# Rosemount 3051S Advanced HART Diagnostics with a Smart Wireless THUM™ Adapter

## INTRODUCTION

This technical note is intended to describe the procedure of configuring the Smart Wireless THUM Adapter to output advanced diagnostics data from the Rosemount 3051S Advanced Diagnostics Pressure Transmitter. The instructions are written around the advanced diagnostics DA2 option (3051S HDT Rev 3). The THUM Adapter may be used in cases where the existing host system does not receive digital HART data from instrumentation devices, but only receives a 4-20 mA signal. The THUM Adapter wirelessly transmits device information, such as process variables and device status, so that it can be integrated into the host system. Refer to the Rosemount 3051S Product Manual 00809-0100-4801 and the THUM Adapter Product Manual 00809-0100-4075, for detailed information.

## INSTALLATION AND HART COMMUNICATION

The 3051S HART transmitter and THUM Adapter must be connected to the host system, powered, and functioning properly as shown in Figure 1. A HART communication host, such as AMS Device Manager, or a 375/475 Field Communicator must be connected to the transmitter communication loop and be successfully communicating.

Figure 1. Installation of Smart Wireless THUM Adapter
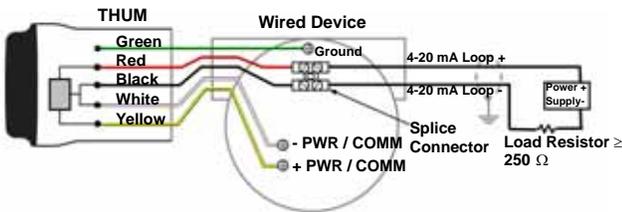


By default, the 3051S has a HART address of 0, while the THUM Adapter has a default address of 63. If configuration is done using AMS Device Manager with a HART modem, then the WirelessHART Adapter mode can be enabled using the Multi Drop tab of the modem properties, as shown in Figure 2. If the HART address of the THUM Adapter has been changed from the default, it will be necessary to use different addresses than shown in Figure 2.

Figure 2. Setting WirelessHART Adapter mode in AMS Device Manager
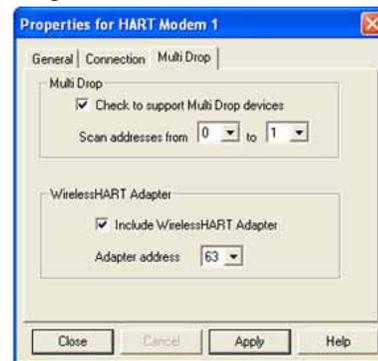


After the HART modem is connected, and the WirelessHART Adapter mode configured, AMS Device Manager will show the icons for both the 3051S and the THUM Adapter, similar to Figure 3.

Figure 3. 3051S Advanced Diagnostics and THUM Adapter in AMS Device Manager

# Configuration Guide

## Field Communicator

To configure the 3051S and THUM Adapter using a 375 or 475 Field Communicator, set the poll for the range of addresses used by the 3051S and THUM Adapter. This is done using the key sequence:

HART Application > Utility (3) > Configure HART Application (1)

- Polling Options = Poll By Address
- Polling Addresses = Custom Range
- Custom Range = 0, 63

## CONFIGURING THE THUM ADAPTER

The THUM Adapter must be joined to the network of a Smart Wireless Gateway in order to transmit any information. In order to join the THUM Adapter to the Gateway network, the correct Network ID and Join Key must be entered.
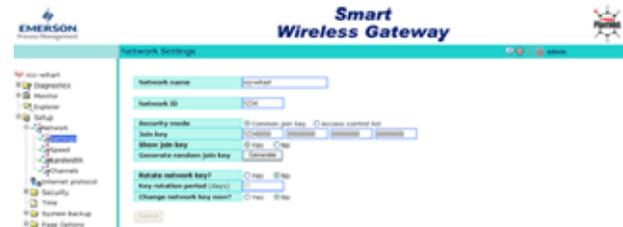
To enter the Network ID and Join Key using AMS Device Manager, the THUM Adapter and Gateway will both need to be connected to AMS Device Manager. For information on how to connect a Gateway to AMS Device Manager please see the Gateway manual 00809-0200-4420. Once both the THUM Adapter and Gateway are connected to AMS Device Manager, drag and drop the THUM Adapter icon onto the Gateway icon as shown in Figure 5. This will automatically write the correct Network ID and Join Key to the THUM Adapter. The THUM Adapter will now join the network when it is in range of the Gateway.

