computer, the TAMS 63488 USB/GPIB Controller can be connected to a self powered USB hub. The self powered hub should then be connected to the computer's USB port with a separate USB cable. It is also necessary to apply power to the hub.

When installing the TAMS 63488 USB/GPIB Controller, you may get the message : "HI-SPEED USB Device Plugged into non-HI-SPEED USB Hub". This indicates that your USB port is not capable of running at High Speed (480Mbps). The TAMS 63488 USB/GPIB will automatically switch to Full Speed (12Mbps). For High Speed operation, you need to install a USB 2.0 High Speed Interface in your computer.

Once the TAMS 63488 USB/GPIB Controller is connected to the computer or USB hub, the lights will flash green, then red, and then the power light will turn green. This indicates that the TAMS 63488 USB/GPIB controller is ready.

After plugging in the TAMS 63488 USB/GPIB Controller to a USB port, the Windows plug and play manager will detect the new hardware (TAMS USB/GPIB Controller), and briefly display a screen such as:



The Windows plug&play manager has detected the TAMS 63488 USB/GPIB Controller and is attempting assign the proper driver for that interface.

Note When installing the TAMS 63488 USB/GPIB Controller software, you may get a Windows Message indicating that the driver has not passed Windows Logo Testing or a message indicating that the driver has not been digitally signed. Please disregard these messages and continue with the installation.

Once the hardware is installed, the TAMS 63488 USB/GPIB Controller needs to be configured using the IO Config utility.

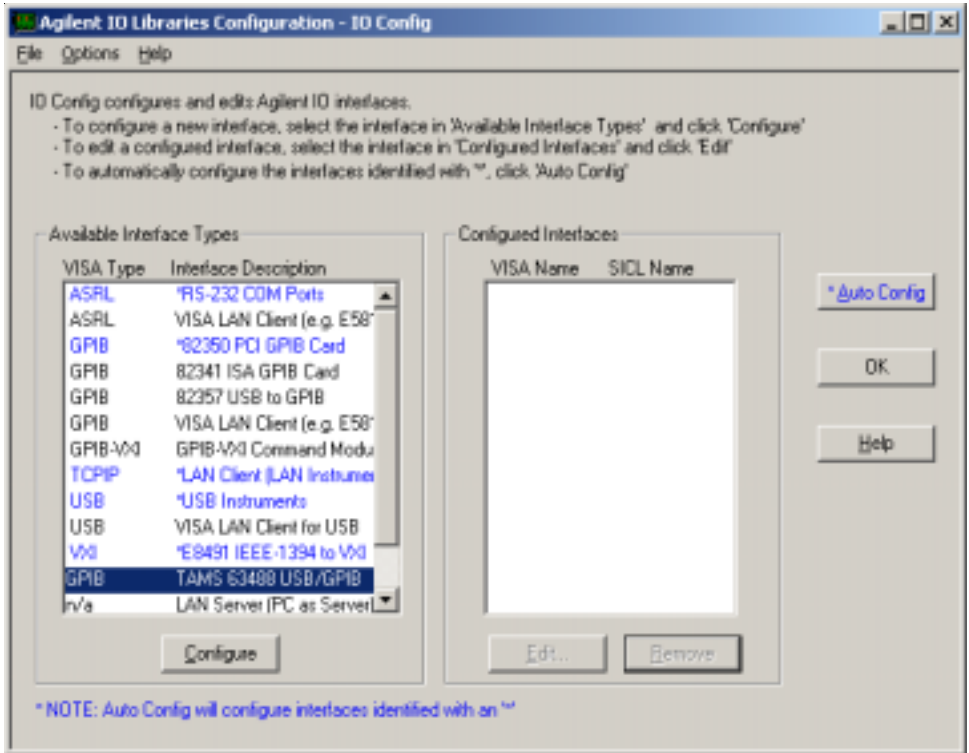
Configuring the USB/GPIB Controller in SICL/VISA

Configure the interface by executing the IO Config program, which will now be located in the IO Libraries bin subdirectory. You should also have a shortcut under Start->Programs->Agilent IO Libraries

Note If the Agilent IO Libraries version M.01.00 were installed using the default values the IO Libraries bin subdirectory will be found here:

