GE Infrastructure

Sensing

Model XGS868

Steam Ultrasonic Mass Flow Transmitter (1 & 2 Channel)

Programming Manual

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Warranty

Each instrument manufactured by GE Infrastructure Sensing, Inc. is warranted to be free from defects in material and workmanship. Liability under this warranty is limited to restoring the instrument to normal operation or replacing the instrument, at the sole discretion of GE Infrastructure Sensing, Inc. Fuses and batteries are specifically excluded from any liability. This warranty is effective from the date of delivery to the original purchaser. If GE Infrastructure Sensing, Inc. determines that the equipment was defective, the warranty period is:

- one year for general electronic failures of the instrument

- one year for mechanical failures of the sensor

If GE Infrastructure Sensing, Inc. determines that the equipment was damaged by misuse, improper installation, the use of unauthorized replacement parts, or operating conditions outside the guidelines specified by GE Infrastructure Sensing, Inc., the repairs are not covered under this warranty.

The warranties set forth herein are exclusive and are in lieu of all other warranties whether statutory, express or implied (including warranties of merchantability and fitness for a particular purpose, and warranties arising from course of dealing or usage or trade).

Return Policy

If a GE Infrastructure Sensing, Inc. instrument malfunctions within the warranty period, the following procedure must be completed:

1. Notify GE Infrastructure Sensing, Inc., giving full details of the problem, and provide the model number and serial number of the instrument. If the nature of the problem indicates the need for factory service, GE Infrastructure Sensing, Inc. will issue a RETURN AUTHORIZATION number (RA), and shipping instructions for the return of the instrument to a service center will be provided.

2. If GE Infrastructure Sensing, Inc. instructs you to send your instrument to a service center, it must be shipped prepaid to the authorized repair station indicated in the shipping instructions.

3. Upon receipt, GE Infrastructure Sensing, Inc. will evaluate the instrument to determine the cause of the malfunction.

Then, one of the following courses of action will then be taken:

- If the damage <u>is</u> covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.

- If GE Infrastructure Sensing, Inc. determines that the damage <u>is not</u> covered under the terms of the warranty, or if the warranty has expired, an estimate for the cost of the repairs at standard rates will be provided. Upon receipt of the owner's approval to proceed, the instrument will be repaired and returned.

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Chapter 1

Programming Site Data

Introduction

The Model XGS868 flow transmitter must be properly installed and programmed, as described in the *Startup Guide*, before it can provide accurate flow rate measurements. After completing the installation and initial setup, use this chapter to program the advanced features of the Model XGS868's *User Program*.

Step-by-step programming instructions are presented in this chapter. Also, as a programming aid, a complete set of menu maps for the SITE EDIT MENU are included in Appendix A, *Menu Maps for IDM*. The specific figure numbers will be referenced throughout this chapter, as required.

Refer to the appropriate section for a discussion of the following SITE EDIT MENU features.

- Channelx-Status - activate one or both channels and select the desired measurement method.

- Channelx-System - enter the individual channel parameters.

- Channelx-Pipe Parameters - enter the pipe geometry and other parameters.

- Channelx-Input/Output - set up the inputs and outputs.

- Channelx-Setup - set the signal limits, response times and mass flow status.

- Global-System - select system units (English and metrics).

- Global-Input/Output - set up error handling, option cards and display.

- Global-Comm Port - set the serial port parameters.

Note: *The "x" in CHx represents the channel number. If you are using a 1-Channel meter, only Channel 1will appear.*

To get the XGS868 up and running as quickly as possible you must, as a minimum, activate the channel(s), enter channel and global system data and pipe parameters. The *Procedure Options* sections at the end of each menu will help you in programming the required (quick startup) and optional data.

Note: *In this manual, only the programming of Channel 1 will be described. To program Channel 2 of a 2-channel meter, simply repeat the same procedure presented for Channel 1.*

Programming Methods   There are three methods for programming the XGS868 flowmeter:

- **Instrument Data Manager (IDM)** - a PC-based, non-resident software program that communicates with the XGS868 via its RS232 serial port.

