

**MACTek<sup>®</sup> Corporation**

# **VIATOR<sup>®</sup> SCADA HART<sup>®</sup> Adapter**

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***Users' Manual***

**Edition: October, 2000**

**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.

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 # \_\_\_\_\_  
2245 Enterprise East Parkway  
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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# VIATOR<sup>®</sup> RS232 Interface for HART<sup>®</sup>

## **Overview**

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

The adapter operates on low power and is isolated and fully HART-compliant. It draws power from the RS232 Interface and requires no external power supply. The adapter operates on as little as 2.0 mA at voltages as low as 4.0 VDC. The adapter adheres to the EIA-RS232C standard and supports hardware handshaking.

The VIATOR SCADA HART Adapter is enclosed in a small, rugged plastic case, suitable for the industrial environment. The adapter'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 SCADA HART Adapter
- 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 SCADA HART Adapter Package:**

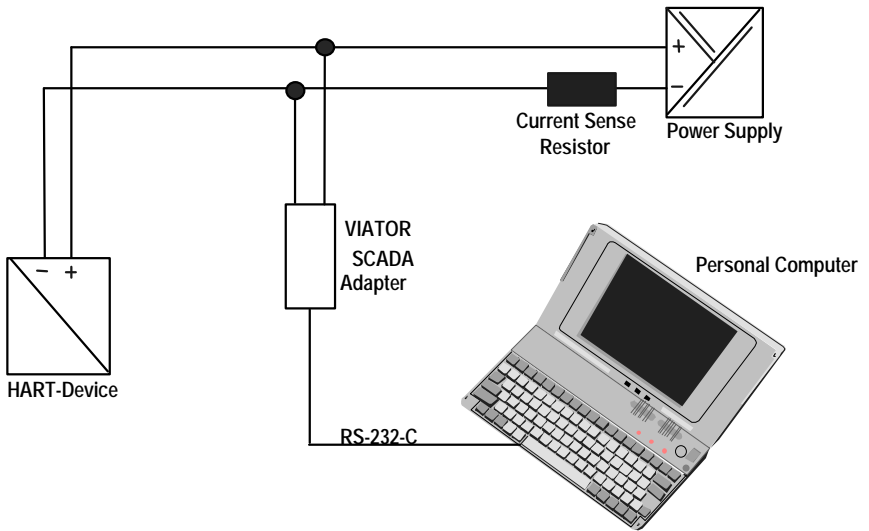
Your Interface package contains the following items:

- The VIATOR SCADA HART Adapter
- 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 SCADA HART Adapter has a female 9-pin DB-9 serial port for connection to the computer. The SCADA interface has an integral, 3-foot twisted pair cable for wiring directly to the HART loop.



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

Do not install the unit under power in a Class 1 Division 2 hazardous environment. Disconnect power to the HART loop before attaching the VIATOR SCADA HART Adapter to the loop when using the unit in a Class 1 Division 2 hazardous environment. You may restore power to the loop after attaching the unit.

Attach the mating DB-9 connector on the adapter to your computer's 9-pin serial port. Secure the adapter 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 adapter.

The adapter is transformer-isolated and polarity-insensitive. Transformer isolation allows you to connect the adapter across the current sense-resistor or across the field device. Do not connect the adapter across the power supply; you cannot damage the unit, but communication cannot occur. Polarity insensitivity means that you may attach either one of the HART leads to positive or 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	Twisted pair cable for wiring directly to the HART loop.
Output Level:	Fully HART compliant. 0.5 +/- .1Vpp trapezoidal wave @ 1200/2200 Hz.
Isolation:	1500VDC isolation between instrument & computer.
Certification:	For use in Class 1 Division 2 hazardous environments.

### **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:	Twisted pair wire about 3 ft long.
Connection	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

### Outputs:

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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