MICRO THERMO TECHNOLOGIES

Yokogawa HGM 300 Comm Adaptor Installation Guide

Document No.71-GEN-0101-R2.1 V4.1

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1 Introduction

1.1 Using this document

This guide is intended for technicians installing the Yokogawa to LonWorks FT-10 Communications Adaptor modules. It is not a complete user guide, but rather a simple step-by-step summary of the instructions for the installation of the HGM300 adaptor module.

A complete user guide and a user manual covering specifically the operation of the HGM300 leak detector is available in the following document:

HGM300 Refrigerant Gas Monitoring System – Operations Manual. (IMHGM300/RDM800-0401). Revision No. 04-2001

1.2 Conventions used in this document

For your convenience, several screen captures have been added to describe the procedures. As well, some images contain numbered balloons to help illustrate the procedure.

Finally, **bold** text is used for emphasis or to highlight technical terms.

2 Step by Step Procedure

2.1 Installation, Set Up and Alarm Relay Wiring of the unit

The Yokogawa HGM300 to LonWorks FT-10 Communications Adaptor enables a Yokogawa HGM300 Refrigerant Monitor to communicate with a Lonworks FT-10 Free Topology network. The HGM300 Refrigerant Monitor can monitor 4, 8 or 16 zones. Zone PPM readings, flow status, refrigerant selections, and HGM internal health may be viewed over Lonworks. Each HGM zone supports three levels of alarming (Leak, Spill, and Evacuate) and each alarm threshold can be set over LonWorks or by the PC software PC2HGM151.EXE.

All wiring between the Yokogawa HGM300 Refrigerant Monitor and the Lonworks Communications Adaptor is contained within the HGM300 Refrigerant Monitor and the only external cable is the Lonworks FT-10 communications cable. *Figure 1 – HGM300 Wiring Diagram* below (Figure 2 in the HGM300 Refrigerant Gas Monitoring System – Operations Manual) depicts the wiring requirements of the adaptor.

