MANUAL

INSTRUCTIONS | OPERATION

HART INTERFACE

HI341

HART® COMMUNICATION PROTOCOL

NOV/24

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Technology Company

HI341

HART Interface

HART COMMUNICATION PROTOCOL

Consult our subsidiary

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HI341 – HART INTERFACE

Description

HI341 HART interface was designed to provide communication between a HART field device and a microcomputer. The interface is powered by signals from the USB port of a PC or tablet with a Windows operating system.

The HI341 interface, in addition to performing HART communication, can also provide power to field device during bench tests. It has power supply modes in both voltages, for transmitters, and current, for positioners.

Another feature of the interface is the presence of an internal resistor for HART communication, when operating on a bench, without needing extra connections.

The HI341 is compatible with all HART communication software based on serial communication.

Main features

- Spiral cable for easy installation and use.
- Standard USB type A connector.
- Powered by the system: No external power supply is required.
- Mini grabber connectors in super-resistant plastic.
- Works with HART equipment from different manufacturers.
- Compact design.
- Compatible with HART configurators based on EDDL and FDT/DTM.

Figure 1 – HI341

Installation and Configuration

Installation

The HI341 interface uses the USB port present on most computers. The user must plug the cable into a USB port and in most cases, it will be automatically recognized in newer versions of Windows. If the user has a PC with a Windows 7 operating system, follow the steps described in the **HI341 Driver Installation** topic later in this manual.

It is important to know what identification is given to the virtual COMM port created. To do this, right-click on **Start** and choose **Device Manager**. The following window will open:

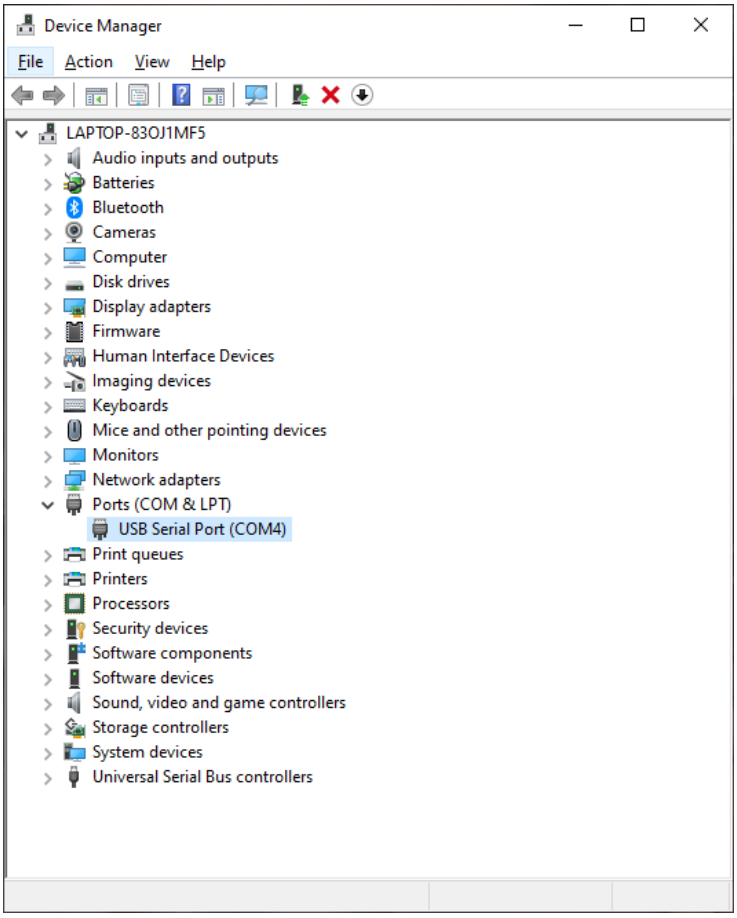

Figure 2 – Device Manager

In the example shown in figure 2, the USB port is COM4. This identification must be informed in the HART configurator that the user will use.