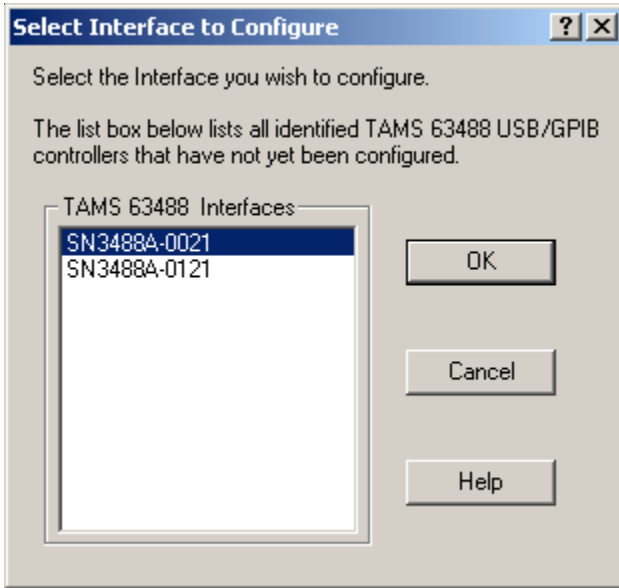
Windows 2000/XP: C:\Program Files\Agilent\IO Libraries\bin\

Upon execution, the IO Config program will present a window like this:



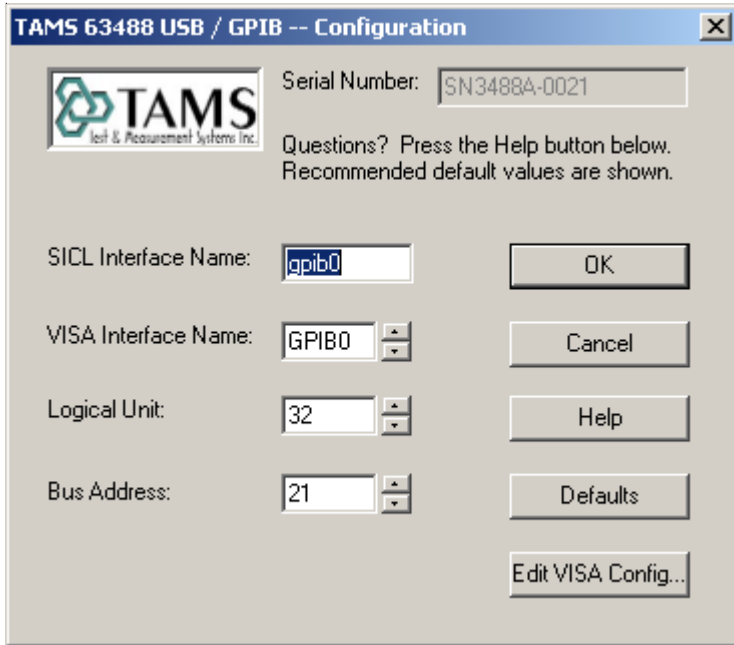
To configure your 63488 interface, please highlight the GPIB TAMS 63488 USB/GPIB Controller entry under Available Interface Types and double click on it or click on the Configure button.

If you have more than one USB/GPIB Controller in your system the following window will appear (if you have one controller only, please continue to the next step):



Select the 63488 controller you wish to configure (if you have only have one 63488 USB/GPIB controller, you will not need to select any interface, the system will do it automatically for you). Click on OK.

Now the following window will appear:



In this window you will select all of the configurable parameters for the TAMS 63488.

