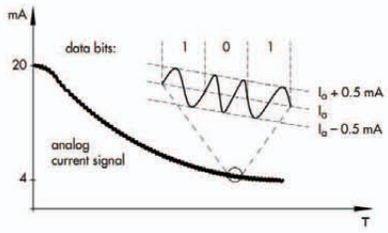
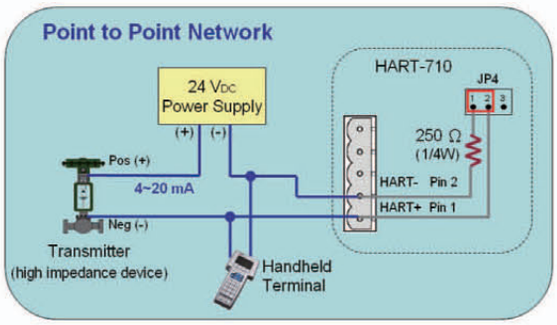
7. HART Introduction & Products

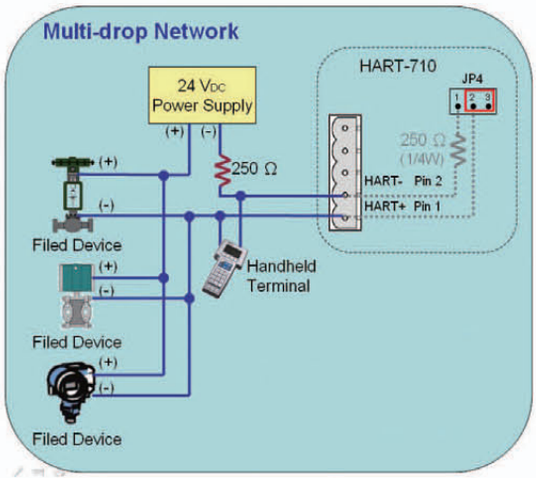
HART Field Communications Protocol extends this 4 ~ 20 mA standard to enhance communication with smart field instruments. The protocol preserves the 4 ~ 20 mA signal and enables two-way digital communications to occur without disturbing the integrity of the 4 ~ 20 mA signal. Unlike other communication technologies, the HART protocol can maintain compatibility with existing 4 ~ 20 mA systems with a uniquely backward compatible solution.
Here are two main operational modes of HART instruments: analog/digital mode, and multi-drop mode.



Peer-to-Peer mode

The analog and digital signals can be communicated in this mode. Here the digital signals are overlaid on the 4 ~ 20 mA loop current. Both the 4 ~ 20 mA current and the digital signal are valid output values from the instrument. The polling address of the instrument is set to "0". Only one instrument can be put on each instrument cable signal pair.





Multi-drop mode (digital)

In this mode, only the digital signals are used. The analog loop current is fixed at 4 mA. In multi-drop mode it is possible to have up to 15 instruments on one signal cable. The polling addresses of the instruments will be in the range 1 ~ 15. Each meter needs to have a unique address.

HART Features

- Relatively easy to understand and use, the HART protocol provides access to the wealth of additional information (variables, diagnostics, calibration, etc.)
- HART is a no risk solution for enhanced field communication
- Compatibility with standard 4 ~ 20 mA wiring
- Simultaneous transmission of digital data
- Risk reduction through a highly accurate and robust protocol
- Increase Plant Availability
- Reduce Maintenance Costs
- Improve regulatory compliance

Selection Guide

Model Name	Description	Page
HART Gateway		
HART-710	Modbus to HART Gateway	7-2
HART Module		
I-87H17W	HART module for PAC	7-2
HART Converter		
I-7567	USB to HART Converter	7-3
I-7570	Serial to HART Converter	