- **PanaView™** - a Windows-based, non-resident software program that communicates with the XGM868 via its RS232 serial port.

- **Remote Control Communications Unit (RCCU)** - a hand-held device that communicates with the XGM868 through wireless, infrared transmissions.

Note: *The* XGM868 *cannot be programmed at the electronics enclosure. One of the above methods must be used.*

Although the actual displays differ somewhat, the general procedures are the same for all three programming methods. This chapter provides detailed IDM programming instructions. If you are using PanaView™, see Appendix D, *PanaView™ for IDM-Compatible Meters* and/or the *PanaView™ User's Manual* (910-211) for detailed instructions. If you are using the RCCU, refer to Appendix C, *Remote Control Communications Unit*, for specific instructions.

Note: *This manual is for instruments using software verion Y3DS or later.*

Activating a Channel

The Channelx-Status submenu permits selection of the desired measurement method. In addition, it is used to activate/deactivate one or both of the channels in a 2-Channel Model XGS868.

While following the programming instructions, refer to Figure A-1 in Appendix A.

To access the Channelx-Status submenu:

1. Open the SITE EDIT MENU from the Edit Functions menu.
2. Select Channelx.
3. Select Status.
4. Select Burst to activate the channel/path and press Next Item/Enter.

Note: *Burst is automatically selected for a 1-Channel meter.*

5. Use the pull-down menu to select one of the measurement methods described below and press Next Item/Enter.

   • Skan Only is the preferred technique for locating the acoustic signal and for high velocity measurements. It is more robust in a noisy environment than the Measure technique.

   • Skan/Measure is the preferred technique to use for low velocity measurements.

If Skan Only is selected at the above prompt, the meter uses this technique exclusively. However, if Skan/Measure is selected, the meter uses Skan Only to find the acoustic signal and then tries to use the Skan/Measure technique for the actual measurement.

Note: *To change the Skan Only and Skan/Measure parameters, see the* Signal *submenu section on page 1-15 of this chapter.*

Procedure Options

After completing the above step, IDM returns to the Channel PROGRAM window. Do one of the following:

   • To continue entering "quick startup" data, proceed to Step 3 in the following section.

   • To continue regular programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

   • To leave the *User Program*, press Exit Page twice.

Entering System Data for the Channel

The Channelx-System submenu is used to enter system parameters for the channel. While following the programming instructions, refer to Figure A-1 in Appendix A.

Accessing the Channelx-System submenu

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select System.

4. Key in the desired Channel Label (up to 5 characters) and press Next Item/Enter.

5. Key in the desired Site/Channel Message (up to 21 characters) and press Next Item/Enter.

Selecting the Volumetric Units

1. Use the pull-down menu to select the desired volumetric units for the flow rate display and press Next Item/Enter. Available units are listed in Table 1-1 below.

2. Use the pull-down menu to select the desired time units for the flow rate display and press Next Item/Enter.

3. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the volumetric flow rate display and press Next Item/Enter.

Table 1-1: Available Volumetric/Totalizer Units

English	Metric
Actual Cubic Feet	Actual Cubic Meters
Thousands of ACF	Thousands of ACM
Millions of ACF	Millions of ACM
Standard Cubic Feet	Standard Cubic Meters
Thousands of SCF	Thousands of SCM
Millions of SCF	Millions of SCM

Selecting the Totalizer Units

1. Use the pull-down menu to select the desired units for the totalized flow rate display and press Next Item/Enter. Available units are listed in Table 1-1 on the previous page.

2. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the totalized flow rate display and press Next Item/Enter.

3. Do one of the following:

   • If MASS FLOW is ON, proceed to *Selecting the Mass Flow Units* below.

   • If MASS FLOW is OFF, the meter returns to the Channel PROGRAM window. Go to *Procedure Options* on the following page.