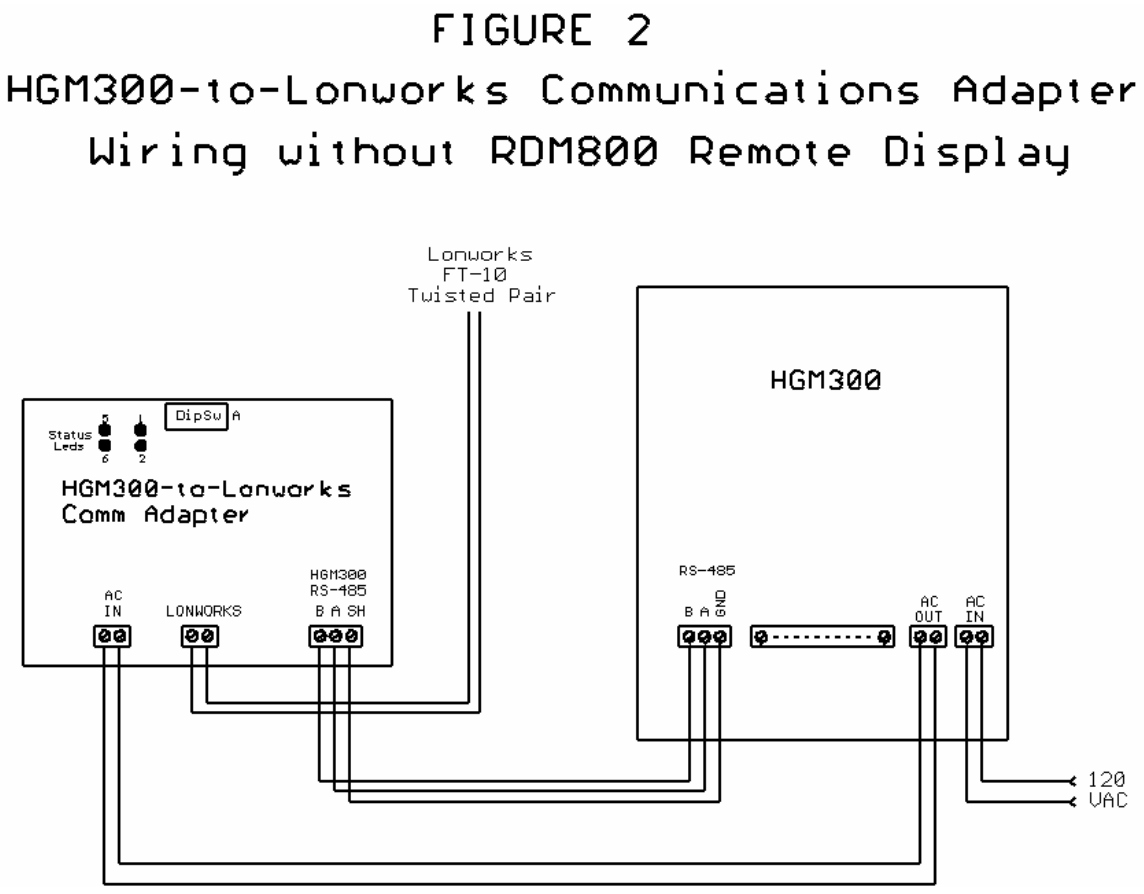

Figure 1 – HGM300 Wiring Diagram

2.2 HGM300 Refrigerant Gas Monitor System N& HGM300 Communications Adaptor & Settings

2.2.1 HGM300 Refrigerant Gas Monitor System Setting

Changing the Serial NetworkTerminator Setting

The terminator switch is shipped from the factory in the terminated or **In position**. This is the correct setting if the HGM Refrigerant Monitor is connected to a single device, or it is the last device on the network chain. If the HGM300 Refrigerant Monitor is being installed in the middle of a network, the terminator must be move to the Out position. Locate the switch and determine its position. If it needs to be moved, slide the switch to the appropriate position.

Set the terminator switch in the In Position

Changing HGM300 Refrigerant Gas Monitor System Address Dip Switch Setting

Each HGM 300 on the network must have a distinct address. A dip switch on the main circuit board is used to define this value. Locate the switch and set it to the desired address. The address may be set from from 1 to 16

Example: For Address = 5, switch 1 and 4 are ON

Set the Address = 1, Switch 1 =On, Switch 2 = Off, Switch 4 = Off, Switch 8 = Off

2.2.2 HGM300 Communications Adaptor Setting

See *Figure 2 – HGM300 Dipswitch and LED Indicators*, on page 5, (Figure 4 in the HGM300 Refrigerant Gas Monitoring System – Operations Manual) for the location of the adaptor dipswitch 'A'.

Switches 5-8 on the adaptor's 'A' dipswitch are used to match the HGM300 Refrigerant Monitoring System address set on the HGM's address dip switch (on HGM main board). Values from 0-15 are possible:

HGM address	A5	A6	A7	A8
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off

9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	Off
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On

Since the HGM is the only node on the adaptor-to-HGM interface, address 1 is normally used. Be sure to set the same address on the adaptor and the HGM main board dipswitches. To set an ON state on the dipswitch, set the switch in the UP position