NOTE
Some computers may not automatically recognize the HI341 interface upon first use. Therefore, it is necessary to install an FTDI driver. This will be done automatically if the computer uses the Windows 10 operating system or higher, connected to the Internet, as soon as the interface is connected.

HI341 Driver Installation

When the HI341 is connected to the USB port of the computer using the Windows 7 operating system, a driver installation screen will generally open automatically. Otherwise, follow the following steps.

The installation file is available on the Smar website at https://www.smar.com.br/en/softwares, Drivers option. Choose the HI341 driver. Unzip the file.

For this installation, follow the steps below:

- 1st step: In **Control Panel** choose **Administrative Tools**. And then, **Computer Management** option. See Figures 3 and 4.

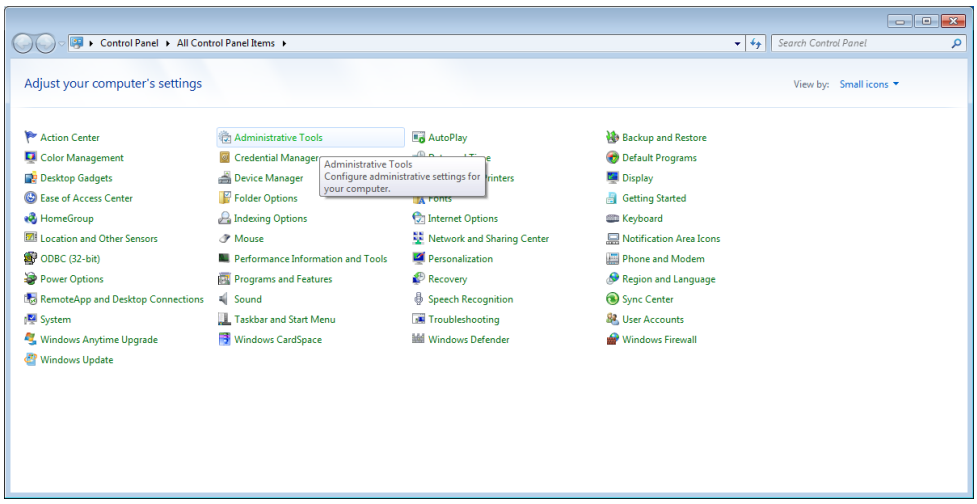

Figure 3 – Driver Installation Step-by-Step – Administrative Tools

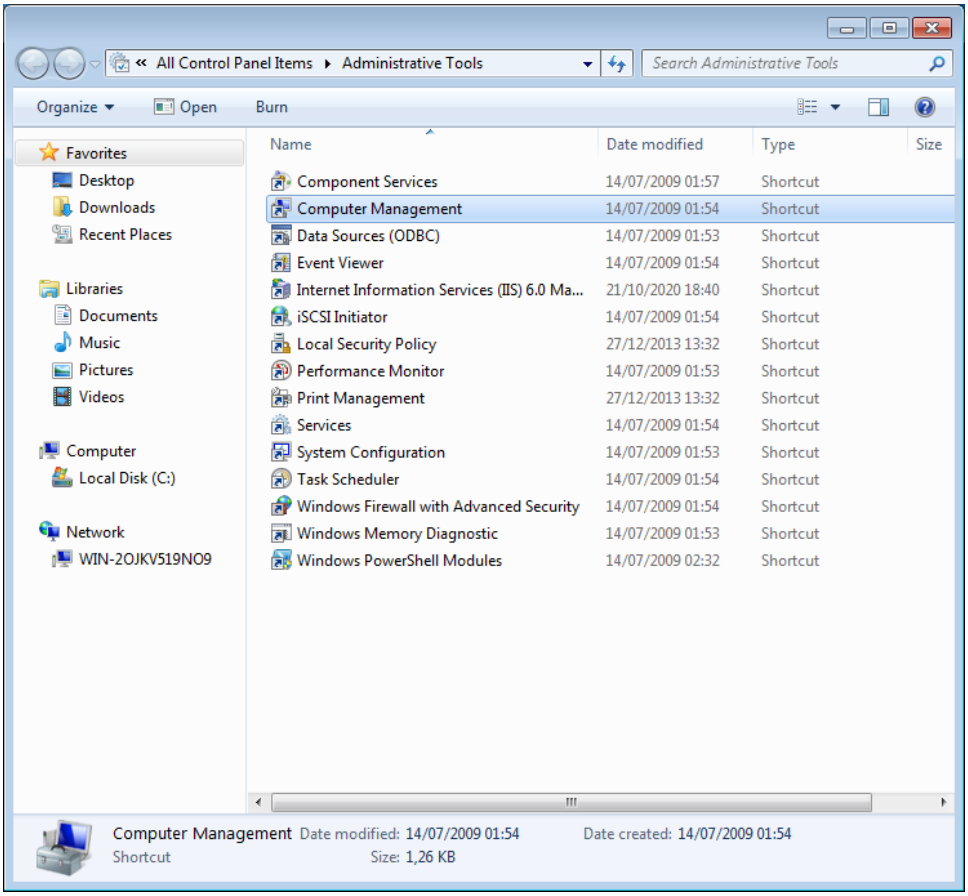

Figure 3 – Driver Installation Step-by-Step – Computer Management

- 2nd step: on the next window, the user must look for the **Device Manager** option. See Figure 5.

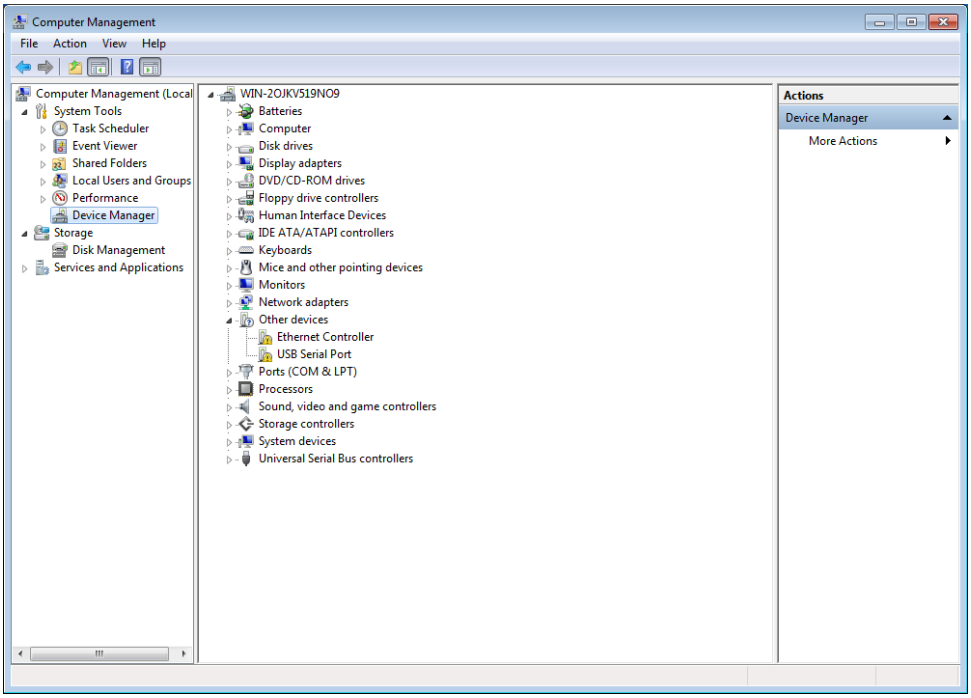

Figure 5 – Driver Installation Step-by-Step – Device Manager

- 3rd step: Right-click **USB Serial Port** and choose **Properties**. See Figure 6.

