HI232 *HART Interface for protocol RS-232*

Description

The Computer Modem HI232 is a complete communication path for a HART network. It will enable personal computers to read and or configure data within HART devices. The computer RS-232 connector provides operating energy for the modem, eliminating the need for extra power supply, while the HART loop connector is electrically isolated from the computer terminals. These are key features for process control network. The HI232 is able to work with most configuration software in the market, being a reliable and cost effective option.

Features

- Ideal for configurations, data acquisition and digital control.
- Factory tested to work with all HART field devices.
- Extremely low leakage current (< 1 uAdc) will not interfere with current loop.
- Compatible with RS-232 type DB-9 connector or type DB-25 with adaptor cable.
- Galvanic isolation between HART and RS-232 port greater than 500V.
- Small size and light weight enclosure, no need for extra power supply.

The purpose of this document is assist with the setup, installation, operation and maintenance of the HI232 as well as providing technical specifications and basic data, for further information about this product can be found at www.springres.com

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1 General Information

Process control applications impose strong concerns over any access into the signal line. Quite common to have the field device far from the control room, raising serious concerns about ground loops and static electricity, while the signal wires are transmitting the analog current representing the process variable anything connected to it must not disturb such signal. The computer interface must consider these necessities therefore must be built with best quality components and also observing all guidelines for ground loop isolation, energy injection, and current leakages.

At the computer side these interfaces must satisfy applicable standard computer communication such as RS232, RS-232, BlueTooth, Ethernet, and many others. At the process control network these interfaces must satisfy the requirements of HART protocol.

The HI232 interface combine requirements of HART and RS-232 protocols, and also consider general guidelines of intrinsic safety for hazardous areas. The HART connector is galvanically isolated from the computer connections making it safe for process control application.

2 Mounting & Electrical

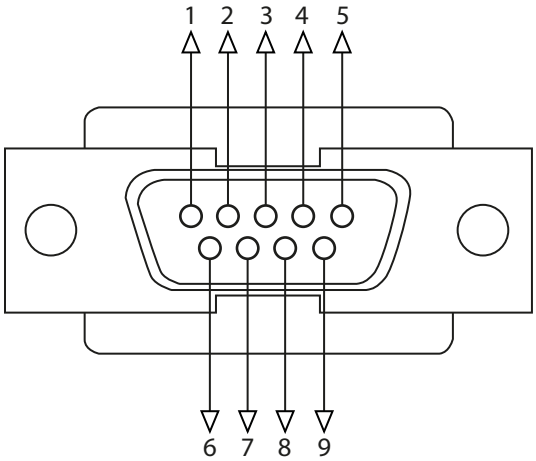
The HI232 require no special need for mounting it can be left hanging on the computer cable, or over any desk within an environment fitted for computer operation. Figures 7.1.1 suggest electrical connection to computer and HART network.

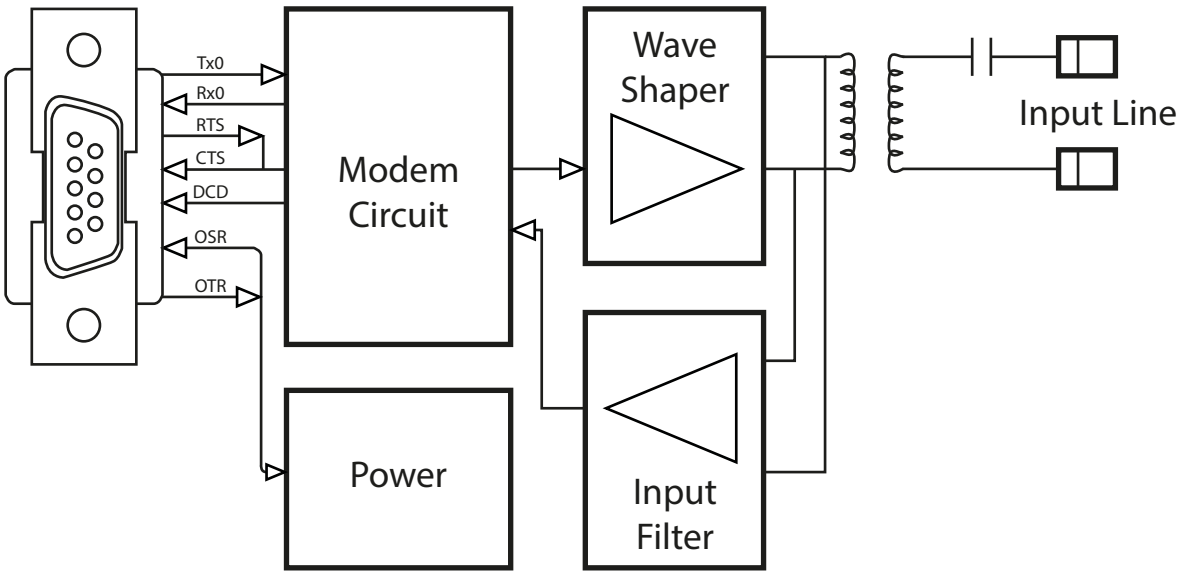
The HART and RS-232 wires are galvanically isolated from each other this way the computer and process control equipments can be grounded according to their own requirements. The HI232 will tap into signals from these 2 ground systems without concerns.