Note: *To activate mass flow, refer to page 1-20.*

Selecting the Mass Flow Units

1. Use the pull-down menu to select the desired mass flow units for the flow rate display and press Next Item/Enter. The available units for this prompt are determined by the selection made at System Units. See Table 1-2 below.

Table 1-2: Available Mass Flow Units

English	Metric
Pounds	Kilograms
Thousands of LB	Metric Tons (1000 KG)
Millions of LB	
Tons (2000 LB)	

2. Use the pull-down menu to select the desired time units for the mass flow rate display and press Next Item/Enter.

3. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the mass flow rate display and press Next Item/Enter.

4. Use the pull-down menu to select the desired units for the totalized mass flow rate display and press Next Item/Enter. The available units for this prompt are determined by the selection made at System Units.

5. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the totalized mass flow rate display and press Next Item/Enter.

Procedure Options

After completing the above steps, IDM returns to the Channel PROGRAM window. Do one of the following:

- To continue entering "quick startup" data, continue to Step 3 in *Entering Transducer and Pipe Parameters* on the next page.

- To continue regular programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page twice.

Entering Transducer and Pipe Parameters

Enter the transducer and pipe parameters via the Pipe Parameters submenu. While following the programming instructions, refer to Figure A-1 in Appendix A.

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Pipe Parameters.

4. Do one of the following:

   - Standard transducers: enter the number engraved on the transducer head, then use the pull-down menu to select Standard and press Next Item/Enter. Proceed to *Pipe Data* on the next page.

   - Special transducers: use the pull-down menu to select Special and press Next Item/Enter. Proceed to *Special Transducers* below.

   IMPORTANT: *Special transducers have no engraved number on the head and are rarely used. Examine the transducer head carefully for a number.*

Special Transducers

1. Assign a number between 91 and 99 for the special transducer and press Next Item/Enter.

2. Use the pull-down menu to select the transducer frequency (supplied by the factory) and press Next Item/Enter.

   Note: *The frequency is required to transmit an excitation voltage at the transducer's natural frequency.*

3. Enter the special transducer time delay value (supplied by the factory) and press Next Item/Enter.

   Tw is the time required for the transducer signal to travel through the transducer and its cable. This time delay must be subtracted from the transit times of the upstream and downstream transducers to ensure an accurate measurement.

Pipe Data

If a standard transducer is being used, the programming sequence should be rejoined at this point.

1. Enter the known pipe outside diameter or circumference, then use the pull-down menu to select the units. Press Next Item/Enter.

   Obtain the required information by measuring either the pipe outside diameter (OD) or circumference at the transducer installation site. The data may also be obtained from standard pipe size tables found in *Sound Speeds and Pipe Size Data* manual (914-004). Available units are shown in Table 1-3 below.

Table 1-3: Available Pipe OD Units

English	Metric
pipe OD in inches	pipe OD in millimeters
pipe OD in feet	pipe OD in meters
pipe circumference in inches	pipe circumference in millimeters
pipe circumference in feet	pipe circumference in meters

2. Enter the know thickness of the pipe wall and press Next Item/ Enter. If the pipe wall thickness is not available, look up the value in a table of standard pipe size data which can be found in *Sound Speeds and Pipe Size Data* manual (914-004).

IMPORTANT: *Because the units cannot be independently chosen for this parameter, the value must be entered in the same units used for the pipe OD.*

3. Enter the path length of the ultrasonic signal, then use the pull-down menu to select the units. Press Next Item/Enter.

Note: *If a spoolpiece was ordered with the meter, the transducer signal path length* (P) *and the transducer signal axial length* (L) *are engraved on the flowcell and/or are included in the documentation supplied with the meter. For on-site transducer installations, refer to Appendix C,* Measuring P and L Dimensions, *in the* Startup Guide *for instructions.*

Pipe Data (cont.)