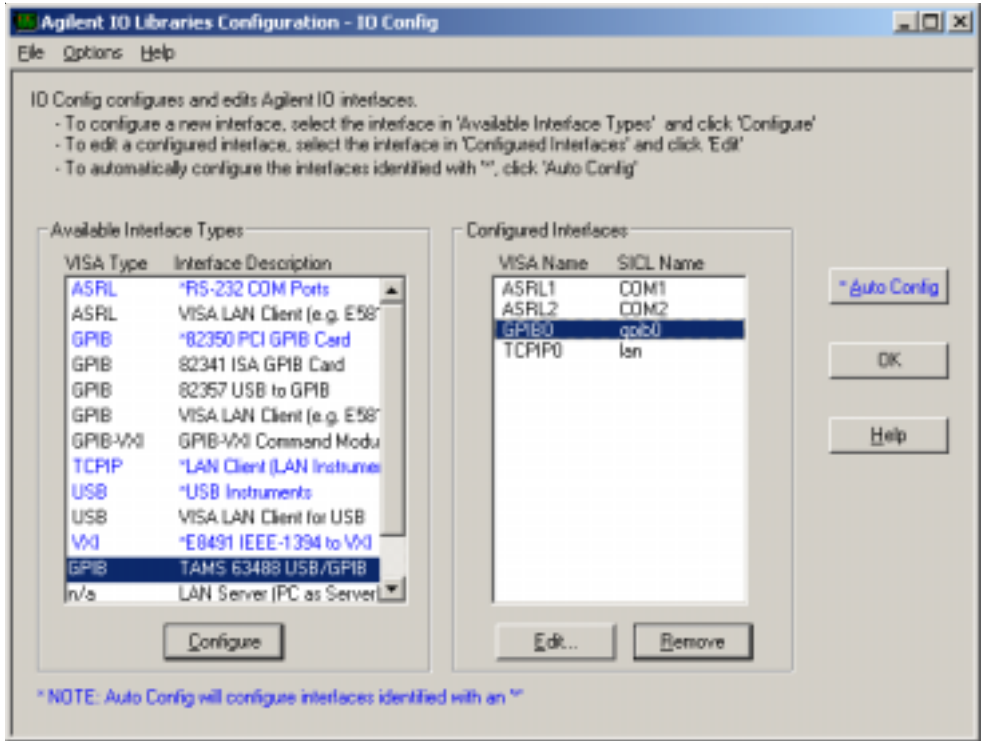
Note The entry named “Serial Number” refers to the serial number of the TAMS 63488. This read only field will match the serial number printed on the TAMS 63488 USB/GPIB controller.

If you have existing applications that specify a different SICL or VISA name, then you may need to change these parameters to match the configuration name that the program is expecting.

Typically, the logical unit does not have to be changed. Traditionally, the first GPIB interface has been assigned the logical unit of 7.

The GPIB Address, which by default is set to 21, is the bus address you wish the interface to have at system power up. Please make sure that this GPIB address does not conflict with any other GPIB device on the same bus.

Additional information on these functions is provided through the HELP button. When you are finished setting the configurable parameter, click OK. You will then see your interface listed on the screen, such as:



Now, click OK to finish configuring the TAMS 63488 USB/GPIB Controller and exit IO Config.

Connecting GPIB Instruments

Once the TAMS 63488 USB/GPIB controller software and hardware has been successfully installed, instrument communications can begin by connecting the GPIB instruments to the controller's GPIB connector.

If you are communicating with one GPIB instrument, the TAMS 63488 USB/GPIB controller can be connected directly to the instrument's GPIB connector. If you want to communicate with multiple GPIB instruments then you need to use additional GPIB cables. The GPIB cables should be used to daisy chain multiple instruments together. The TAMS 63488 USB/GPIB Controller should be the last item connected. An example configuration is shown below:



Supplemental Information

This section provides supplementary information on the TAMS 63488 USB/GPIB Controller. The 63488 only functions as the GPIB System Controller.

The 63488 supports standard GPIB modes of operation, except for:

- Passing of Active Controller
- Non-System Controller Mode, which prevents using SICL Commander sessions or VISA Servant Sessions.

The T1 delay is set at 350 nsec.

Revision 1.1 of the software added a minimum timeout period. If you set a timeout value smaller than the minimum timeout, then the timeout value will be raised to the timeout floor. The minimum timeout period was needed to ensure reliable USB transactions when running at Full Speed.

USB High Speed and Full Speed

The USB standard defines three speeds: High Speed (480Mbps), Full Speed (12Mbps), and Low Speed (1.5Mbps). The TAMS 63488 USB/GPIB Controller will operate in either High Speed or Full Speed and will automatically use the highest speed possible.

In order to use High Speed, the Computer and USB Hub (if used) must support High Speed.

USB Hubs

USB Hubs can be bus powered or self powered. Bus powered means that power is supplied from the USB Bus and typically each port on the hub can only provide 100mA. Self powered hubs means that they supply their own power and typically have an external power supply that is connected to an outlet. Self powered hubs typically provide 500mA of power per port.

The TAMS 63488 USB/GPIB Controller requires 500mA. Because of this reason, the TAMS 63488 USB/GPIB can not be used with bus powered hubs.

