HG1 Plus

Intelligent HART Gateway

HG1+
RAP SYSTEMS

Modbus to Hart gateway
EASILY CONNECT MODBUS CLIENTS INCLUDING PLC, SCADA AND DCS SYSTEMS

Hart to Hart Bridge
JOIN TWO DISTANT HART NETWORKS TOGETHER AS ONE USING LAN OR WAN

Hart Modem
USE STANDARD TOOLS SUCH AS PACTWARE OR FIELDCARE

Remote Asset Management
CONTROL AND MANAGE YOUR FIELD ASSETS REMOTELY

Modbus Gateway

Serial Modbus RTU - RS232, RS422, RS485
Encapsulated Modbus RTU
Modbus TCP/IP over Ethernet
Multiple simultaneous clients
Read and write any transmitter variable

HART interface

Primary or secondary master
Multi-dropped transmitters
All mandatory and common practice commands
Support for device specific commands
Automatic polling of device data and configuration

HART Modem

Serial RS232, RS422, RS485
Ethernet (Virtual serial port)
Pactware, Feildcare, RadarMaster, Simatic
PDM, SmartVision and more

Modbus Bridge

Connect two distant HART networks
Connect using LAN or WAN

Remote Access

Remote Modbus
Remote Modem
Remote Configuration and updates
Connect over LAN or WAN , Internet

HART
COMMUNICATION

Industrial Process Control

Factory Automation

RAP SYSTEMS
Real Time Applications

Product Description

The HG1plus is an advanced HART communications module designed for industrial and factory automation applications. This versatile device provides HART to Modbus protocol conversion, HART to HART network bridging, HART Modem interfaces and allows remote access to field devices over local and wide area networks in support of effective asset management. The stand-alone DIN rail mounted HG1+ is rugged, compact and low power, making it an ideal solution for applications wanting to exploit the many advantages of Smart field instrumentation.
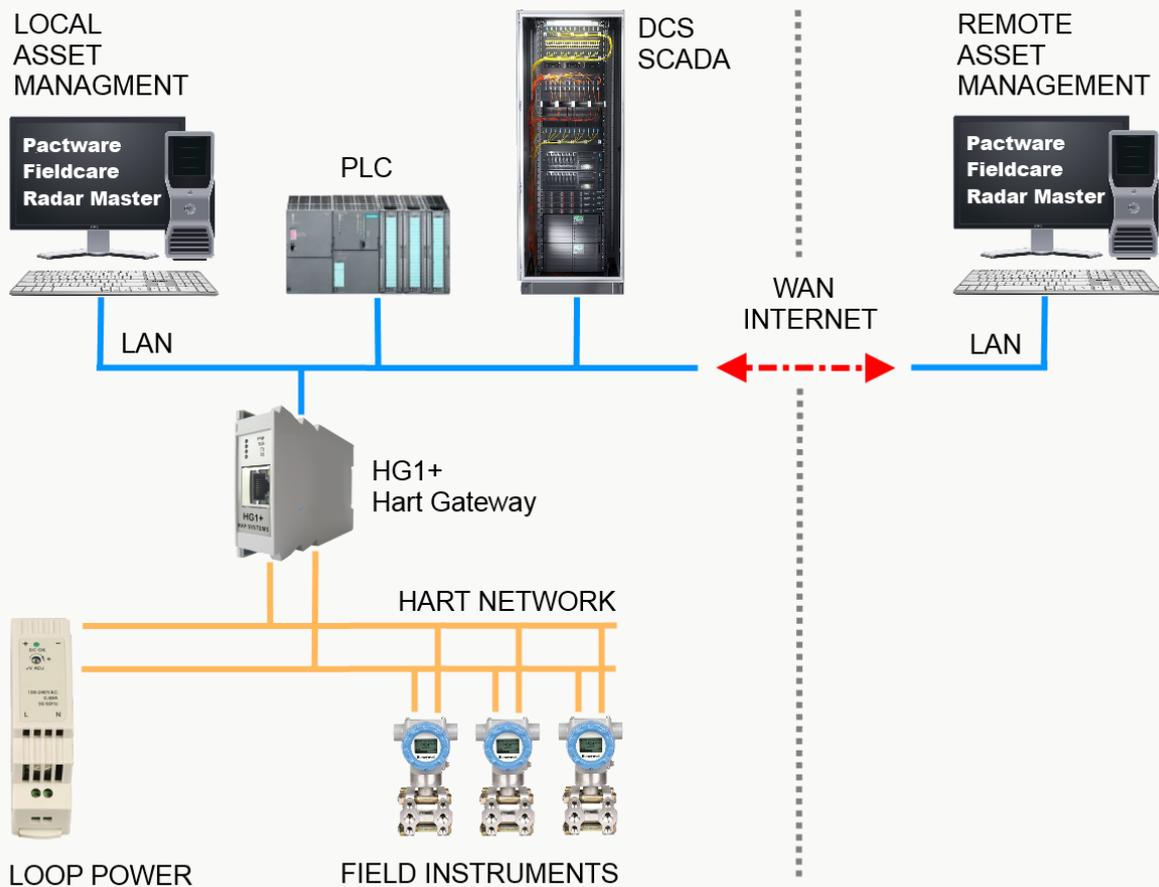