4. Enter the axial length of the ultrasonic signal, then use the pull-down menu to select the units. Press Next Item/Enter.

5. Use the pull-down menu to select the fluid type and press Next Item/Enter. Then do one of the following:

  • If OTHER was selected - proceed to Step 6.

  • If STEAM was selected - proceed to Step 7.

6. Enter the speed of sound (in feet per second) in the gas to be measured and press Next Item/Enter.

7. Enter a value for the flow calibration factor and press Next Item/Enter. The default value is 1.00, but values between 0.50 and 2.0 may be entered.

Procedure Options

After entering the Calibration Factor, **IDM** returns to the Channel PROGRAM. Do one of the following:

  • To continue entering "quick startup" data, press EXIT PAGE once and proceed to Step 2 in *Entering Global System Data* on page 1-21.

  • To continue regular programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

  • To leave the *User Program*, press the EXIT PAGE key twice.

Entering Zero Cutoff and Setting Up Inputs

Enter the zero cutoff value and set up the temperature, pressure and quality inputs via the Input/Output submenu. While programming these parameters, refer to Figure A-1 in Appendix A.

IMPORTANT: *If an option card in* Slot 1 *fails to appear in this menu, it may be turned* Off. *See the* Global-Input/Output-Options *section on page 1-26 for setup instructions.*

Zero Cutoff Value

Near a zero flow rate, the Model XGS868's readings may fluctuate due to small offsets caused by thermal drift or similar factors. To force a zero display reading when there is minimal flow, enter a *zero cutoff value* as described below.

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Input/Output.

4. Enter a value from 0 to 1 ft/sec (0 to 0.30 m/sec) for the zero cutoff and press Next Item/Enter. The recommended setting is 0.1 ft/sec (0.03 m/sec).

Assume Saturation

This prompt permits you to use a single input for either temperature or pressure to measure mass flow. The *User Program* contains a table that correlates pressure and temperature for saturated steam. If the meter can assume the steam is always at or near saturation, then only a temperature or pressure input is needed. The meter will interpolate the corresponding pressure or temperature.

1. Use the pull-down menu to select whether you will assume saturation or not and press Next Item/Enter. Proceed to one of the following sections:

   • If you selected Yes - proceed to *Steam Input Type* on the next page.

   • If you selected No - proceed to *Temperature Input* on the next page.

Steam Input Type

Use the next prompt to select which type of input will be used to measure mass flow.

1. Use the pull-down menu to select the type of input that will be used to measure mass flow and press Next Item/Enter. Proceed to one of the following sections:

   • If you selected Temperature - proceed to *Temperature Input* on the next page.

   • If you selected Pressure - proceed to *Base Temperature* on the next page.

   IMPORTANT: *GE Infrastructure Sensing recommends using a live input for either temperature or pressure when assuming the saturation.*

Temperature Input

The Model XGS868 can use either a fixed temperature value or a live temperature input to calculate the steam density for the mass flow rate display.

1. Use the pull-down menu to select a fixed temperature value or to set up the option card in Slot 1 that will supply the live temperature input and press Next Item/Enter.

   Note: *If Slot 1 contains an activated option card with an analog input assigned to* Temperature *or an* RTD *input, Slot 1 appears as an option at the above prompt. If the process temperature is stable, a fixed value may be used, but most applications require a live temperature input.*

   If there is no active option card for temperature, the meter assumes you are using a fixed temperature.

2. Proceed to one of the following sections:

   • If you selected Fixed - proceed to Step 3.

   • If you selected Slot 1 - proceed to Step 4.

3. Enter the know fixed process temperature and press Next Item/ Enter. The meter will accept values from -328° to 1832°F (-200 to 1000°C). Proceed to *Base Temperature* on the next page.

4. Use the pull-down menu to set up input A or input B and press Next Item/Enter. The inputs were labeled during setup.

   Note: *The set up of input A is used as an example. Identical procedures would be used to set up input B.*

Base Temperature

1. Enter the base temperature and press Next Item/Enter. The ratio of this value to the actual temperature is used to calculate the standard mass flow rate.

