



USB HART^Ò Interface

Users' Manual

DM01003100AA February, 2003

LIMITED WARRANTY VIATOR[®] Interface for HART

MACTek Corporation warrants this Interface and all of its component against defects in materials or workmanship for a period of one year from the date of purchase. This warranty only extends to the original consumer of this product.

If the Interface or a component does not function because of defects in material or workmanship during the warranty period, *MACTek* will either repair the defective product or replace it with a new or remanufactured functionally equivalent product of equal value. The original consumer must send proof of purchase along with the defective product as provided below. To obtain service under this warranty, first call the *MACTek* Support Center to obtain a Return Merchandise Authorization (RMA) number from *MACTek*; then deliver the product, shipment pre-paid, to *MACTek* addressed as follows:

MACTek Engineering Dept. Attn: RMA # _____ 2112 Case Parkway South Twinsburg, OH 44087 USA

Call the *MACTek* Support Center at (216) 283-2010 to obtain an RMA number, or for further product or service information under this warranty.

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

No terms in any purchase order or other sales agreement shall alter or replace the terms contained in this Limited Warranty

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VIATOR USB HART Interface

Overview

Congratulations on purchasing the VIATOR USB HART Interface. The Interface allows you to communicate with HART instruments using a personal computer, the computer's USB port, and HART communication software.

The Interface operates on low power, is isolated, and fully HART compliant. It draws power from the USB port and requires no external power supply. The Interface operates on as little as 30 mA of USB supplied power, well within the capabilities of all PCs. The Interface adheres to the USB 2.0 standard. The VIATOR USB HART Interface Software Driver included on the VIATOR Interface Installation CD provides the link between the USB port and the HART communication software, by generating a virtual communications port.

The Interface is enclosed in a small, rugged plastic case, suitable for the industrial environment. You connect the interface to your computer with a short integral cable terminating in a USB A connector, and connect to field devices with an integral 6 foot cable terminating in two Minigrabber[®] test clips.

For the most recent version of this document, go to the MACTek web site <u>http://www.mactekcorp.com/</u>

Getting Started

Hardware and Software Requirements:

- VIATOR USB HART Interface, Model 010031
- Computer with one or more USB ports
- Windows operating system software:
 - Windows 98 second edition Windows ME Windows 2000 Windows XP
- VIATOR Interface Installation CD with VIATOR USB HART Interface Software Driver, software utilities and documentation
- HART application software for communication with HART instruments

HART Communication Software

HART communication software must be capable of recognizing virtual Com ports to work with the Interface,

DOS and Windows NT based applications do not recognize USB virtual com ports and are therefore not supported.

Check Your VIATOR USB HART Interface Package:

Your Interface package contains the following items:

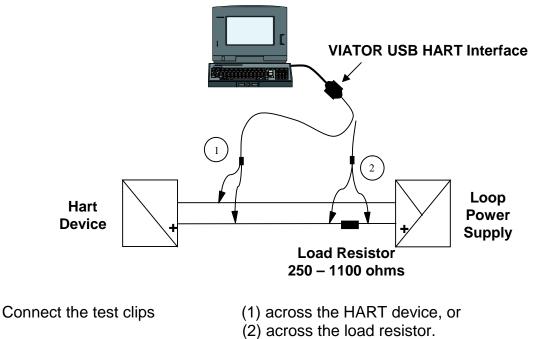
- VIATOR USB HART Interface
- VIATOR Interface Installation CD

If any of these items is missing or damaged, please contact MACTek Corporation.

Connecting to a HART Device

The Interface has an integral USB cable with a male A plug for connection to the computer and an integral, 6-foot cable with two test clips.

The Interface connection to the HART network is transformer-isolated and polarityinsensitive. Transformer isolation allows you to connect the Interface across the loadresistor or across the HART device. Polarity insensitivity means that you may attach either test clip to either side of the HART device or load Resistor.



Do not connect the Interface across the power supply. You will not damage the Interface, but communication with the HART device cannot occur.

