

# HM1-UD USB HART MODEM

## USER GUIDE

Revision 1.0

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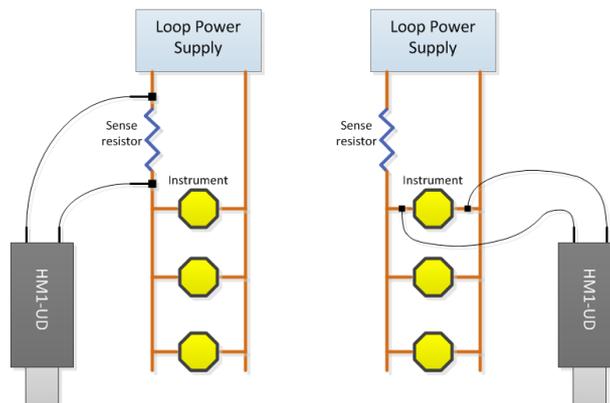
## 1 INTRODUCTION

The HM1-UD is a single channel HART modem module intended for use in conjunction with a PC or laptop computer running standard or proprietary software (such as PACTware) to configure, maintain and manage HART capable process instruments.

Communication between the PC and the module is via a high speed USB interface. Software drivers provided with the product create a virtual serial port (com port) on the PC which is identical in behaviour to an actual serial port and may be used as such by software packages. The USB connection is convenient for portable engineering tools such as note and net books which often do not provide a serial interface.

## 2 HARDWARE INSTALLATION

The HM1-UD installed simply by (a) plugging the device into a free USB port on the host computer and (b) connecting two flying leads to the HART loop using the grabber clips, either across the HART instrument itself or across the loop sense resistor as shown below:



Connection options

A USB extension cable can be used to extend the reach of the modem if required. The polarity of the connection to the loop is not important.

## 3 SOFTWARE INSTALLATION

If the PC to which the HM1-UD is connected has an internet connection, the relevant drivers will be automatically download and installed once the device is plugged in. If this is not the case, or the drivers do not install automatically for any other reason, you may obtain them directly from the Rap Systems website – you will need to register if you have not already done so to get access

to the product support download section. Drivers are available for Windows, Mac OS X and Linux operating systems.

Once installed and the HM1-UD connected, the operating system will report an additional serial port (see device manager under windows). This new serial port can be now be used by software such as Pactware to communicate with the HART modem.

## 4 THEORY OF OPERATION

The HM1-UD appears as a standard serial communications port of the host computer. Data written to the port will be encoded into a HART compatible signal and placed onto the HART loop (provided the RTS signal has also been asserted). Data received from the HART loop (with RTS de-asserted) will be converted into serial data and made available to be read from the serial port. The HM1-UD is a dumb device and acts simply as a protocol converter at an electrical signal level. Implementation of the HART protocol is the responsibility of the host computer.