2. Do one of the following:

   - If you selected No at Assume Saturation, proceed to *Pressure Input* below.

   - If you selected Pressure as the Steam Input Type, proceed to *Pressure Input* below.

   - If you selected Temperature as the Steam Input Type, proceed to *Base Pressure* below.

Pressure Input

1. Use the pull-down menu to select a fixed pressure value or to set up the option card in Slot 1 that will supply the live pressure input and press Next Item/Enter.

   Note: *If Slot 1 contains an activated option card with an input assigned to* Pressure, Slot 1 *appears as an option at the above prompt. If the process pressure is stable, a fixed value may be used, but most applications require a live pressure input.*

   If there is no active option card for pressure, the meter assumes you are using a fixed pressure.

2. Proceed to one of the following sections:

   - If you selected Fixed - proceed to Step 3.

   - If you selected Slot 1 - proceed to Step 4.

3. Enter the known fixed process pressure and press Next Item/ Enter. The meter will only accept values from 0 to 5000 psia. Proceed to *Base Pressure* below.

4. Use the pull-down menu to set up input A or input B and press Next Item/Enter. The inputs were labeled during setup.

   Note: *The set up of input A is used as an example. Identical procedures would be used to set up input B.*

Base Pressure

Enter the base pressure and press Next Item/Enter. The ratio of this value to the actual pressure is used to calculate the standard mass flow rate.

Low Pressure Switch

1. Use the pull-down menu to activate or deactivate the low pressure switch software function and press Next Item/Enter.

2. Proceed to one of the following sections:

   • If you selected Yes - proceed to Step 3.

   • If you selected No - proceed to *Quality Input* below.

3. Enter the low pressure switch set point and press Next Item/Enter. The acceptable range is 0 to 5000 psia. The meter will stop taking readings if the pressure drops below this value.

Quality Input

When the temperature and pressure inputs indicate that the steam is saturated, the Quality Input value is used for the mass flow rate calculations. Unless a different value is accurately known, accept the default value at the following prompt:

Note: *The quality value indicates what fraction of the fluid is in the gas phase. The remaining fraction is assumed to be liquid water. Thus, a quality value of 1.0 indicates 100% gas.*

1. Use the pull-down menu to select a fixed steam quality value or to set up the option card in Slot 1 that will supply the live steam quality input and press Next Item/Enter.

Note: *If Slot 1 contains an activated option card with an analog input that has been programmed as* Special, *Slot 1 appears as an option at the above prompt. Normally, a fixed value of 1.0 (100% steam) should be used for the steam quality value.*

   If there is no active option card for a special input, the meter assumes you are using a fixed quality value.

2. Proceed to one of the following sections:

   • If you selected Fixed - proceed to Step 3.

   • If you selected Slot 1 - proceed to Step 4.

3. Enter the known fixed steam quality and press Next Item/Enter. (The meter will accept values from 0.0000 to 1.0000.) Go to *Procedure Options* of the following page.

4. Use the pull-down menu to set up input A or input B and press Next Item/Enter. The inputs were labeled during setup.

Note: *The set up of input A is used as an example. Identical procedures would be used to set up input B.*

Procedure Options

After completing the above steps, IDM returns to the Channel PROGRAM window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page twice.

Entering Setup Data

The signal limits, response times, mass flow and multi K factors for the Model XGS868 are specified via the Setup submenu. The following four submenus are included in this section:

- Signal - set the parameters related to the transducer signal (see below).

- V averaging - specify the response of the meter to step changes (page 1-18).

- Default Setup - reset all parameters to default values (page 1-18)

- Advanced Features - enable mass flow and enter K factors (page 1-19).

While following the programming instructions, refer to Figure A-2 in Appendix A. Record all programmed data in Appendix B, *Data Records*.