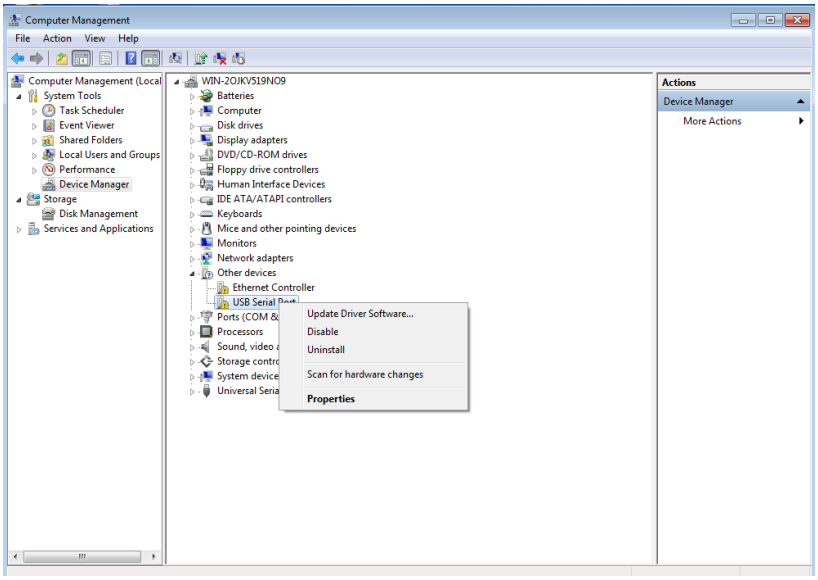

Figure 6 – Driver Installation Step-by-Step – USB Serial Port

- 4th step: The next window will open. Click **Update Driver**. See Figure 7.

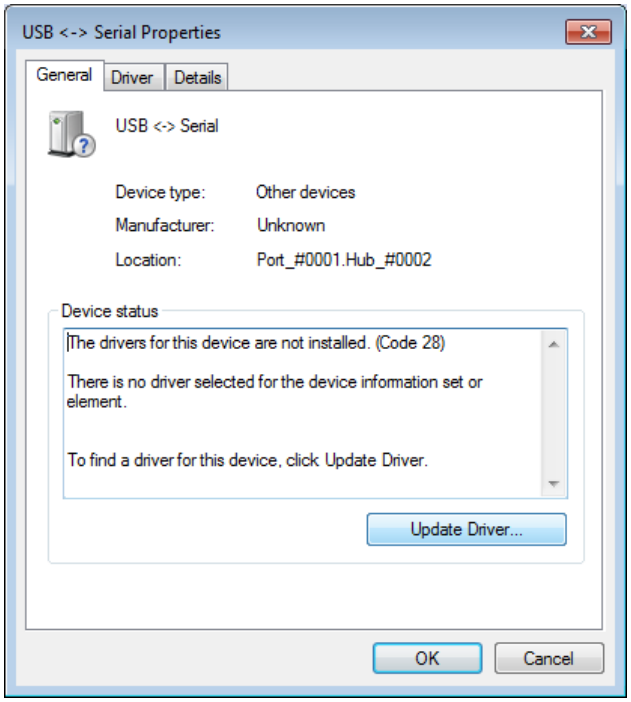

Figure 7 – Driver Installation Step-by-Step – Update Driver

- 5th step: The next window will open. Search for the driver on your computer. Click **Next**. See Figure 8.

