HM01

HART Modem – Converter to RS232

HART modem is designed to convert RS232 signals to a HART communication protocol according to the Bell 202 Standard. It operates in half-duplex mode, the transmission direction follows the RTS signal level found on the personal computer serial interface. The modem provides easy connection between a personal computer and a device equipped with HART protocol communication. Communication is based on using additional digital transmission of information which are superimposed on the 4 to 20 mA current output of the device.

In addition to maintenance and diagnostic data it is possible to transmit through the connection data in digital form such as value corresponding to the sensor output current and other measured variables. By this way, one sensor can measure and transmit several physical variables. Easy access to maintenance and diagnostic information of connected devices enables monitoring of an actual sensor status and by means of setting program in the PC it is possible to perform simple change in sensor settings as well. Besides, monitoring of measured physical value by input sensor current is still held.

The HM01 modem construction enables simple link to the connecting wiring of the sensor. There is no need to disconnect the sensor. Simultaneously it ensures galvanic separation between the measuring circuit and connected personal computer. The HM01 modem is primarily intended for maintenance purposes. In case of its permanent installation to the measuring circuit it is necessary to remove used measuring hooks and to connect the cables to the connection wiring appropriately.

Inputs and Outputs

- RxD (pin no. 2): data received by the personal computer, voltage levels correspond to RS232 standard, this is output signal of the modem HM01

- TxD (pin no. 3): data transmitted by the personal computer, voltage levels correspond to the RS232 standard, this is input signal of the modem HM01

- RTS (pin no. 7): personal computer output signal for switching the direction of data flow through modem HM01. When RTS is between -12 V and 0 V, the modem is receiving data from HART network and is transmitting them to RS232 level of the serial port. When the voltage is between +2 V and +12 V, the modem is transmitting data from RS232 serial port to the output according to the HART protocol

- DTR (pin no. 4): personal computer output signal, by the HM01 it is used as a power supply for its electronic circuits after rectifying

- GND (pin no. 5): signal ground, connects the personal computer ground wire to the ground wire of the modem HM01 and is isolated from the HART outputs of the modem. Isolation voltage between input and output part of the modem is 500 V

- HT1, HT2: input / output of HART standard of the HM01 modem

Basic parameters

- the transmission speed of the modem is 1200 bit/sec (according to the Bell 202 Standard), a transmitted level LOG L is represented by a frequency of 1200 Hz and a level LOG H is represented by a frequency of 2200 Hz

- the modem is fully self contained, it does not need any external power supply. Required supply voltage is gained from RS232 serial port signals of the connected personal computer

- isolation voltage between input and output side of the modem HM01 is 500 V

- output voltage of the modem HM01 at frequency of 1200/2200 Hz is at operating resistance of 250 ohm approximately 500mV, its mean value is zero and it does not influence measurement accuracy of the sensor output current

- the modem HM01 is mounted in a plastic cover with a size of 50×42×22 mm, on RS232 serial link side the modem is equipped with Canon 9Z connector, on a HART side there are two cables 1,1 m long with isolated measuring hooks. Modem inputs are symmetrical on the HART side and it does not depend on their polarity. Colour marking of output cables and measuring hooks is not important

- size: 50×42×22 mm

- weight: 60 g

Typical connection scheme of the HM01 HART modem in the measuring circuit