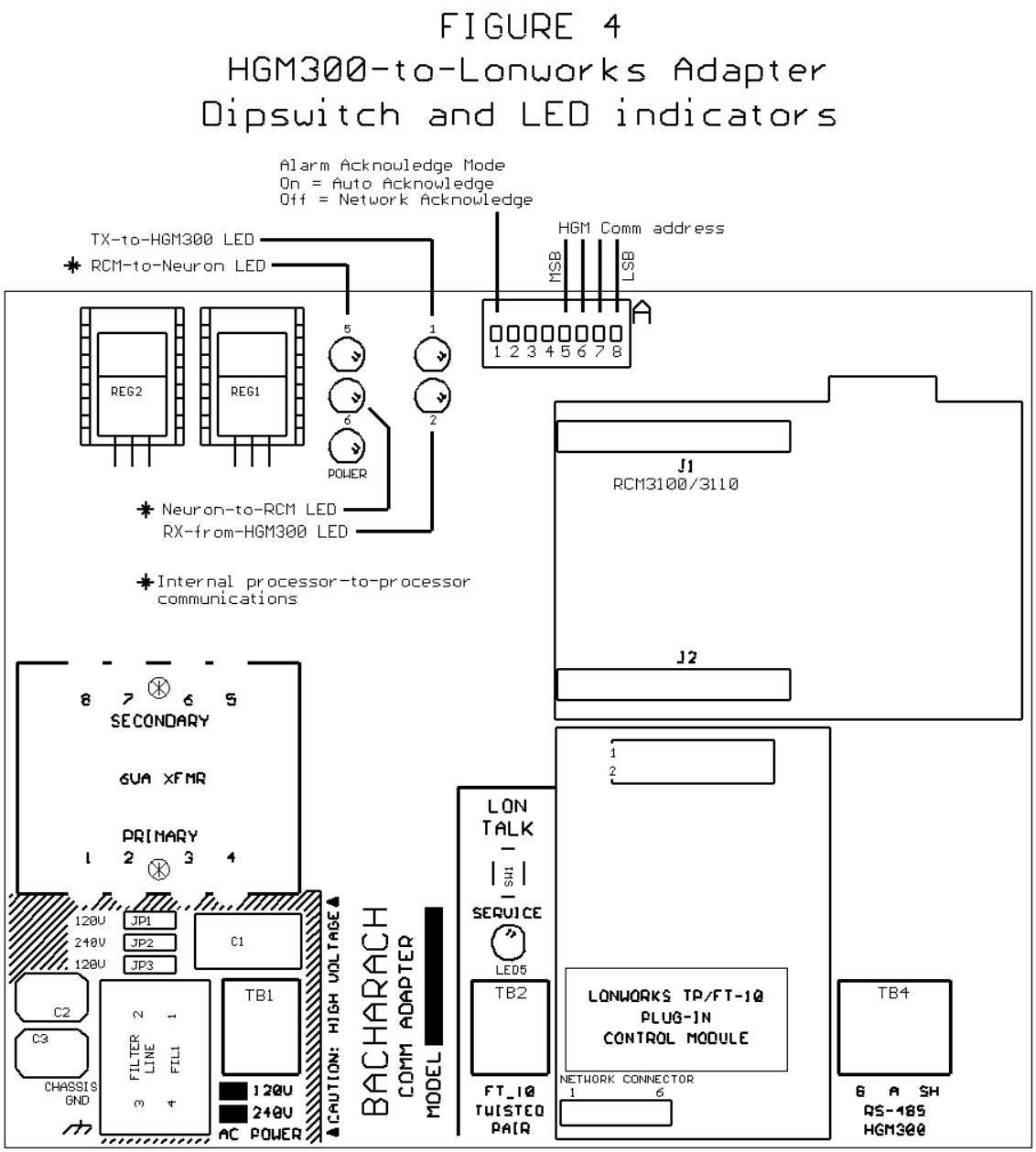

Figure 2 – HGM300 Dipswitch and LED Indicators

2.3 HGM300 LonWorks Communication Adaptor Alarm Acknowledge Options

Two alarm acknowledge options are supported—Auto Acknowledge and Network Acknowledge.

In the Auto Acknowledge mode, the HGM300 LonWorks Communications Adaptor will clear its alarm outputs the next time the alarmed zone is sampled and its PPM has dropped below the alarm thresholds. No intervention from the Lonworks network is necessary.

In the Network Acknowledge mode, the HGM300 LonWorks Communications Adaptor will never clear its alarm outputs until LonWorks has acknowledged the alarms using network variables nviHgmAlmAck (Command Point Zone Alarm Clear) or nviHgmAlmAckSw (Command Point Global Alarm Clear). Once LonWorks has acknowledged the alarms, the HGM will clear its alarm outputs the next time the alarmed zone is sampled and its PPM has dropped below the alarm thresholds.

Dipswitch A1 on the adaptor selects which alarm acknowledge option is used:

A1 On = Auto Acknowledge

A1 Off = Network Acknowledge. (Set A1 to the Off position)

If dipswitch A1 is changed while the adaptor is powered up, the adaptor must be reset by pressing the CPU RST button below dipswitch A before the change will take effect.

2.4 MT 500 Sensor Node Installation

The LonWorks FT-10 Communications Adaptor has no network variable nvoAlarm to generate an Alarm directly to the MT Alliance Alarm Window. So, the network variable nvoAlarm must be generate indirectly through an MT 500 Sensor Node by connecting the Alarm Relay contacts from HGM300 Refrigerant Monitor to the inputs of MT 500 Sensor Node.

So, there is two ways to connect the Alarm Relays contacts:

1. Use 4 spare inputs on an MT 500 Sensor close to the HGM300 Refrigerant Monitor
2. Install a new MT 500 Sensor Node close to the HGM300 Refrigerant Monitor.

