

Application Note for the GW HM Gateway

Gateway Introduction

The GW HM is a HART to Modbus RTU Gateway from SAN Telequip (P) Ltd. It is a compact and reliable industrial communication device designed to integrate HART-enabled field instruments and transmitters with Modbus RTU-based monitoring and control systems such as PLCs and SCADA.

Objective

The objective of this application note is to describe the functionality, configuration, and application of the GW HM gateway. This document helps system integrators, OEMs, and field engineers understand how GW HM enables seamless integration of HART-based field instruments with Modbus RTU-based PLCs, SCADA, and control systems.

Key Benefits of Using the GW HM

1. Seamless Integration of HART Instruments

Enables easy interfacing of HART-based flow, pressure, temperature, and level transmitters with Modbus RTU-based PLCs and SCADA systems commonly used in Oil & Gas industries.

2. Reliable Operation in Harsh Environments

Designed to operate in high-temperature, remote, and rugged industrial locations, making it suitable for refineries, offshore platforms, pipelines, and gas processing plants.

3. Protocol Conversion Without Instrument Replacement

Eliminates the need to replace existing HART instruments by converting HART data into fixed Modbus RTU registers for immediate use in both legacy and modern control systems.

System Architecture Overview

Application Diagram:

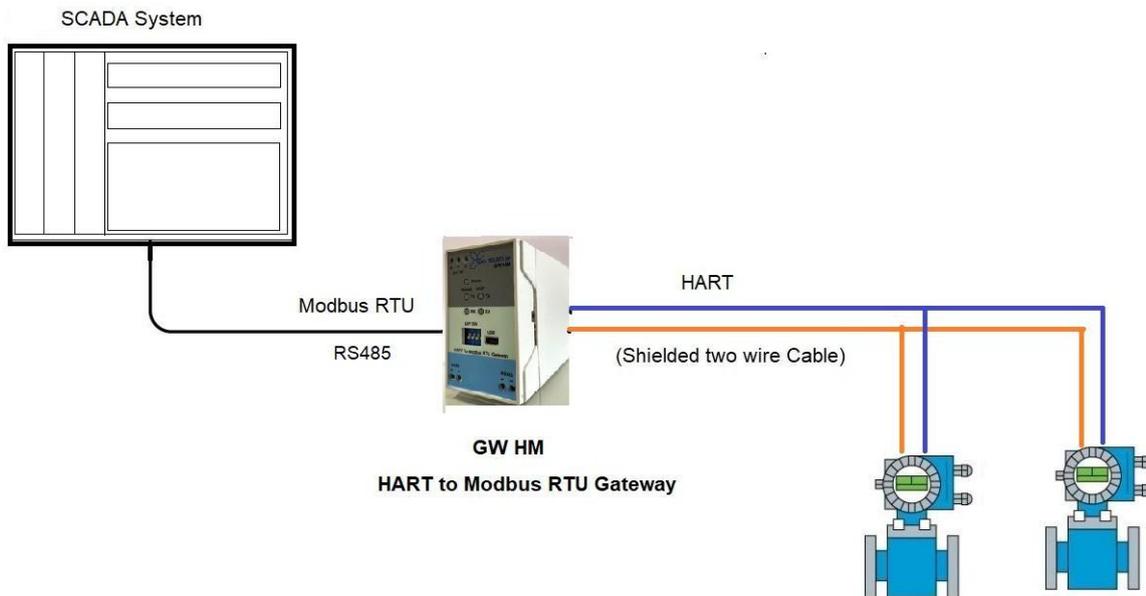


Diagram Explanation

1. SCADA System

The SCADA system acts as the central monitoring platform and works as a Modbus RTU master. It communicates with the GW HM over RS-485 to read process values, device status, and diagnostics. The data is used for real-time monitoring, logging, and alarms.

2. GW HM – HART to Modbus RTU Gateway

GW HM functions as a protocol converter between HART field instruments and Modbus RTU systems. It reads HART process variables and maps them into fixed Modbus registers. This enables seamless integration of HART devices with existing PLC or SCADA systems.

4. Flow Meter (HART Field Device)

The HART-enabled flow meter measures process parameters such as flow, pressure, and temperature. It communicates digitally over a two-wire HART loop. The measured values and diagnostics are transmitted to GW HM for further processing.

Operational Workflow

1. HART flow meters are connected to the GW HM H+ and H- terminals. The wiring configuration may vary depending on whether the HART meters operate in Active or Passive mode.
2. GW HM reads HART data and converts it into the Modbus RTU slave protocol.
3. The RS-485 output is connected to a master device or application such as SCADA, PLC, Modscan, or controller.
4. Process data can be accessed through fixed Modbus registers, and communication parameters such as Device ID, baud rate, parity, and stop bits can be configured as required.

Summary

The GW HM HART to Modbus RTU Gateway provides a reliable and cost-effective solution for integrating HART-based field instruments with Modbus RTU control systems. It enables seamless data access, supports harsh industrial environments, and eliminates the need for instrument replacement, making it ideal for Oil & Gas, process automation, and industrial monitoring applications.