Using the Interface with TransEra HTBASIC

Load the SICL version of the GPIB/HPIB driver with your desired options, e.g.:

```
LOAD BIN "HPIBS;DEV hpib7 ISC 7"           (for TransEra HTBASIC)
```

Note: Historically 'hpib7' is the SICL name for the first GPIB Controller. If you are following the above example, you need to change the SICL Name to 'hpib7'. By default the TAMS 63488 uses a SICL Name of 'gpib0'.

Using the Interface with Agilent VEE

Configure at least one instrument, using the Logical Unit number assigned to the TAMS 63488 USB/GPIB Controller as the prefix, and then perform I/O as usual. The refresh button will not report that the controller is present: this is normal and does not indicate malfunction.

Troubleshooting

This section describes some troubleshooting techniques for the TAMS 63488. The latest information is available at the TAMS website at: <http://www.tamsinc.com/hpib/63488/>

Problem: The lights on the 63488 USB/GPIB Controller do not light up or does not flash on startup.

Solution: The most likely cause of this problem is the 63488 is not connected to the computer and thus does not have power.

Is the USB cable securely connected between the 63488 and the computer? Try unplugging the USB cable and reconnecting it. Try a different USB port on the computer.

Is the 63488 USB/GPIB Controller connected to a USB hub? If it is connected to a hub, Is the hub connected to the computer? Does the USB hub have power connected to it?

Does Windows detect a new USB device in Device Manager, but the lights are off on the 63488? The most likely situation is that your computer's USB port is not supplying 500 mA. Please contact your computer manufacturer for information on your usb ports. You may have to use an external powered USB hub.

Problem: Installed the 63488 USB/GPIB computer before installing the 63488 USB/GPIB controller Software.

Solution: If you attach the 63488 to the computer before installing the TAMS 63488 software, and you did not cancel the operation; then Windows will assign the default USB driver for that device. You need to: start the Windows Device Manager (Click on Start->Settings->Control Panel, Double Click on System, Click on the Hardware Tab, Click on the Device Manager... button) Select the TAMS 63488 USB/GPIB Controller which will be the unknown USB Device, and Double Click on it. Select the Driver Tab. Click on "Update Driver.." button. Select the TAMS 63488 USB/GPIB driver.

Problem: IOConfig can not find the TAMS 63488 USB/GPIB Controller.

This occurs if the TAMS 63488 USB/GPIB controller is not connected to the computer or if the wrong driver is installed. If the power light on the TAMS 63488 USB/GPIB controller is green, then the unit is receiving power and is connected to the computer. The TAMS 63488 USB/GPIB controller uses the T63488.sys driver. You can use the Device Manager to determine which driver is assigned to the T63488.sys driver.

Problem: The green power light on the TAMS 63488 unit is on, but the program is unable to communicate with instrument through SICL or VISA.

The most likely cause of this problem is an incorrect configuration setting.

Is the instrument connected to the TAMS 63488? Verify the physical connection between the instrument(s) and the TAMS 63488 USB/GPIB controller.

Did you run Agilent's IO Config? SICL and VISA need to be configured before the TAMS 63488 USB/GPIB Controller is operational.

If you are using multiple GPIB instruments, make sure that each device has its own unique GPIB address. Each GPIB device must have a unique GPIB address. The GPIB Address for the TAMS 63488 can be found using the IO Config utility.

Is the address string correct? (e.g. "gpib0,20" for siel or "gpib0::20::instr" for visa)
Existing programs may have hard coded address strings. You can use the IO Config utility to change the SICL or VISA names to match what the program is expecting.

Appendix A - Software License Agreement

Software License Agreement

Please carefully read this License Agreement before installing the software. Rights in the software are offered only on the condition that the Customer agrees to all terms and conditions of the License Agreement. If you do not agree to the terms of the License Agreement, you may return the unopened software package and the hardware for a full refund.

In return for the payment of fee TAMS grants the Customer a license to use the software, until terminated subject to the following

Customer may use the software on any one computer.

Customer may not reverse assemble or decompile the software.

Customer may make copies for archival purposes.

Customer has no other rights to copy.

All copies of the software must bear the copyright notice(s) contained on the original.