If you install a new MT 500 Sensor Node, you have to connect the 24 volts AC Supply and the LonWorks Network .

2.5 Connecting Alarm Relays from the HGM300 Refrigerant Monitor to a MT 500 Sensor Node

Each HGM300 Refrigerant Monitor includes 4 Form C SPDT alarm contacts. The relays are factory assigned to the following conditions:

- Relay #1 : Leak Alarm
- Relay #2 : Spill Alarm
- Relay # 3 : Evacuate Alarm
- Relay # 4 : HGM 300 Faults

The relays are located at the bottom of the HGM300 Refrigerant Monitor board, as shown below in *Figure* 3 – HGM300 Refrigerant Monitor Relay Contacts Connection. Each relay is identified by a label on the circuit board. So, locate the Relay connector on the HGM300 Refrigerant Monitor and remove it from the circuit board and make the connections (as described in *Table 1 – Alarm Relays Connections between the HGM300 and the MT 500 Sensor Node*, below) with a 8 wires cable.

Because HGM300 LonWorks Communications Adaptor has no standard alarm handling structure (nvoAlarm), the Alarm relay contacts of the HGM300 Refrigerant Monitor must be connected to a Sensor Node to generate an nvoAlarm. Doing so will allow Leak, Spill and Evacuate alarms to appear in the MT Alliance Alarm window.

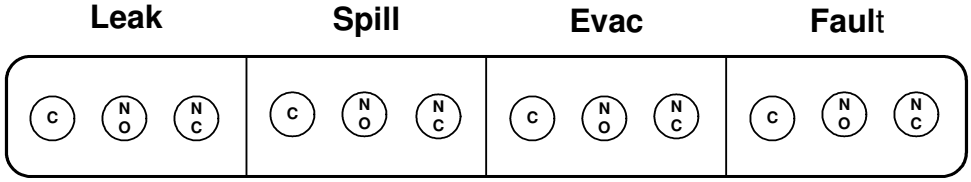

Figure 3 – HGM300 Refrigerant Monitor Relay Contacts Connection

Table 1 – Alarm Relays Connections between the HGM300 and the MT 500 Sensor Node

HGM300 Relay	Relay Contacts	MT 500 Sensor Node Connection
Leak Relay	COMMON	Ground
	NO	U1
	NC	
Spill Relay	COMMON	Ground
	NO	U2
	NC	
Evacuate Relay	COMMON	Ground
	NO	U3
	NC	
Fault Relay	COMMON	Ground
	NO	U4
	NC	

3 MT Alliance

After the physical installation, the configuration parameters must be loaded into the controller.

3.1 Adding HGM 300 Refrigerant Monitor System View

1. Click the **Refrigeration Subsystem** button.
2. In the **Mode** menu, select **Configuration**.
3. In the **Configure** menu, select **Views**. The **View Configuration** window opens.
4. Select the view that precedes that of the Yokogawa Refrigerant Monitor view.
5. Click the **Insert after** button. A new view without any images appears.
6. Type the name (Yokogawa) of the view in the **View Name** field.
7. Click the **Change Image** icon. The **Open File** dialog box appears. Select the file to get a graphic representation of the Yokogawa Refrigerant Monitor System:
8. Yokogawa (4Z).bmp for a 4 zones Yokogawa Refrigerant Monitor.
9. Yokogawa (8Z).bmp for an 8 zones Yokogawa Refrigerant Monitor.
10. Yokogawa (16Z).bmp for a 16 zones Yokogawa Refrigerant Monitor.
11. If you wish, you can check the **Zoom** box. Thus, only their status will be seen in the normal view when you place measure points on the close up of the view.

3.2 Adding the Custom node HGM300 LonWorks Communicatiosn Adaptor

Now that the Yokogawa Refrigerant Monitor view is shown, the custom node HGM300 LonWorks Communications Adaptor needs to be added.

1. In the **Subsystem** menu, select **Refrigeration** or click the **Refrigeration Subsystem** button.
2. In the **Mode** menu, select **Configuration**. When entering this mode, a components toolbox appears in the bottom right corner of the window. It contains all the items that can be placed in the view.
3. Select the view that you created at the previous step by clicking on the tab displaying its name.
4. Drag and drop a node icon from the toolbox to the Yokogawa Refrigerant Monitoring view. As soon as the icon is dropped, the **Node Definition** window opens. Select in dropdown list the Yokogawa custom node.
5. Click the **OK** button to finish or **Cancel** to clear the node.