Modbus Gateway

The HG1 provides an interface between instruments on a HART network and Modbus clients such as SCADA, DCS and PLC systems. The HG1 automatically communicates with the HART devices and maintains an internal database of their configuration and process data. This data can be read or written using a choice of Modbus interfaces including RS232, RS422, RS485 and Ethernet. The HART to Modbus gateway allows host systems with no native HART capability to access the wide range of data available from HART capable devices. Multiple Modbus connections are supported simultaneously, making it possible to hand off transmitter data to any number of independent systems or consumers.

The HG1+ supports HART networks with multiple devices (multi dropped) and may act as either a primary or secondary master device. It implements all mandatory and common practice HART commands and supports device specific communications through the use of installable device templates.

Both the encapsulated RTU and Modbus TCP/IP interfaces may be accessed remotely.

HART bridge

A pair of HG1s may be used to combine two independent HART networks together via a local area network so that they behave as if they were a single unified network. Such a situation may occur when two groups of transmitters are located too far apart to extend a single HART loop to cover all devices. Once bridged using the HG1s the combined network behaves and performs as if the transmitters were all on a single network

HART NETWORK (A)   LOCAL AREA NETWORK   HART NETWORK (B)

HG1   HG1

FIELD INSTRUMENTS   FIELD INSTRUMENTS
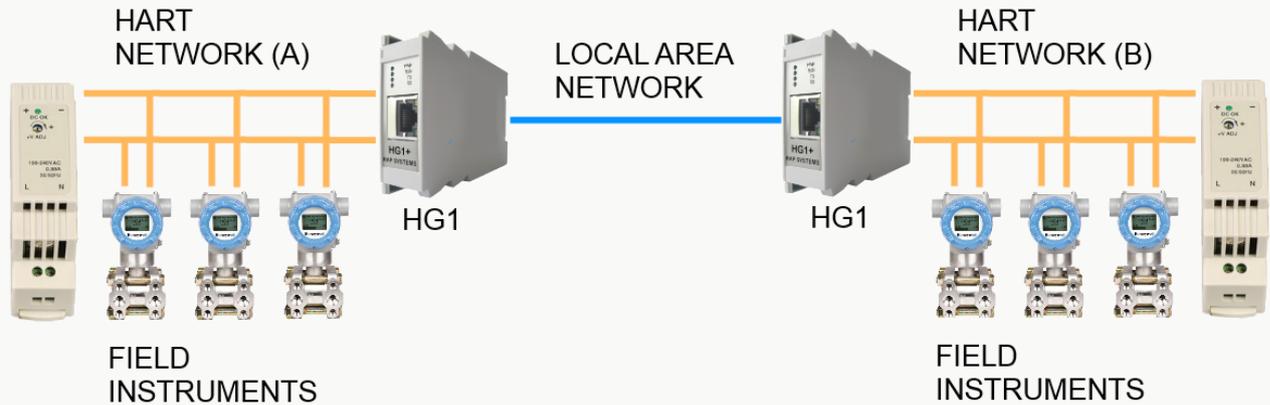
HART Modem

The HG1 provides a HART modem interface for industry standard device management software such as Pactware and Fieldcare. This interface is available through a direct serial connection - selectable as either RS232, RS422 or two wire RS485 - and via a virtual serial port on PC computers connected to the same Ethernet network as the HG1.

The HART Modem interface may be used at the same time as the Modbus gateway functions, allowing both Modbus access for process control and data gathering and simultaneous device management from a maintenance PC. The HG1 automatically and transparently arbitrates HART network bandwidth between the two applications.

The HART modem does not require the host application to control the serial ports RTS signal (a requirement with most HART modems) as this is handled automatically by the HG1. As a result the HG1 allows the use of two and four wire electrical standards for the serial port connection.

Remote Access

All the networked features of the HG1, including HART modem access, Modbus communications, configuration and maintenance can be performed remotely over a local area network or over the internet. From a single location you can manage and maintain your field assets where ever in the world they are.

Remote access from a central location lends itself to meaningful asset management with improved failure prediction, reduced downtime and significant reduction in costs associated with routine and non scheduled maintenance that would otherwise require an engineer to travel to site.