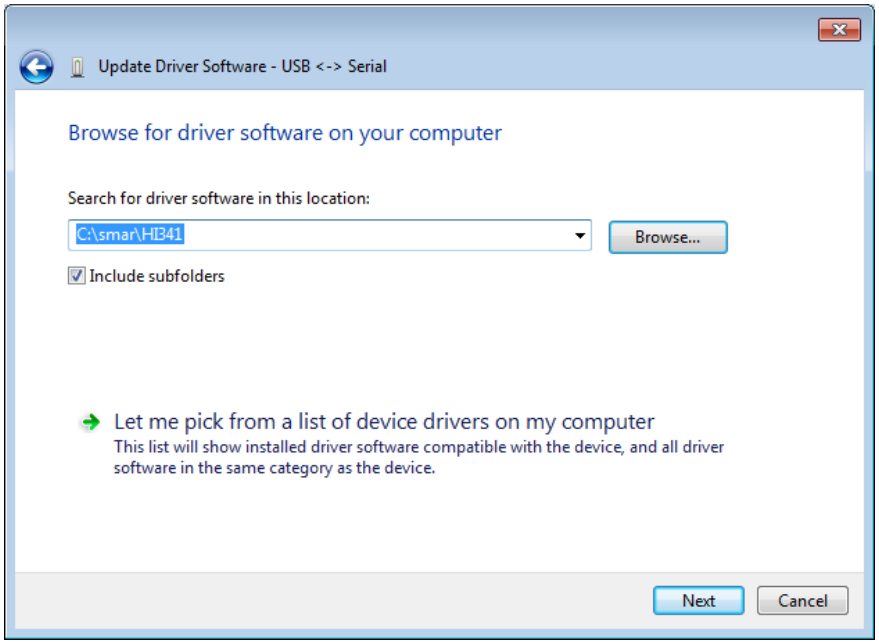

Figure 8 – Driver Installation Step-by-Step – Searching the driver

- 6th step: The driver will be installed. See Figure 9.

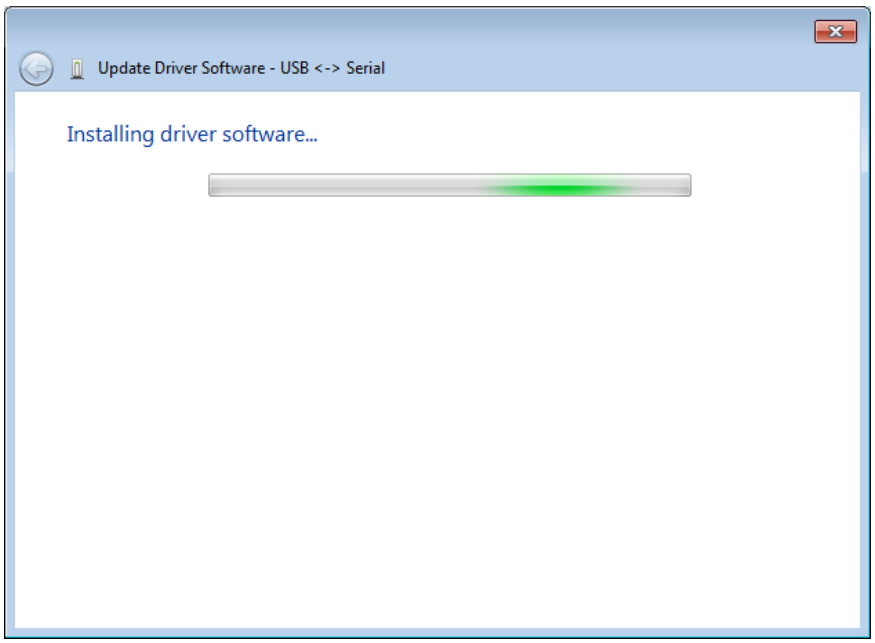

Figure 9 – Driver Installation Step-by-Step – Installing the driver

- 7th step: The next window will open. The driver was installed. Click **Close**. See Figure 10.