Set Transducer Signal Settings

Use this option to set the limits for the incoming signal and other parameters affecting the transducer signal. For example, the programmed signal strength low limit may be used to determine the trigger point for an alarm.

Caution!
The Signal default settings are suitable for most applications. Consult the factory before changing any of these parameters.

Only after consulting the factory, complete the following steps to program the signal parameters:

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Set up.

4. Select Signal.

5. Use Table 1-4 on the next page to choose the desired values. Enter or select a value and press Next Item/Enter.

Procedure Options

After completing the above steps, IDM returns to the Channel SET UP window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Set Transducer Signal Settings (cont.)

Table 1-4: Transducer Signal Settings

Transducer Signal Parameters	Range	Default Value	Miscellaneous Information
Signal Low Limit	-20 to 100	20	The E1:LOW SIGNAL error message appears when the signal strength falls below the programmed SIGNAL LOW LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.
Correlation Peak Limit	0 to 500	100	The E4: SIGNAL QUALITY error message appears when the signal quality falls below the programmed COR. PEAK LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes
Soundspeed +- Limit	1 to 50%	20%	The E2:SOUNDSPEED error message appears when the calculated fluid sound speed differs from the fluid sound speed entered in the Channelx-System menu by more than the programmed SOUNDSPEED +- LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.
Velocity Low Limit	-500 to 500 ft/sec (-150 to 150 m/sec)	-75.0 ft/sec (-23 m/sec)	The E3: VELOCITY RANGE error messages appears when the calculated fluid velocity is less than the programmed VELOCITY LOW LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.
Velocity High Limit	-500 to 500 ft/sec (-150 to 150 m/sec)	75.0 ft/sec (23 m/sec)	The E3: VELOCITY RANGE error messages appears when the calculated fluid velocity exceeds the programmed VELOCITY HIGH LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.
Acceleration Limit	0 to 250ft/s (0 to 76m/s)	50 ft/s (15 m/s)	The E6: CYCLE SKIP error message appears when the calculated fluid velocity changes by more than the programmed ACCELERATION LIMIT value from one reading to the next. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.
Amplitude Discriminator Low	0 to 100	14	The amplitude discriminator measures the transducer signal received by the XGS868. The default value for this parameter is 14, and values from 0 to 100 are acceptable. The E5: AMPLITUDE error message appears when the amplitude discriminator falls below the programmed AMP. DISCRIM LOW value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.
Amplitude Discriminator High	0 to 100	34	The amplitude discriminator measures the transducer signal received by the Model XGS868. The default value for this parameter is 34. Values from 0 to 100 are acceptable. The E5: AMPLITUDE error message appears when the amplitude discriminator exceeds the programmed AMP. DISCRIM HIGH value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.

Table 1-4: Transducer Signal Settings

Transducer Signal Parameters	Range	Default Value	Miscellaneous Information
Delta T Offset	-1000 to 1000 msec	0 msec	An offset between the upstream and downstream transit times is specified at this prompt.
Skan T Offset	–500 to 500 msec	58 msec	At this prompt, specify a time measurement offset that compensates for a shift resulting from cross-correlation.
% of Peak	1 to 100%	50%	The percentage of peak used to calculate the transit times and Delta T is specified at this prompt.
Xmit Sample Size	2, 4, 8, 16 or 32	8	Both the upstream and downstream transducers transmit ultrasonic pulses in bursts, which consist of a series of transmit pulses. XMIT SAMPLE SIZE determines how many bursts are sent in one direction before sending in the other direction.
M>S Switch	0 to 250 msec	50 msec	If the burst mode is set to *Skan/Measure* (S/M), the meter switches from *Skan* to *Measure Mode* when Delta T is less than the M>S_Switch value. **DO NOT** change this value unless advised by the factory.
# Shifts	0 to 10	3	The number of shifts corresponds to the actual number of transmits per cycle (number of signals added together in one direction to produce an averaged signal for one interrogation of the fluid) and need only be changed if the environment is very noisy or the acoustic signal is weak.
A Divisor	0.1 to 10	2.5	The Divisor used to calculate the Measure Mode integrated threshold level is not normally changed.
# Transmit Pulses	1 to 16	4	# Transmit Pulses specifies the number of pulses in a burst. For difficult conditions (i.e. long paths, high velocity or high temperature), settings as high as 16 may be necessary.
T Window (cycles)	0 to 1000	0	The XGS868 calculates the size of the transmit window based on pipe size and fluid sound speed. However, for special diagnostic purposes, it is possible to reset the window size.
R Window (cycles)	10 to 128	10	The XGS868 calculates the size of the receive window based on pipe size and fluid soundspeed. However, for special diagnostic purposes, it is possible to reset the window size.

