

***MACTek<sup>®</sup> Corporation***

**VIATOR<sup>®</sup> RS232 Interface for  
HART<sup>®</sup>**

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***Users' Manual***

**Edition: January, 1999**

**LIMITED WARRANTY**  
**VIATOR® Interface for HART**

*MACTek Corporation* warrants this interface and all 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.

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*MACTek Engineering Dept.*  
Attn: RMA # \_\_\_\_\_  
2245 Enterprise East Parkway  
Twinsburg, OH 44087  
USA

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# VIATOR® RS232 Interface for HART®

## *Overview*

Congratulations on purchasing the VIATOR RS232 Interface for HART. The Interface allows you to communicate with HART instruments using a personal computer, the computer's serial interface, and the appropriate HART software.

The Interface requires no special installation, operates on low power for notebook compatibility, and is isolated and fully HART-compliant. It draws power from the RS232 Interface and requires no external power supply. The Interface operates on as little as 2.0 mA at voltages as low as 4.0 VDC, which is well within the capabilities of most PC systems, including energy-efficient notebook computers. The Interface adheres to the EIA-RS232C standard and supports hardware handshaking.

The VIATOR RS232 Interface is enclosed in a small, rugged plastic case, suitable for the industrial environment. The Interface's small size allows you to attach it directly to your computer's serial interface. No adapter cable is required.

## ***Getting Started***

### **Hardware and Software Requirements:**

- VIATOR RS232 Interface for HART
- Computer with one or more RS232 serial port
- Male 9-pin DB-9 connector on at least one serial port, or 25-pin DB-25 connector with DB-25 to DB-9 converter cable (converter cable is not supplied)
- Operating system software such as MSDOS V5.0 or greater that supports RS232 serial ports
- Software for communication with HART instruments

### **Check Your VIATOR RS232 Interface Package:**

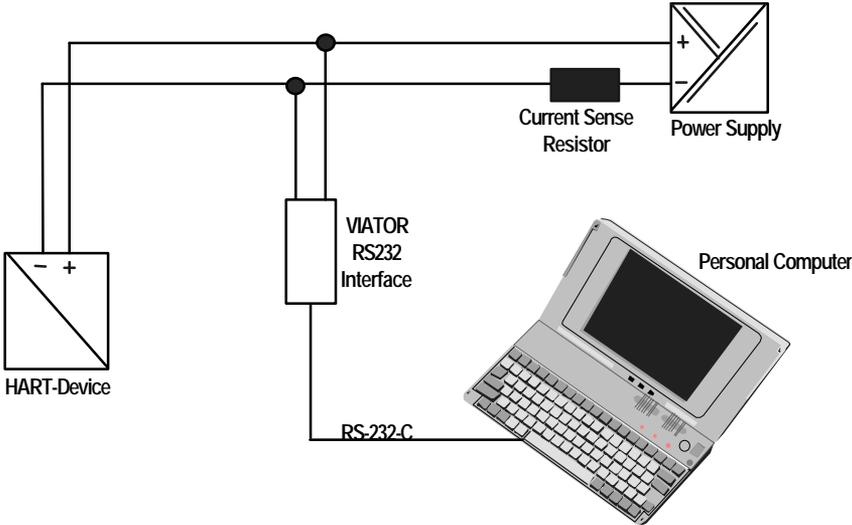
Your Interface package contains the following items:

- The VIATOR RS232 Interface
- Users' Manual
- Connector cable is integral to the Interface.

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

## ***Description of the Connectors and the Cable***

The VIATOR RS232 Interface has a female 9-pin DB-9 serial port for connection to the computer. The standard interface has an integral, 6-foot connector cable terminating in two, polarity-insensitive test clips.



## ***Installation of the Interface***

Attach the mating DB-9 connector on the Interface to your computer's 9-pin serial port. Secure the Interface by tightening the thumb-screws.

Some computers have only a DB-25, 25-pin serial port. You can use a short DB-25 to DB-9 converter cable if you do not have a DB-9 connector on your computer.

You may have to assign your HART software to the COM port used by your interface.

The Interface is transformer-isolated and polarity-insensitive. Transformer isolation allows you to connect the Interface across the current sense-resistor or across the field device. Do not connect the Interface across the power supply; you cannot damage the unit, but communication cannot occur. Polarity insensitivity means that you may attach either one of the test clips to positive and negative poles. You do not have to check the direction of current flow before connecting the unit.

## ***Technical Specifications***

### **Electrical Specifications:**

Power Supply:	No external supply required. System powered via RS232 inputs. Compatible with RS232 levels from +/- 4V to +/-12V.
Supply Current:	1.5mA @ +/-4V inputs. 4.0mA @ +/-12V inputs. Power is drawn from DTR and/or RTS when positive. Supply current does not include current load on output pins.
Pin Connections:	
Computer	Industry standard IBM-PC compatible RS232 DB-9 connector (see Table II.1).
HART	Two test clips.
Output Level:	Fully HART compliant. 0.5 +/- .1Vpp trapezoidal wave @1200/2200 Hz.
Isolation Certification:	1500VDC isolation between instrument & computer.

### **Software Requirements:**

Operating System:	MSDOS Version 5.0 or higher, or equivalent OS that supports serial COM port.
Installation:	Set application software to COM port used by DB-9 serial port.

### **Environmental Specifications:**

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

### **Physical Dimensions:**

Enclosure:	49.5 x 33.3 x 15 mm) ABS enclosure suitable for industrial use.
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### **Interface:**

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

**RS232 Pin Connections**

Inputs:	Pin #	Impedance Ohms	Voltage Levels *	
			Mark/true	Space/false
Transmit data (TXD)	3	220K	2 to 12 V	-12 to 0 V
Data terminal ready (DTR)	4	% pwr supply current + DSR load current + RXD if true load current + CD if true load current	2 to 12 V	-12 to 0 V
Request to send (RTS)	7	220K +% pwr supply current + CTS load current	2 to 12 V	-12 to 0 V
Ground	5	Ref	0 V	0 V
<b>Outputs:</b>				
Carrier detect (CD)	1	4V thru 220 Ohm if true -4V thru 220 Ohm if false	3.5 V / -3.5 V	
Receive data (RXD)	2	4V thru 220 Ohm if true -4V thru 220 Ohm if false	3.5 V / -3.5 V	
Data set ready (DSR)	6	Hardwired from DTR	DTR	
Clear to send (CTS)	8	Hardwired from RTS	RTS	
Ring Indicator (RI)	9	Not used	Not used	

\*RTS or DTR must exceed +/-4V to power the unit. Inputs must not exceed +/-12V, and must be current limited to +/-10mA.

% pwr supply current is supplied by the RTS or DTR based on whichever is more positive.

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**MACTek**<sup>®</sup>

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