To move an icon, select it while pressing the CTRL key and move it with your mouse.

Once the node is placed, it must be configured and associated with the controller.

1. Click the node icon. The **Custom Node Information** dialog box opens.
2. Select the **Details** tab.
3. Type a unique name for the node (Yokogawa) in the Identification field and, if you wish, in the Notes field.
4. Select the **Commands/Status** tab.
5. In the Installation group, click the **Install** button.
6. The **Install a Custom Node** dialog box opens and prompts you to click the **Service** button of the Yokogawa LonWorks Communications Adaptor. For manual entry, see the "Node Installation" manual. As soon as you press the **Node Service** button, the software download begins. MT-Alliance loads the software in the node. Once the load is completed, the window buttons are activated.
7. Click **OK** to close the window.
8. Click **Accept** to save the changes.

3.3 Dropping and Configuring a Sensor Node

To drop a Sensor Node:

1. In the Mode menu, select Configuration
2. Select and possibly zoom the view
3. Drag and drop a node
4. Specify transceiver type and select the channel on which it will be installed
5. Select a node type Sensor Node.
6. Select the model Univ Sen Node MT 500 V4.1

It is now time to configure the Sensor Node:

1. Click on the Sensor Node you dropped on the view
2. In the Detail tab, give the Sensor Node identification.
3. Select the Commands/Status tab.
4. In the Installation group, click the Install button.
5. The Install a Custom Node dialog box opens and prompts you to click the Service button of the Sensor Node. For manual entry, see the "Node Installation" manual. As soon as you press the Node Service button, the software download begins. MT-Alliance loads the software in the node. Once the load is completed, the window buttons are activated.
6. Click OK to close the window.
7. Click Accept to save the changes.

3.4 Dropping Sensors

If the Leak, Spill , Evacuate, Fault Relays contacts are connected (as described in *Table 1 – Alarm Relays Connections between the HGM300 and the MT 500 Sensor Node*, on page 7), you must drop 4 Sensors Switches in the same view as the Sensor Node. You start by dropping and configuring sensors and later assign them to the Sensor node.

1. Pick the desires sensor physical type name (Switch) and select the **Manufacturer** (Generic) and **Sensor model** (Low Side Switch for MT 500).
2. After you dropped the sensor on your view, click on it to bring the configuration window.
3. Fill the **Detail, Alarm setting** and **Hardware** Tab as indicated in *Table 2 – Sensors Configuration Parameters* below.

Table 2 – Sensors Configuration Parameters

Tab and Fields	Leak Relay	Spill Relay	Evacuate Relay	Fault Relay
Details Tab				
Identification	Leak Alarm	Spill Alarm	Evacuate Alarm	Fault Alarm
Alarm Setting Tab				
Enable Alarm	Enable	Enable	Enable	Enable
Description	Leak Alarm	Spill Alarm	Evacuated Alarm	Fault Alarm
Alarm Position	1	1	1	1
Alarm Set Time	1 min	1 min	1 min	1 min
Recall Set T1me	1 min	1 min	1 min	1 min
Alarm Relay	Refrigeration	Refrigeration	Refrigeration	Refrigeration
Priority	3	3	3	3
Hardware Tab				
Manufacturer	Generic	Generic	Generic	Generic
Sensor Model	Low Side Switch	Low Side Switch	Low Side Switch	Low Side Switch
Sensor Node	SNX	SNX	SNX	SNX
Sensor Input	1	2	3	4

3.5 Dropping Measure Custom Points for the Yokogawa LonWorks Communicationss Adaptor

Table 3 – List of the Measure Points, below, shows the list of Measure Points for the HGM300 LonWorks Communications Adaptor for a 16 zones Yokogawa Refrigerant Monitor. For the location of the Measure Points on the View, refer to *Figure 4 – HGM300 Refrigerant Monitor MT Alliance View*, on page 18.