3 Electric Wiring

Figure 3.1 and the table below describe the electrical designators of the HI232 terminals.

Pin #	Designator
1	Data Carrier Detect
2	Received Data
3	Transmitted Data
4	Data Terminal Ready
5	Signal Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator



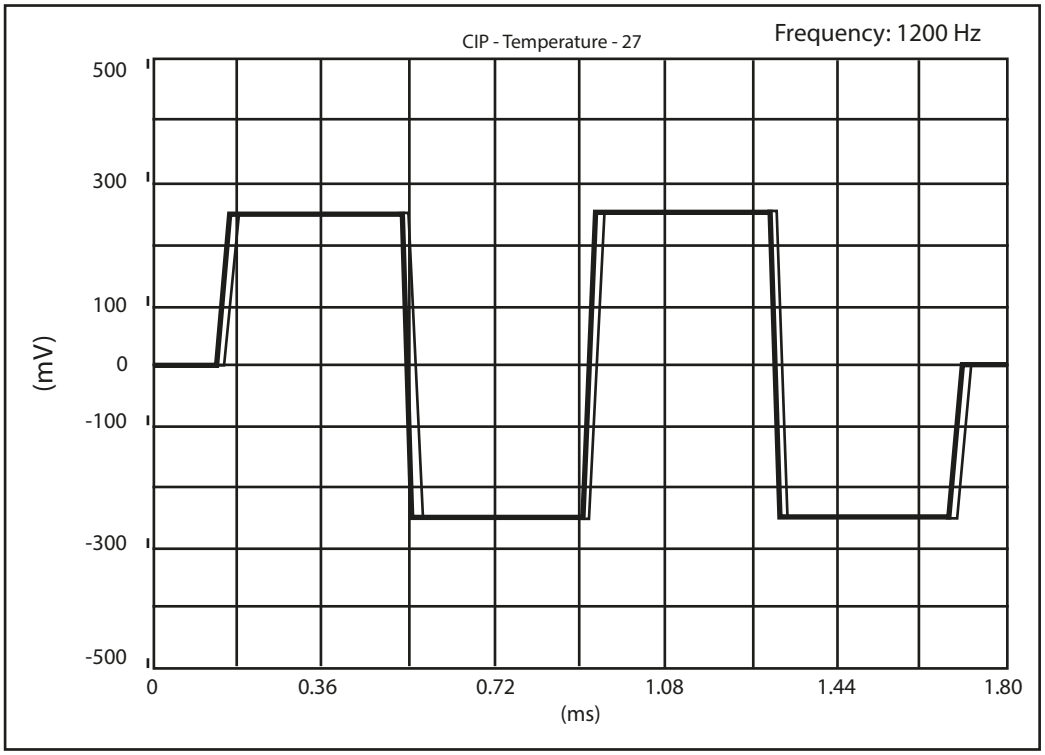


4 Functional Specifications

- Power supply. _____ less than 20mA from RS-232 port
- Operating temp. _____ -20 to 70C
- Storage Temp: _____ -20 to 70C
- Humidity: _____ 10 to 90%