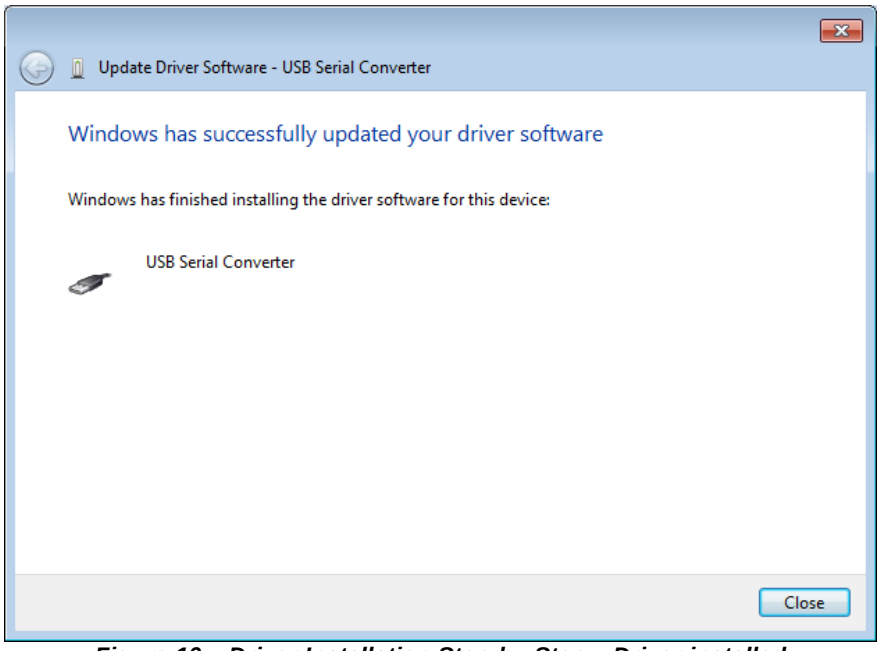

Figure 10 – Driver Installation Step-by-Step – Driver installed

Once this step is complete, the user can verify that the USB port is working properly through its properties. See next figure.

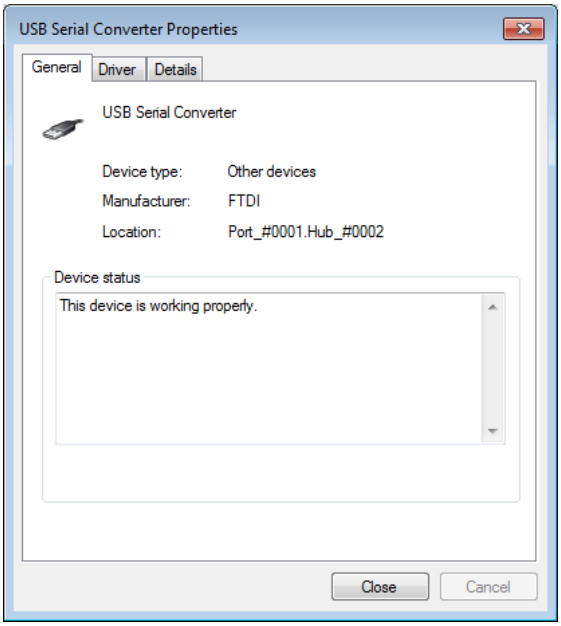

Figure 11 – Properties of USB Port

The port created is the one that will be selected within the application software to communicate with the **HI341**.

Connection between HI341 interface and HART equipment

The interface is connected to the computer via USB cable, and it is connected to the HART equipment via retractable hooks, mini grabber connectors, as shown in the following figure.

Figure 12 – Retractable hooks for connection to HART equipment

The red cable is the positive, it must be connected to the **COMM +** terminal, and the black cable is the negative, it must be connected to the **COMM -** terminal. The cables can also be connected to the + and – terminals, respectively, of the power supply. In this case, the interface must be in **LOCAL** mode.

Figure 13 – HART equipment terminal block

See below HI341 connection examples.