OWNERSHIP: Customer agrees that they do not have any title or ownership of the software, other than ownership of the physical media. Customer acknowledges and agrees that the software is copyrighted and protected under the copyright laws.

Customer Acknowledges and agrees that the software may have been developed by a third party software supplier named in the copyright notice(s) included with the software, who shall be authorized to hold Customer responsible for any copyright infringement or violation of this License Agreement.

TRANSFER OF RIGHTS IN SOFTWARE: Customer may transfer rights in the software to a third party only as part of the transfer of all their rights and only if Customer obtains the prior agreement of the third party to be bound by the terms of this License Agreement.

Upon such transfer, Customer agrees that their rights in the software are terminated and that they will either destroy their copies and adaptations or they will deliver them to the third party.

Transfer to a US government department or agency or to a prime or lower tier contractor in connection with a US government contract shall be made only upon their prior written agreement to terms required by TAMS.

SUBLICENSING AND DISTRIBUTION: Customer may not sublicense the software or distribute copies or adaptations of the software to the public in physical media or by telecommunications without the prior written consent of TAMS

TERMINATION: TAMS May terminate this software license for failure to comply with any of these terms provided TAMS has requested Customer to cure the failure and Customer has failed to do so within thirty (30) days of such notice.

UPDATES AND UPGRADES: Customer agrees that the software does not include updates and upgrades which may be available from TAMS under a separate support agreement.

EXPORT CLAUSE: Customer agrees not to export or re-export the software or any copy or adaptation in violation of the US Export Administration regulations or other applicable regulations.

LIMITED WARRANTY

TAMS warrants for a period of 90 days from the date of purchase that the software product will execute its programming instructions when properly installed on the computer or workstation with a supported version of the Operating System. TAMS does not warrant that the operation of the software will be uninterrupted or error free. In the event that this software product fails to execute its programming instructions during this warranty period, Customer's remedy shall be to return the CD media to TAMS for replacement. Should TAMS be unable to replace the media within a reasonable amount of time, Customer's alternate remedy shall be a refund of the purchase price upon return of the entire product and all copies.

TAMS warrants the media upon which the product is recorded to be free from defects in materials and workmanship under normal use for a period of 90 days from the date of purchase. In the event any media prove to be defective during the warranty period, Customer's remedy shall be to return the media to TAMS for replacement. Should Tams be unable to replace the media within a reasonable amount of time, Customer's alternate remedy shall be a refund of the purchase price upon return of the entire product and all copies.

NOTICE OF WARRANTY CLAIMS Customer must notify TAMS in writing of any warranty claim within the warranty period.

LIMITATION OF WARRANTY: TAMS makes no other express warranty, whether written or oral, with respect to this product. Any implied warranty of merchantability or fitness is limited to the 90-day duration of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

This warranty gives specific legal rights, and you may also have other rights which vary from state to state, province to province or country to country.

EXCLUSIVE REMEDIES : The remedies provided above are Customer's sole and exclusive remedies. In no event shall TAMS be liable for any direct, indirect special, incidental, or consequential damages (including lost profit) whether based on warranty, contract, tort or any other legal theory. Some states provinces or countries do not allow the exclusion or limitation of incidental or consequential damages, so the limitation or exclusion may not apply to you.

WARRANTY SERVICE: Warranty service may be obtained directly from TAMS or from any of its Distributors.

Appendix B - Hardware Warranty Information

ONE YEAR LIMITED WARRANTY

Test & Measurement Systems, Inc. warrants to the purchaser that the Interface card will be free of all defects in material and/or workmanship for one year from the date of shipment to the customer.

In the event of malfunction or failure attributable directly to faulty material and/or workmanship, TAMS will at its option, repair or replace the defective product or components, to whatever extent it shall deem necessary to restore the product or component, to proper operating condition. TAMS may at its option repair or replace, a defective unit with a new or refurbished unit.

The customer shall be solely responsible for the failure of any TAMS product, resulting from accident abuse, or misapplication of the product, and TAMS assumes no liability as a consequence of such events under the terms of this warranty.

While TAMS has made every effort to provide clear and accurate technical information about the application of this product, TAMS assumes no liability for any events arising out of the use of this technical information.

This Warranty gives you specific legal rights and you may also have other rights which vary from state to state, and from country to country.