5 Performance Specifications

- Computer port: _____ RS-232 compliant
- Computer o.s.: _____ Windows, MacOS, Android
- HART protocol: _____ HART 1 through 7
- HART modulator output: _____ 400mVpp through 250 Ohm see figure xx
- HART modulator input: _____ 120mVp to 1500mVpp
- HART-RS-232 isolation: _____ 500Vac @ 60HZ



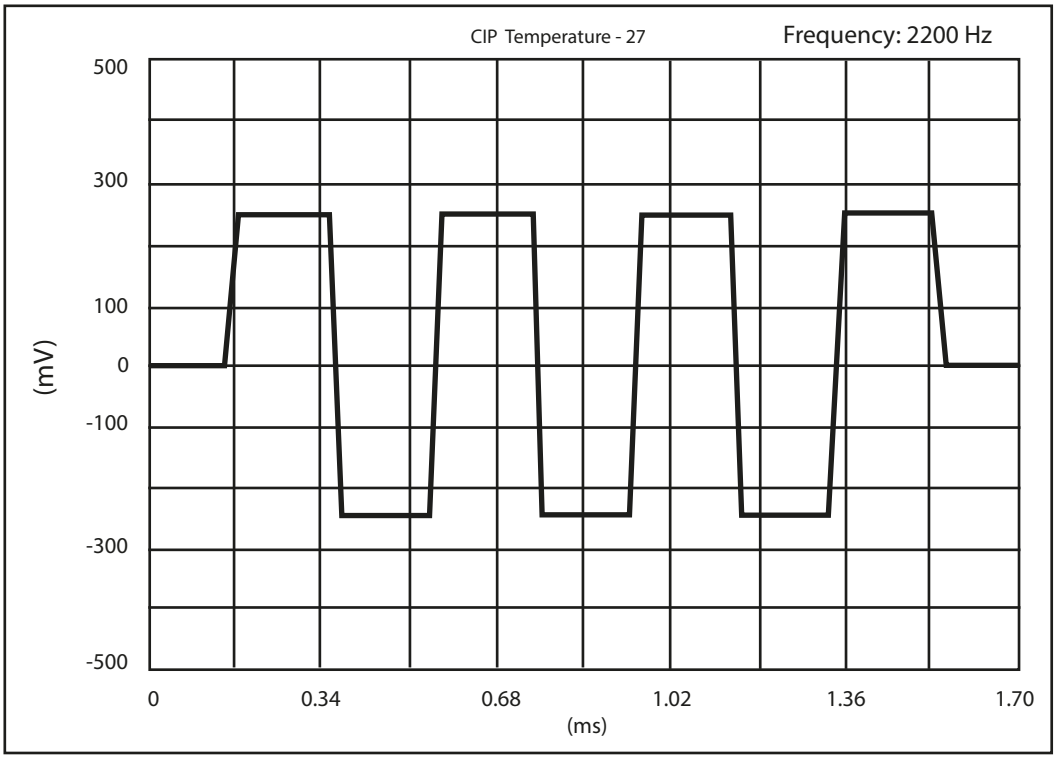


Figure 5.1: modulation wave shape

Vibration Effect:	Meets SAMA PMC 31.1
Electro-Magnetic Interference:	Designed to comply with IEC 801

6 Physical Specifications

Electrical Connection:	RS-232 cable up to 400mm HART cable expandable to 1 meter.
Mounting:	No special requirement

7 Hardware Configuration

The HI232 is composed of 4 sections, the RS-232 electronic interface, the HART modem, the galvanic isolation module, and the a/c current section. These sections are designed to satisfy the respective protocols to provide serial communication without interference to the process control current signal and also keeping the 2 networks electrically isolated to prevent damaging ground faults.

7.1 RS-232 computer cable

The HI232 computer cable will connect directly into any PC with RS-232 port, it will transfer serial data through RS-232 protocol and take power from the same PC connector. The HI232 require less than 1mA of current therefore it will not cause issues when used with modern PC or Laptop.