Standby and Hibernate Power Saving Modes

The VIATOR USB Interface driver supports all portable computer power saving modes. However, interruption of HART communication software by a Standby or Hibernate mode may necessitate restarting that HART communication software to continue HART communications.

Software First Installation (Inserting CD before plugging in VIATOR Interface - Recomended)

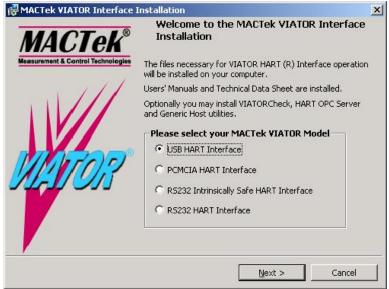
Inserting the VIATOR Interface Installation CD into the PC's CD drive will automatically start the installation of the MACTek driver (viator.sys) and information (viator.inf) files. Screens will appear, prompting the user to install documentation, test utilities and HART communications software. All documentation and utilities are optionally installed. Only the MACTek drivers are necessary for the proper operation of the VIATOR USB HART Interface.

1) Insert the VIATOR Interface Installation CD into your PC's CD drive. The preliminary screen will appear:

Then a Welcome window will appear:

	Welcome to the MACTek VIATOR Interface Installation	<u>×</u>
Measurement & Control Technologies	The files necessary for VIATOR HART (R) Interface operatio will be installed on your computer.	'n
	Users' Manuals and Technical Data Sheet are installed.	
	Optionally you may install VIATORCheck, HART OPC Server and Generic Host utilities.	
	Please select your MACTek VIATOR Model	
	C USB HART Interface	
1002	C PCMCIA HART Interface	
	C RS232 Intrinsically Safe HART Interface	
	C RS232 HART Interface	
	,	
Select interfa	ce model to continue	

Select the USB HART Interface:



Click Next>

The Custom Setup screen will appear. Installation of the VIATOR USB Interface documentation, drivers, and utility software will be the default condition.

MACTek VIATOR Interface Installation	X
Custom Setup Select the documentation and utilities that you want to install.	MACTek Measurement & Control Technologies
Click on the icons in the list below to select additional files to in	istall.
VIATOR HART Interface Support Files USB HART Interface PCMCIA HART Interface X • R5232 Intrinsically Safe HART Interfa R5232 HART Interface VIATORCheck Application Notes	Feature Description Users' Manuals, Data Sheets, Registration Form, and Drivers (if required) for all VIATOR HART Interfaces. Be sure that your interface type is selected.
	This feature requires 0KB on your hard drive. It has 1 of 4 subfeatures selected. The subfeatures require 660KB on your hard drive.
Install to: nstallShield Help Space Space	Next > Cancel

Highlighting an item will display its description and size in the area to the right of the item list. Clicking on the icons will present the option of installing (default) or not installing that item. The USB HART Interface must be selected for the drivers to be installed.

The following screen will be displayed while files are copied:

MACTek	VIATOR Interface Installation	
1000	J the MACTek VIATOR Interface gram features you selected are being installed.	MACTek Measurement & Control Technologies
P	Please wait while VIATOR Interface driver and doc installed. This may take several minutes.	cumentation files are
	Status:	
	Generating script operations for action:	
nstallShield -		[[
	< <u>B</u> ack	Next > Cancel

VIATOR USB HART Interface

MACTek in agreement with the HART Communications Foundation (HCF) provides a 30 day evaluation copy of the HART OPC Server. Clicking on the pushbutton will install this software. The Generic Host is also from HCF and must have the HART OPC Server installed to function.

Adobe Reader is necessary to read the documentation copied to the PC's hard drive.

Realized WIATOR Interface Installation	×
Select from the following optional application software to	install MACTEK®
The HART OPC Server is to successfully establish communication between the HART Server and a OPC client application and test the ability to write data to a HART instrument. 30 Day evaluation software package.	HART OPC Server
A generic HART host, used to verify the HART Server	<u>G</u> eneric Host
Software necessary for viewing and printing Users' Manual or other documentation	<u>A</u> dobe Reader 5
InstallShield	
< <u>B</u> ack	Cancel

The final screen is:



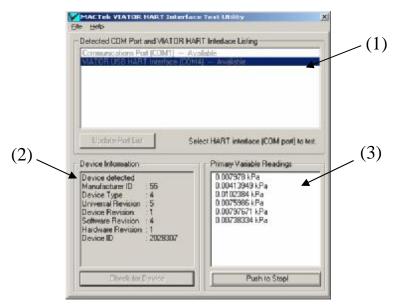
Please complete and FAX the Registration form found at the back of this manual.