This Warranty is in Lieu of all other express warranties which now or hereafter might otherwise arise with respect to this product. ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE, SHALL HAVE NO GREATER DURATION THAN THE PERIOD FOR THE EXPRESS WRITTEN WARRANTY APPLICABLE TO THIS PRODUCT AS SHOWN ABOVE, AND SHALL TERMINATE AUTOMATICALLY AT THE EXPIRATION OF SUCH PERIOD.

(Some states and countries do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you) No action shall be brought for breach of any implied or express warranty after one year subsequent to the expiration of the period of the express written warranty.

Incidental and consequential damages caused by malfunction, defect, or otherwise and with respect to breach of any express or implied warranty, are not the responsibility of TAMS, and to the extent permitted by law, are hereby excluded both for property and to the extent not unconscionable, for personal injury damage. (Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.)

Appendix C: Specifications

General Requirements:

Minimum System Requirements	Windows 2000 Service Pack 4, Windows XP USB Port (OS may require additional resources)
Required Software	Agilent IO Libraries, Version M.01.00 or later
Supported Standards	USB 2.0, IEEE-488.1 and IEEE-488.2 compatible, SICL, VISA
Supported Software Development	Visual Basic, Visual C/C++, Visual Studio, Agilent VEE, BASIC for Windows, LabVIEW

General Characteristics:

Power	USB bus powered device, +5V 500 mA (max), 280 mA (typical)
Connectors	Standard 24-pin IEEE-488, Standard USB B
Dimensions	9.53 cm x 6.35 cm x 2.54 cm (including connectors)
Weight	227 grams
Cable	6 foot, shielded, USB 2 certified
Indicators	Power, Activity
Warranty	1 Year

Environmental Specifications

Operating Environment	0 degrees C to +40 degrees C
Storage Environment	-20 degrees C to +60 degrees C
Humidity	20-80% (0 degrees C to +40 degrees C)
Storage Humidity	20-80% (0 degrees C to +55 degrees C)

Ordering Information

Interface	TAMS 63488 USB/GPIB Controller
URL:	http://www.tamsinc.com/hpib/63488/

Appendix D: Safety



This symbol indicates a caution. See the manual for a complete explanation, and only continue when all conditions are fully understood and met.



This symbol indicates that the product complies with the requirements of the Low Voltage Directive and the EMC Directive, and carries the CE Mark accordingly.

Ordinary protection: This unit is for indoor use only. It is not protected against a harmful ingress of moisture.

This product uses components that may be damaged by electrostatic discharge. Although all such components are protected, take precautions to avoid electrostatic discharge into the connectors.

Do not use this product in a manner not specified by TAMS.

Only qualified, TAMS-trained personnel may service this product.

The USB cord is the means of disconnect. If the USB cord is not accessible to the operator, then another means of disconnect (i.e. power switch on the rack) must be provided by the user.

Appendix E: Declaration of Conformity

Manufacturer's Name: Test & Measurement Systems Inc. (TAMS)

Manufacturer's Address: 750 14th Street SW
Loveland, CO 80537
USA

Declares, that the product:

Product Name: TAMS 63488A USB/GPIB Controller
Model Number: TAMS 63488A

Conforms with the following European Directives:

The product herewith complies with the requirements of the Low Voltage Directive and the EMC Directive and carries the CE Marking accordingly.

Conforms with the following product standards:

EMC IEC 61326:2000, Electrical Equipment for Measurement, Control and Laboratory Use – Part 1: General Requirements

<u>Specification</u>	<u>Test Method</u>	<u>Test Conditions</u>	<u>Result</u>
Emissions	EN 61326-1	Group 1 Class A	Compliant
Electrostatic Discharge	EN 61000-4-2	+4kV Contact / VCP / +-4 kV Air	Compliant
Radiated RF Immunity	EN 61000-4-3	80 – 1000 MHz, 3 V/m, 80% 1kHz AM	Compliant
EFT/Burst	EN 61000-4-4	+0.5kV I/O (>3 meters), +1kV AC mains	Compliant
Conducted RF Immunity	EN 61000-4-6	150 kHz to 80 MHz, 3Vrms, 80% 1kHz AM, power and I/O > 3 meters	Compliant



17 December 2004

Darren Kwock

Date

Appendix F: Distributors

Denmark

Brouwers Computerware
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TAMS 63488 USB/GPIB Controller for
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Part #63488-90002