Setting Response Time - V Averaging

Use this option to specify the number of readings that occur before the meter will respond to a step change in flow rate. In general, the smaller the number of readings, the less steady the display will appear. Complete the following steps to set the response time:

IMPORTANT: *Do not change this number unless instructed to do so by GE Infrastructure Sensing personnel.*

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Set up.

4. Select V Averaging.

5. Select the response time (in seconds) from the pull-down menu and press Next Item/Enter. For best results, select 30 to ensure the most stable signal.

Procedure Options

After completing the above steps, IDM returns to the Channel SET UP window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Initializing Setup Parameters - Default Setup

Use this option to initialize (reset) all of the parameters within the Set up menu to their default values. Complete the following steps to reset all of the parameters:

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Set up.

4. Select Default Setup.

5. Select Yes to initialize parameters or No to abort this command.

Procedure Options

After completing the above steps, IDM returns to the Channel Set up window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Using Advanced Features

This option enables you to access the more advanced features of the meter. In this option you can do the following:

- enter a table of K factors - that compensates for non-linear flow rates (see below).

- enable mass flow - calculated for static fluid density (on the next page).

Entering Multiple K Factors

Use this option to enter a table of K factors. K factors are used to create a curve for the flow range (based on velocity) that compensates for non-linear flow rates. The meter accepts from 2 to 20 pairs. Complete the following steps to enter multiple K factors for velocity values:

Note: *The factors are supplied by the factory; without them the K-factor table cannot be edited.*

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Set up.

4. Select Advanced Features.

5. Select Multiple K Factors.

6. Use the pull-down menu to select whether to activate or deactivate multiple K factors and press Next Item/Enter.

Note: *If you select Off, go to* Procedure Options *on the following page.*

7. Use the pull-down menu to select whether to edit the table and press Next Item/Enter.

Note: *If you select No, go to* Procedure Options *on the next page.*

Editing K Factors

1. Enter the number of K factors (2 to 20) in the table and press Next Item/Enter.

2. Enter the velocity value for K-factor number "X" and press Next Item/Enter.

Note: *When editing the K-factor table, the velocities must be entered in increasing order.*

3. Enter the K-factor corresponding to velocity number "X" (0.333 to 3.0) and press Next Item/Enter.

4. Repeat Steps 2 and 3 for each pair of values.

Procedure Options　　　After completing the above steps, IDM returns to the Advanced Features window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page four times.

Activating Mass Flow　　　Use this option to calculate mass flow from a static fluid density. Complete the following steps to enter the static density of the fluid:

IMPORTANT:　*The Model XGS868 calculates the actual steam density from the live or fixed temperature and pressure inputs, as programmed in the* Input/Output *menu. However, setting the* Mass flow calculation *prompt to* Yes *overrides this value and uses the density entered at the following prompt to calculate mass flow.*

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Channelx.

3. Select Set up.

4. Select Advanced Features.

5. Select Mass flow calculation.

6. Use the pull-down menu to select whether activate or deactivate mass flow (mass flow is calculated from a static density) and press Next Item/Enter.