Shortcuts to the VIATOR Interface documentation are automatically generated by the Installation CD.

Open Office Document	👼 Generic Host 👼 HART Server	• •	
Programs	MACTER VIATOR	USB View VIATORCheck	
📴 🔷 Documents	•	Application Notes PCMCIA Interface	
😴 🔛 Settings	•	R5232 Interface	
Search	•	👼 R5232 Intrinsically Safe 🔸	ical Data Sheet
🗧 🧇 Help		🔁 Users	' Manual
🖉 🏧 Run			
💈 🔔 Log Off Mactek1			
5 Shut Down			
🏦 Start 🛛 🗭 🚑 👿			

VIATORCheck

VIATORCheck is a utility to help ensure that the VIATOR Interface hardware and driver are correctly installed



After connecting a HART Device (page 3: **Connecting to a HART Device)**, start VIATORCheck and the VIATOR Interface will be listed in the top window (1). Clicking on "Check for Device" causes the device to be questioned and its information in to be displayed in window (2). Clicking on "Read Primary Variable" reads and displays the device's primary variable in window (3).

Hardware Wizard Installation (plugging in VIATOR Interface before inserting CD) Not Recommended. Please Follow Software First Installation.

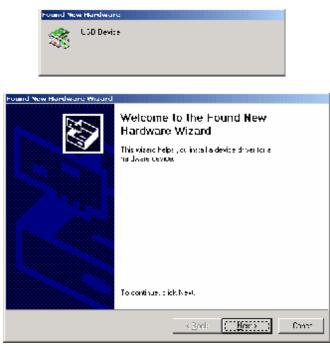
The MACTek driver (viator.sys) and information file (viator.inf) are required for the proper operation of the Interface. They are installed automatically by the Hardware Wizard if the USB Interface is plugged into your PC before the installation CD has been inserted into the CD drive.

1) Plug in the Interface's USB A connector into your PC's USB socket (either socket if more than one is available) or USB hub.

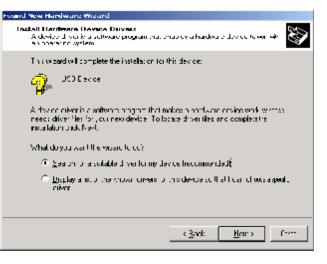
2) The PC will detect and determine that a new USB device has been connected. You will be prompted by pop-up windows to insert the VIATOR Interface Installation CD.

Example pop-up windows for Windows 2000 follows. The pop-up windows for Windows 98, ME, and XP will differ only slightly from these.

2a) Plug in the Interface's USB cable into the host PC. The following windows will appear:



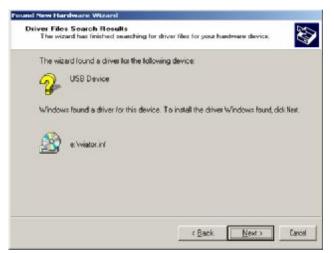
2b) Click Next>



2c) Click Next>

ocate Driver Files Where do you want Windows to sear	tta far driver files?
Search for driver files for the following	hardware device:
USB Device	
The wizard searches for suitable drive any of the following optional search lo	ers in its driver database on your conputerandin
	and a set had a second
To start the search, click Next. If you insert the floppy disk or ED before clic	are searching on a floppy disk or ED-FON drive. king New.
insert the flappy disk or CD before dis	
insert the floppy disk or CD before clic Optional search locations	
inset the floppy disk or CD before clic Optional search locations: Floppy disk drives	
insert the flappy disk or CD before clic Optional search locations Filippy gisk drives CD-FIGM chives	