Table 3 – List of the Measure Points

Description of the Measure Points	Type	Source	SNVT
Zone 1 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_0
Zone 2 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_1
Zone 3 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_2
Zone 4 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_3
Zone 5 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_4
Zone 6 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_5
Zone 7 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_6
Zone 8 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_7
Zone 9 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_8
Zone 10 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_9
Zone 11 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_10
Zone 12 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_11
Zone 13 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_12
Zone 14 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_13
Zone 15 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_14
Zone 16 Gas concentration	PPM	LonWorks Communication Adaptor	nvo_HgmZonePPM_15
Active Sampling Zone	UNSIGNED COUNT	LonWorks Communication Adaptor	nvoZoneSampling
Report any Zone Alarm	SWITCH	LonWorks Communication Adaptor	nvoHgmAlarmAlert
Report any Leak Alarm	SWITCH	LonWorks Communication Adaptor	nvoHgmLeakAlert
Report any Spill Alarm	SWITCH	LonWorks Communication Adaptor	nvoHgmSpillAlert
Report any Evac Alarm	SWITCH	LonWorks Communication Adaptor	nvoHgmEvacAlert

3.6 Dropping Command Custom Points for the Yokogawa LonWork Communications Adaptor

Table 4 – HGM300 LonWorks Communication Adaptor Command Points, below, shows the list of Command Points for the HGM300 LonWorks Communications Adaptor. For the location of the Measure Points on the View, refer to *Figure 4 – HGM300 Refrigerant Monitor MT Alliance View*, on page 18.

Table 4 – HGM300 LonWorks Communication Adaptor Command Points

Description of the Command Points	Type	Destination	*SNVT*
Zone Alarm Clear Command	UNSIGNED COUNT	LonWorks Communication Adaptor	nviHgmAlarmAck
Global Alarm Clear Command	SWITCH	LonWorks Communication Adaptor	nviHgmAlarmAckSw.state

4 Configuring the HGM Refrigerant Monitor with a PC (or laptop)

Some HGM Refrigerant Monitor configuration parameters could not be configured through the HGM300 LonWorks Communications Adapter. A PC DOS software that comes with the HGM300, *PC2HGM151.EXE*, that uses COM1 port, should be used to configure these parameters (for each channel):

- Refrigerant type.
- Length of tubing for each zone.
- Alarm Level Threshold.

PC2HGM151.EXE uses COM1 by default. Therefore, the interface cable should be connected to the port configured as COM1 on the PC or laptop. Also, no other software drivers or devices in the PC may control COM1 when the HGM300 software is in use.

The connection is made through a standard RS-232 serial connection. A three-wire connection is used (RXD, TXD and GND). The HGM300 software automatically configures COM1 to match the HGM300 communication parameters. Please refer to *Table 5 – Refrigerant Monitor Configuration Parameters*, on page 14, for a description of all configuration parameters and to *Table 6 – HGM300 Refrigerant Monitor Zone Configuration Parameters*, on page 16, for a description of the zone configuration parameters.

1. Turn on power of HGM300 Refrigerant Monitor and allow the unit to warm up (approx. 10 minutes);
2. Connect the RS-232 interface cable between the PC and the HGM300 Refrigerant Monitor;
3. Open the software using Window Explorer (a shortcut to the program is available on the desktop) , or create a MT Alliance Add-On to open the software from within the MT Alliance Menu. Upon start up, the program will immediately attempt to download data from the HGM300 Refrigerant Monitor. Several beeps can be heard as the program communicates successfully with the HGM Refrigerant Monitor.

To move through the screen, use the following keyboard keys:

- **ARROW** keys to move up, down, left, and right.
- **ENTER** key to select options.
- **ESCAPE** key to back out of a selection.

1. Using the **ARROW** keys, go to **EDIT** and press **enter** key. The **EDIT** menu drop down;
2. **SELECT** System and press **ENTER** key. The **HGM LOCATION** becomes highlighted;
3. Press the **ENTER** key to move to the **HGM TAG** area, use the **BACKSPACE** key to remove the existing tag. Then enter in a new tag. Press **ENTER** and you are returned to **LOCATION**;

4. Use the **ARROW** keys to select the next item to be addressed. You cannot change the **SN** or **FIRMWARE** items. Press the **ESCAPE** key to return to the menu bar;
5. Go to **EDIT** – press **ENTER**, select **ZONE** and press the **ENTER** key. You may now select a specific zone to identify and set parameters. While **REFRIGERANT** is selected, use the **ARROW** keys to move up and down through the gas library to locate the gas type for that zone. – highlight the gas type and press **ENTER**;
6. To Set the **ALARMS** – select **EVAC ALARM** first, press **ENTER** and use the **BACKSPACE** key to clear the previous setting and type in the new **PPM LEVEL**. Use the same method to set the **SPILL LEVEL** and **LEAK LEVEL**;
7. To close or bypass a zone, set the DISTANCE to 0 feet.