Figure 4. Setting Network ID and Join Key using AMS Device Manager.



To enter the Network ID and Join Key using a Field Communicator, you will first need to obtain the information from the Gateway. To do this navigate to the Setup>Network>Settings page (Figure 5).

Figure 5. Gateway Network Setting Page



After the Network ID and Join Key are obtained, enter them into the THUM Adapter using the Field Communicator. The menu directions are as follows: Configure (2) >Guided Setup (1) > Join Device to Network (1)

## 3051S HART ADVANCED DIAGNOSTICS

**IMPORTANT:**
For communication with the Smart Wireless THUM Adapter, HART Burst mode in the 3051S must be set to Off.

Once the 3051S and the THUM Adapter are integrated and communicating, all of the digital HART information associated with the transmitter is visible in AMS Device Manager. Figure 6 shows the Device Dashboard Overview screen in AMS Device Manager for the 3051S HART Advanced Diagnostics Transmitter. From the AMS Screen, one can view and configure any of the advanced diagnostics features, including Statistical Process Monitoring (SPM), Power Advisory Diagnostic, Service Alerts, and Event Logs. Refer to the Rosemount 3051S Product Manual 00809-0100-4801 for complete information on configuring and using Advanced Diagnostics.
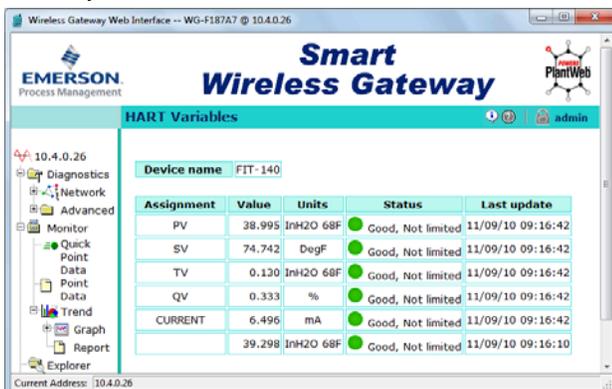
Figure 6. AMS Device Manager Device Dashboard View for 3051S Advanced Diagnostics.



HART Process Variables (PV, SV, TV, and QV) can also be seen in the Wireless Gateway Web Interface, as shown in Figure 7.

Figure 7. HART Digital Process Variables in the Wireless Gateway Web Interface.



The Primary Variable (PV) is the variable that is output as the 4-20 mA loop current. The 2nd (SV), 3rd (TV), and 4th (QV) variables are HART digital variables. By default the variable mapping in the 3051S Advanced Diagnostics is set as shown in Table 1.

TABLE 1. Default HART Variable Mapping for 3051S Advanced Diagnostics

| Primary Variable (PV) | 2nd Variable (SV) | 3rd Variable (TV) | 4th Variable (QV) |
|---|---|---|---|
| Pressure | Module Temperature | Standard Deviation | CV |

The SV, TV, and QV digital variables can be set to any of the following: Pressure, Module Temperature, Scaled Variable, Standard Deviation, Mean, or CV (Coefficient of Variation).

Using the wireless gateway it is possible to send the HART process variables to a historian or trending package using Modbus or OPC.

## HOST INTEGRATION

In order to receive the information from the 3051S Advanced Diagnostic transmitter in the host system, integration must be performed between the Gateway and host system. The Gateway can be integrated by Modbus TCP, OPC, or HTML. Integration is setup in the Gateway's web interface. For more information on host integration please see the Gateway manual 00809-0200-4420 section 5.

**Emerson Process Management**
**Rosemount Measurement**
8200 Market Boulevard
Chanhassen MN 55317 USA
Tel (USA) 1 800 999 9307
Tel (International) +1 952 906 8888
Fax +1 952 949 7001

**Emerson Process Management**
Blegistrasse 23
P.O. Box 1046
CH 6341 Baar
Switzerland
Tel +41 (0) 41 768 6111
Fax +41 (0) 41 768 6300

**Emerson FZE**
P.O. Box 17033
Jebel Ali Free Zone
Dubai UAE
Tel +971 4 811 8100
Fax +971 4 886 5465

**Emerson Process Management Asia Pacific Pte Ltd**
1 Pandan Crescent
Singapore 128461
Tel +65 6777 8211
Fax +65 6777 0947
Service Support Hotline : +65 6770 8711
Email : Enquiries@AP.EmersonProcess.com

**EMERSON**
Process Management