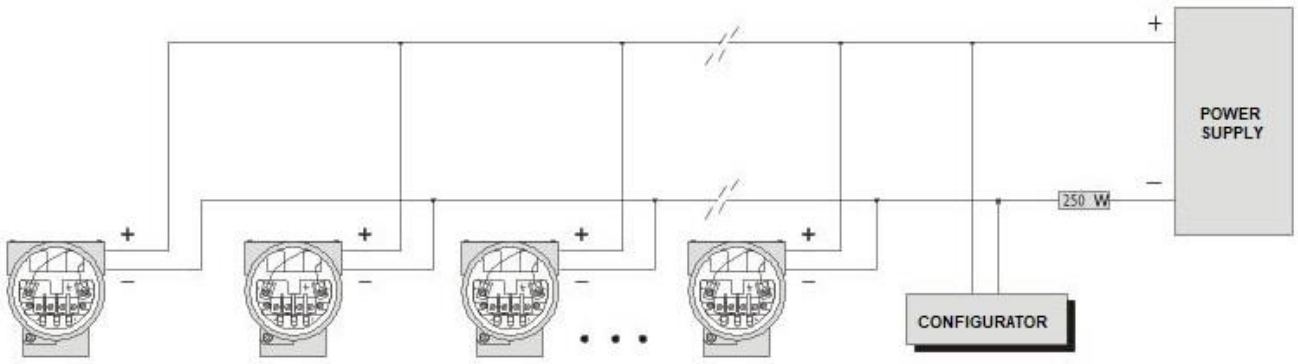

Figure 14 – HI341 – Network connection

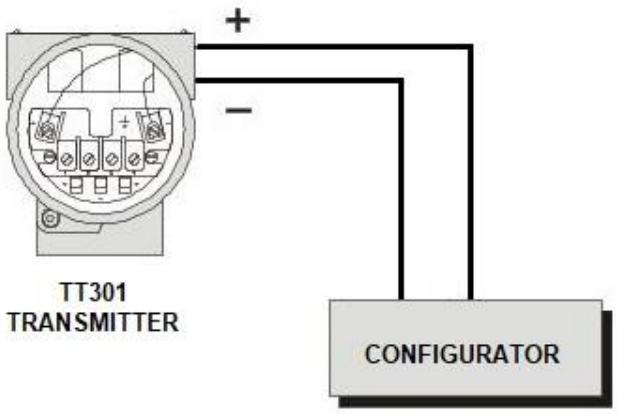

Figure 15 – HI341Connection in Local mode

Operation

The HI341 interface has two selector switches, on the right side, which will indicate whether the equipment will be powered by it or by an external power supply.

Figure 16 – – Indication of the NET/LOCAL and I/V selector switches

Figure 17 – Detail of the NET/LOCAL and I/V selector switches

If the equipment is powered by the interface during the configuration process, the user must choose the **LOCAL** option. If the equipment is powered by an external power supply during this process, the **NET** option must be chosen.

If the equipment is a transmitter, for example a temperature transmitter, the switch must be in position **V**, indicating the supply of 24 Vdc through the interface. If the equipment is powered by current or receives a 4 to 20 mA signal, in the case of a positioner, the switch must be in position **I**.

IMPORTANT
If the switches are not in the correct positions, the equipment will not communicate with the interface.

Operation Modes

NET versus Local
The configuration can be done using the switch located on the side of the interface with the help of a small screwdriver.

With the switch in the **NET** position, the internal communication resistor will be disabled. This configuration is typically used when the transmitter or positioner is connected to the PLC.

In the **LOCAL** position, the internal resistor is enabled, and the power will be supplied by the interface, that is, in this option the equipment must not be connected to an external power supply.

V versus I
This other switch allows you to configure the type of power that will be supplied by the interface when the other switch is in the **LOCAL** position.

In option **V**, a constant voltage sufficient to power 4-20 mA transmitters, such as pressure transmitters, is provided. In option **I**, a constant current of 11 mA is supplied, which is sufficient to power a positioner.

Technical Specifications

COMMUNICATION	
Communication Protocol	HART
Modulation	FSK

INPUT AND OUTPUT	
Input	Power*: 5 Vdc @ 65 mA
Isolation of power supply	1500 Vdc
Output	Voltage 24Vdc @ 3.9 mA (Built-in 250Ω load resistor) / Current (fixed 11mA)

*Protection against power supply with reversed polarity, if the voltage is within the operating range

PROTECTION DEVICE	
Protection Fuse	500 mA – 24 Vdc

INDICATION LEDs		
LED	**COLOR**	**DESCRIPTION**
ON	Green	The LED indicates that the interface is connected to the USB port.
FAIL	Red	The LED lights up when the interface is in LOCAL mode and a short circuit occurs on the equipment's power terminals.
RX	Yellow	Serial port - data reception
TX	Yellow	Serial port - data transmission

DIMENSIONS AND WEIGHT	
Dimensions (H X W X D)	123 x 68 x 30 mm
Weight	250 g

CABLES	
USB Type A standard	Length: 1.5 m
Spiral	Length: 0.7 m