Very important Command Setting the Clock

HGM300 Refrigerant Monitor System Erratic faults are observed if the PC and HGM300 Clock are not synchronized. The HGM300 Zone Reading indicate NO FLOW.

1. Go to HGM Menu
2. Select Set HGM Clock (Set the HGM300 Date & Time Clock to the PC Clock)
3. Mouse Click on Set HGM Clock

Note: When setting the HGM clock command, time will be set automatically by the PC internal clock.

Table 5 – Refrigerant Monitor Configuration Parameters

Configuration Parameters	Parameters Description	Default Value
LOCATION	Name you assign to the HGM300 to identify its location	User Defined
NODE	HGM300 Refrigerant Monitor Address on the RS-485 Port	01
SN	HGM300 Refrigerant Monitor Serial Number	
# ZONE	Number of zones for 1 to 16 connected to the HGM300	1 to 16
REZERO MODE	The frequency which the HGM300 re-zeroes the optical sensor. ZONE CHANGE re-zero at each zone change. This is the most accurate setting but increase the time interval between measurement cyles.	ZONE CHNG
ZONE HOLD TIME	Set the length of time that a zone will be monitored when the Zone Hold feature is actuated	15 min
DETECT LIMIT	Squelch setting that instruct HGM300 to interpret PPM reading below the designated level as 0	1 to 99 PPM
AUDIBLE ALARM	Enable or disable internal audible alarm.	ALARM
ALRM ACK MODE	Select the Alarm Relay Mode Latching (Manual) or Non- Latching (Auto). In the Latching Mode (Manual), the alarm relay will be reset when the user will clear the alarm via the HGM300 LonWorks Communications Adapter.	MANUAL
LOOP 2 FACTOR	Set the PPM scale factor for current loop number 2. With the default value .016mA/PPM. To calculate the output current, multiply the scale factor by the PPM and add 4. Example: 100 PPM reading Output current = (100 PPM* .016mA) + 4mA = 5.6 mA	.016 ma/ppm

RS 485 BAUD	Baud Rate between PC and the Yokogawa HGM300	
# STOP BIT	Number of Stop Bits	
SERVICE TIME	The Service Mode will disable the unit for the duration of the Service Time	User Defined

Table 6 – HGM300 Refrigerant Monitor Zone Configuration Parameters

Configuration Parameters	Parameters Description	Default Value
LOCATION	Name of the monitoring zone	User Defined
REFRIGERANT	Type of refrigerant gas being monitored in the zone	User Defined
Degre ºC at ZONE	Exact temperature at the sample point for greather accuracy	
CURRENT ppm	Last PPM measurement recorded in this zone	
PEAK ppm	Peak PPM measurement recorded in this zone	
PEAK TIME	Time of the Peak easurement recorded in this zone	
RESET PEAK	Time that the Peak measurement has been reset	
DISTANCE	Length of tubing between the HGM300 and air intake line.	
LOG INTERVAL	Sets the length of time between entries in the trend log	1 – 1440 minutes
LEAK LEVEL	Peak Level Alarm Threshold	100 ppm
SPILL LEVEL	Spill Level Alarm Threshold	300 ppm
EVAC LEVEL	Evac Level Alarm Threshold	500 ppm

5 Acknowledge an HGM300 Refrigerant Monitor Alarm

The acknowledgement of HGM300 Refrigerant Alarm is a two steps process:

- You have to clear the HGM300 Refrigerant Monitor Alarm, then
- You have to clear the MT Alliance Alarm.

5.1 How to clear the HGM Refrigerant Monitor Alarm

In the Start up process always set the:

- Zone Alarm Clear Command Point to 17 for a 16 zones HGM Refrigerant Monitor
- Zone Alarm Clear Command Point to 9 for a 8 zones HGM Refrigerant Monitor
- Zone Alarm Clear Command Point to 5 for a 4 zones HGM Refrigerant Monitor
- Global Zone Alarm Clear to 0

There is two ways to clear a Zone Alarm:

5.1.1 Clear a specific Zone Alarm

- Select the number of the Zone Alarm you want to clear in the Zone Alarm Clear Command Point, then
- Enter 17 in the Zone Alarm Clear Commad Point

The reason of this process is because the HGM300 LonWorks Communication Adapter will clear the alarm only if we provide a transition on the network variable nviHgmAlarmAck (Zone Alarm Clear Custom Point).