- 2d) Make sure that only the "CD-ROM drives", is checked,
 - Click Next>

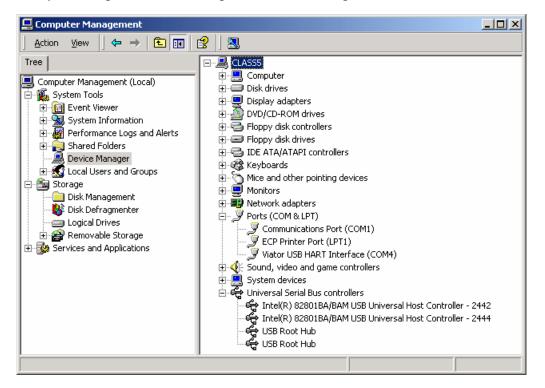


2e) Click Next>



2f) Click Finish

The virtual communications port that has been assigned to the Interface can be determined by viewing the Ports listing in Device Manager, as follows:



The assigned COM number (in this example COM4) may be different between each host PC and can depend upon which USB socket the Interface is plugged into.

Technical Specifications

Electrical Specifications:

Power Supply:	No external supply required. Interface is powered via the USB port.	
Supply Current:	5V @ 30mA	
Connections:		
Computer	Industry standard IBM-PC compatible USB A connector (see Table	
·	II.1).	
HART	Two Mini-grabber test clips.	
Output Level:	Fully HART compliant. 0.5 +/1Vpp trapezoidal wave	
•	@1200/2200 Hz.	
Isolation Certification	on: 1500VDC isolation between instrument & computer.	

Software Requirements:

Operating System:	Windows 98 (second edition), Windows ME, Windows 2000, and Windows XP
	(Windows NT is <i>not</i> supported as NT does not support USB)

HART Cable:

Cable:	Jacketed, twisted pair wire about 4.5 ft long, split into two
	independent test leads 1.5 ft long.
Connection	Mini-grabber test clips, with polarity insensitive termination.

USB Cable:

Cable:	Jacketed, Power 24AWG, Signal 28AWG twisted, Double
	shielded, 1 ft long.
Connector	USB A Male

Environmental Specifications:

Temperature:	Operating:	0° C to 50° C (32° F to 122° F)
	Storage: -40° C	C to 85° C (-40° F to 185° F)
Humidity:	0% to 95% relat	ive humidity (non-condensing).

Physical Dimensions:

Enclosure 51 x 33 x 15 mm ABS enclosure suitable for industrial use.

FCC Class A

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.

CE Compliance, Emissions and Immunity:

The Equipment complies with the Emissions and Immunity requirements given in the EMC Directive 89/336/EEC. The VIATOR Interface was found it to be in compliance with the EMC standards:

Emissions:	EN 61326-1/1997
Immunity:	EN 61326-1/1997
-	EN 61326-1/A1/1998

USB Pin Connections

	Pin #	Description
Data D+	3	Differential full speed USB data at
		12MHz, normally high
Data D-	2	Differential full speed USB data at
		12MHz, normally low
VBUS	1	5V
GND	4	Ground

CUSTOMER REGISTRATION FAXBACK FORM

Dear VIATOR[®] Interface Customer:

To register your product, please provide the information requested below and fax this registration form to *MACTek Corporation* at (216) 283-2009. This information will enable us to serve you better with timely distribution of product updates and new product information.

Sincerely, *MACTek* Corporation

TO: PHONE: FAX: EMAIL:	Customer Registration, <i>MACTek</i> Corporation (216) 283-2010 (216) 283-2009 <u>tholmes@mactekcorp.com</u>
NAME:	
E-MAIL:	
COMPANY:	
STREET:	
CITY:	STATE: ZIP:
COUNTRY:	
PHONE:	FAX:
DATE OF PU	RCHASE:
PURCHASED	 VIATOR USB HART Interface VIATOR RS232 HART Interface VIATOR RS232 HART Reference Interface VIATOR RS232 HART [EEx ia] IIC Interface VIATOR PCMCIA HART Interface
PURCHASED	FROM WHOM?
COMMENTS:	

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Measurement and Control Technologies

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