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Additional features

(Available Q2 2016)

Device Cloud

The HG1 can report its status, and that of any connected field instrument, back to the RAP device cloud. System managers can access this cloud from a PC and get an instant overview of current and historical device performance and health.

Email Alerts

For immediate notification of selected events such as transmitter failure or out of limit process values the HG1 can be configured to automatically send user defined emails to named recipients upon such events occurring.

Configuration tools

Management of the HG1 is accomplished through a suite of PC based tools for easy setup and configuration. Using these tools the HG1 can be completely configured, Modbus maps generated (as plain text files, or in a form suitable for import into Microsoft Excel) and software updates and device template installed.

Utilities are included that allow the user to directly view HART instrument data and to check the integrity of the HART communications loop.

Included in the suite are virtual serial port drivers and related software to support remote access to distributed HG1 devices.
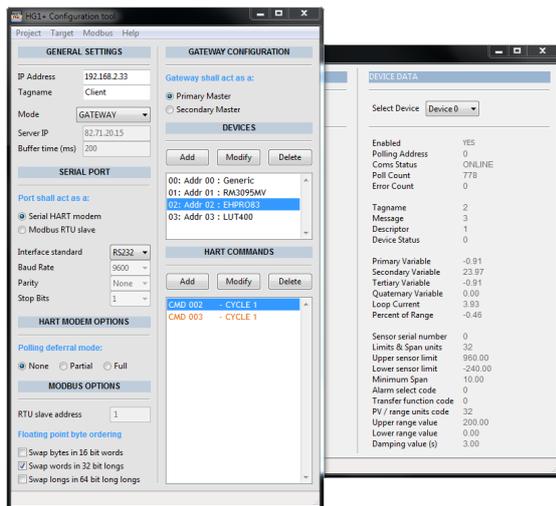
Product Support

Rap Systems customers are entitled to one years complimentary telephone and email support and includes all software updates.

Several levels of chargeable support are also available including

* On site (commissioning, maintenance or upgrades)
* Custom device template design
* Device configuration service
* System design service
* Telephone or email support beyond the first year

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Technical Data

Computational

CPU:	32-Bit ARM9 Processor operating at 170MHz
DRAM:	4 MB
FLASH:	8 MB

H.A.R.T Interfaces

Quantity:	1
Type:	Primary/secondary Master
Multi-drop support:	Yes

Ethernet Ports

Quantity:	1
Type:	10/100 Base-T RJ-45

Serial port

Quantity:	1
Type:	Software selectable RS232 RS422 RS485

Interface Protocols

Types:	Modbus TCI/IP Modbus RTU Encapsulated RTU Raw HART modem

Power

Nominal Voltage:	+24V
Power:	< 2W

Connectors

Ethernet:	RJ45
All other signals:	5.08 pitch screw terminal accepting 4mm^2 wire

Mechanical

Type:	Snap-on DIN rail mounting
Rail compatibility:	DIN EN 60715 TH 35
Material:	Flame retardant PA 66 (UL 94 V-0)
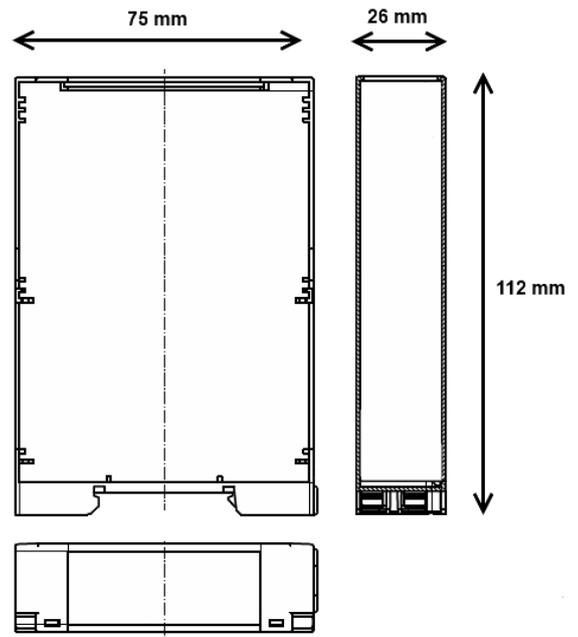
Environment

Operating:	-40 to +85 ºC Ambient
Storage:	-50 to +125 ºC
Humidity:	5 to 90 % non-condensing
Altitude	12,000 feet

Certification

Europe	CE	CE in accordance with EN ISO 17050-1:2004
USA		Class A device, pursuant to part 15 of FCC regulations
Canada		Compliant with ICES-003
Russia	GOST-R	GOST—R approval

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