5.1.2 Clear all Zone Alarm

- Select 1 in the Global Alarm Clear Command Point, then
- Enter 0 in the Global Alarm Clear Command Point.

The reason of alarms only if we provide a transition on the network variable nviHgmAlarmAckSw (Global Zone Alarm Clear Custom Point)

Note: In step 5.1.1 and 5.1.2 the HGM300 will clear its alarm output the next time the alarmed zone is sampled and its PPM has dropped below this process is because the HGM300 LonWorks Communication Adapter will clear all the alarm thresholds.

5.2 How to clear the MT Alliance Alarm

After the HGM300 Refrigerant Monitor Alarm is cleared, then you could clear the MT Alliance Alarm (See MT Alliance User's Manual page 9)

6 MT Alliance View of the HGM300 Refrigerant Monitor.

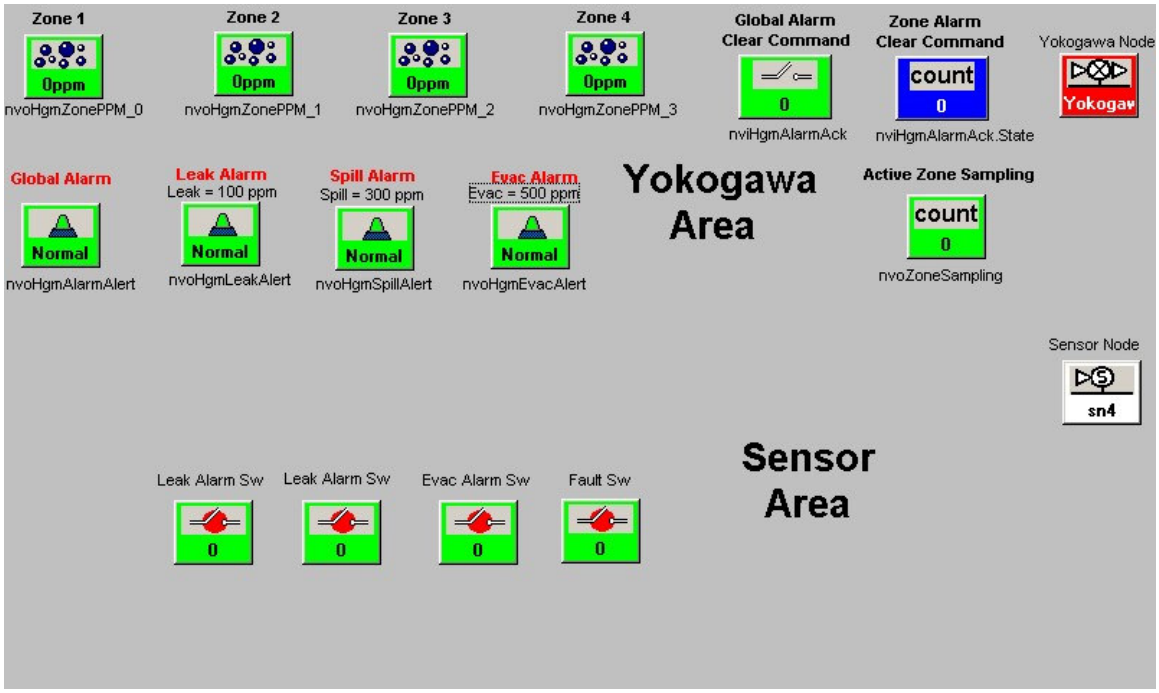

Figure 4 – HGM300 Refrigerant Monitor MT Alliance View

Revision History

REV	Description	Revised by	Date
0.8	Creation of the document	JRT	27-feb-04
0.9	Revision and adaptation to standard documentation template	JG	09-mar-04
1.0	First Publication	JG	11-mar-04
1.1	Modifications	JRT	22-mar-04
2.0	Publication	JG	08-apr-04
2.1	Title Modification	JG, JFB	07-jun-04