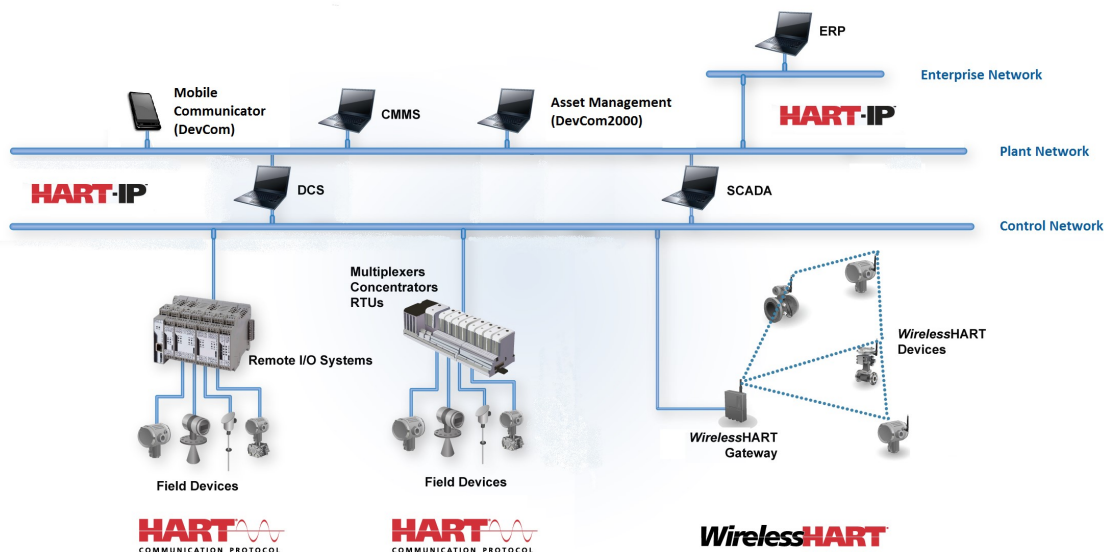


## Introduction to HART-IP

### Introduction

The HART® Protocol was enhanced in 2012 to include the transmission of HART data over the Internet Protocol (IP) using Transmission Communication Protocol (TCP). HART-IP offers a straightforward way to access all the HART information available in a HART device through an IP network and allows that information to be brought up to the enterprise level easily, without the need to go through any translation processes, and with no loss of information.



### What is HART-IP?

HART-IP is simply the HART protocol rendered over Ethernet. The addition of HART-IP capability to HART host applications provides a quick and easy way to configure, monitor and diagnose HART devices on *WirelessHART* networks or HART-IP compatible HART Multiplexers from wherever you have Ethernet access - inside or outside the facility.

In general, the host takes a HART message and wraps a HART-IP header around it. Then it is wrapped in a TCP header and sent across the network. The receiving network device decodes the message and sends the embedded HART command to the addressed device on the *WirelessHART* or HART multiplexer network. The reply then goes through the same process headed back to the host.

### Data Mapping NOT Required

Because the application layer is the same for HART field devices and for HART-IP, time consuming and error-prone data mapping (using Modbus) is eliminated, making HART-IP simple to use with no manual setup required.

#### Uses Existing Network Infrastructure

The industry standard plant Ethernet network supports many protocols eliminating the need for a dedicated network for HART device access. Since HART-IP is a high-level application protocol independent of the underlying media, it can utilize network designs that use redundant Ethernet as well as mesh or ring topologies. It allows the use of Power over Ethernet (PoE) networks as well. Various speeds like 10 Mbit/s, 100 Mbit/s, and 1 Gbit/s etc. are all supported.

#### Using HART-IP to Access a HART Device

Once connected to the HART enabled gateway, the network topology is displayed by the HART-IP capable software host. The user then selects the HART device of interest. For Device Descriptor (DD) enabled HART Communicators, the proper DD is then automatically loaded. Users can then view all the HART device parameters, make edits, and get device status information.

#### Benefits

HART Device communications can be wireless if the plant has a Wi-Fi network in place. HART-IP device access then removes the need to go onto the plant floor to view or change the configuration of a device. This provides significant time and cost savings and improved personnel safety.

Another benefit of using HART-IP is that no HART modem is required - just standard Ethernet access from standard off the shelf network equipment to the WirelessHART Gateway or HART-IP enabled multiplexer. This is also a big cost savings.

#### DevCom HART Communicator

The DevCom Smart Device Communicator application family, from ProComSol, allows the user to perform complete HART device configuration and diagnostics using a Windows, Android, or iOS (Apple) device. All that is needed is an Ethernet connection to a WirelessHART gateway or HART-IP enabled HART multiplexer. Full device monitoring and configuration can be performed anywhere in the world.

#### Conclusion

Process companies are beginning to use more network-related products, multiplexers and multi-drop connections, for on-line interaction with their HART devices. The digital communication capability of HART ensures that device information can be linked remotely via HART-IP to other digital networks and thus becoming part of the Industrial Internet of Things (IIoT).

About ProComSol

ProComSol, Ltd has been providing HART communication products for over 10 years, and is an active member of the FieldComm Group. We provide full DD based HART Communicators for Windows, Android, and iOS (Apple) devices. HART-IP support is included in all versions. Contact ProComSol for more information.

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