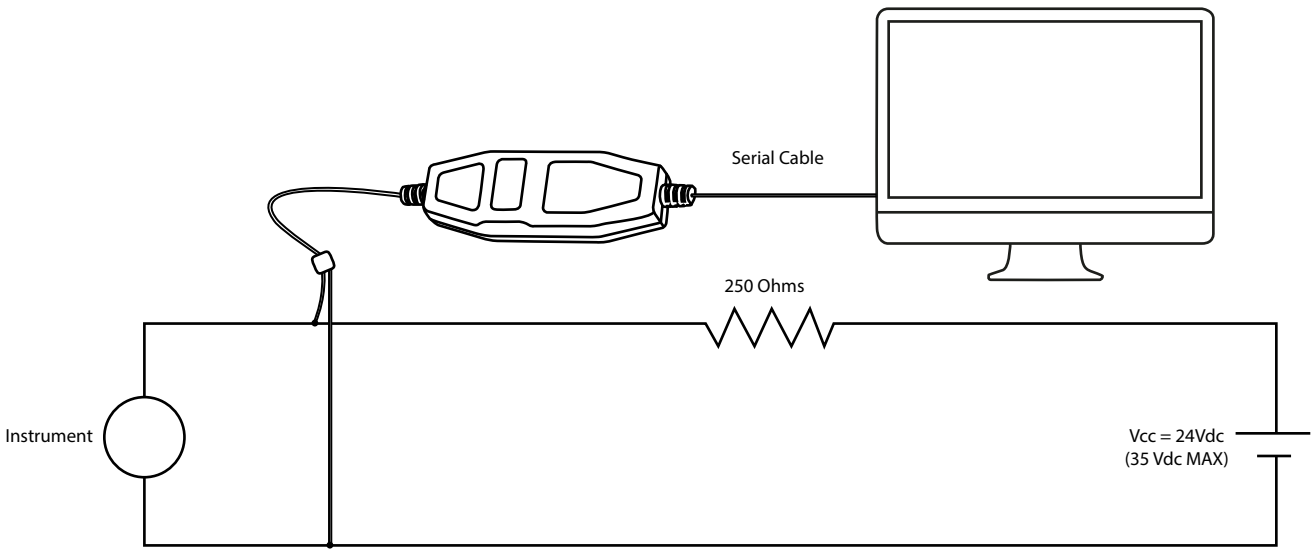


Figure 7.1.1: show connection practice.

7.2 HART network cable

The HI232 HART cable is delivered with hook connector to provide fast and easy attachment to any bare wire or field instrument terminals, its expandable cable 1 meter long will allow momentary connections inside panels or hard to access instruments, allowing easy configurations and commissioning of HART devices.

Figure 7.1.1: show connection practice.

8 Software Configuration

The HI232 will work with any RS-232 compliant PC software with emulation package for protocol RS-232.

9 Mechanical Dimensions

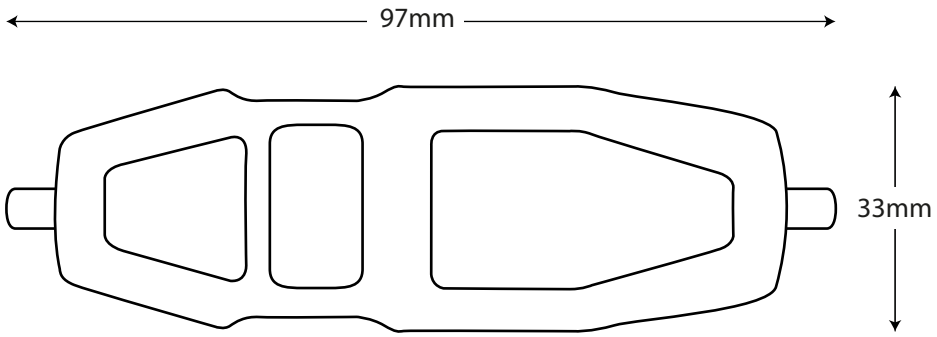


Fig. 9.1 – Mechanical Dimensions

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