Note:　*If you select No, go to* Procedure Options *below.*

7. Enter the fluid density and press Next Item/Enter.

Procedure Options　　　After completing the above steps, IDM returns to the Advanced Features window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page four times.

Entering Global Data

The Global menu is used to enter information that is not specific to any of the individual channels. Information programmed via this menu is used to compute parameters such as the sum, difference or average of the channel 1 and channel 2 signals (for a 2-Channel meter). In addition, several general system parameters may be entered in the Global menu.

IMPORTANT: *When calculating the sum, difference or average readouts, data from the* Global-System *submenu is used. Any conflicting data entered in the* Channelx-System *submenu is overridden.*

The following submenus are included in the Global menu:

• System - use to specify the units of measure used in calculations (see below).

• Input/Output - used to set up error handling and to configure analog inputs and outputs (see page 1-24).

• Communication Port- used to set up the serial communications port (see page 1-36).

Based on the selection made above, proceed to the appropriate section of this chapter for instructions. While following the programming instructions, refer to Figure A-3 in Appendix A. Remember to record all programmed data in Appendix B, *Data Records*.

Entering Global System Data

This menu enables you to select system units that the XGS868 will use when channel data is added, subtracted or averaged together.

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select System.

4. Enter the desired meter message (up to 21 characters) and press Next Item/Enter.

5. Use the pull-down menu to display measurements in English units or metric units and press Next Item/Enter.

6. Use the pull-down menu to select the desired pressure units (absolute or gauge) and press Next Item/Enter.

7. Do one of the following:

• 1-Channel meter, go to *Procedure Options* on page 1-23.

• 2-Channel meter, proceed to *Selecting Volumetric Units* on the next page.

Selecting the Volumetric Units

1. Use the pull-down menu to select the desired volumetric units for the flow rate display and press Next Item/Enter. Available units are listed in Table 1-5 below.

Table 1-5: Available Volumetric/Totalizer Units

English	Metric
Actual Cubic Feet	Actual Cubic Meters
Thousands of ACF	Thousands of ACM
Millions of ACF	Millions of ACM
Standard Cubic Feet	Standard Cubic Meters
Thousands of SCF	Thousands of SCM
Millions of SCF	Millions of SCM

2. Use the pull-down menu to select the desired time units for the flow rate display and press Next Item/Enter.

3. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the volumetric flow rate display and press Next Item/Enter.

Selecting the Totalizer Units

1. Use the pull-down menu to select the desired units for the totalized flow rate display and press Next Item/Enter. Available units are listed in Table 1-5 above.

2. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the totalized flow rate display and press Next Item/Enter.

3. Do one of the following:

   • If MASS FLOW is ON, proceed to *Selecting the Mass Flow Units* below.

   • If MASS FLOW is OFF, the meter returns to the Channel PROGRAM window. Go to *Procedure Options* on the following page.

Note: *To activate mass flow, refer to page 1-20.*

Selecting the Mass Flow Units

1. Use the pull-down menu to select the desired mass flow units for the flow rate display and press Next Item/Enter. The available units for this prompt are determined by the selection made at System Units. See Table 1-6 below.

Table 1-6: Available Mass Flow Units

English	Metric
Pounds	Kilograms
Thousands of LB	Metric Tons (1000 KG)
Millions of LB	
Tons (2000 LB)	

2. Use the pull-down menu to select the desired time units for the mass flow rate display and press Next Item/Enter.

3. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the mass flow rate display and press Next Item/Enter.

4. Use the pull-down menu to select the desired units for the totalized mass flow rate display and press Next Item/Enter. The available units for this prompt are determined by the selection made at System Units.

5. Use the pull-down menu to select the desired number of digits to the right of the decimal point in the totalized mass flow rate display and press Next Item/Enter.

Procedure Options

After completing the above steps, IDM returns to the Global PROGRAM window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page twice.

Setting Up Inputs and Outputs

Set up the XGS868's inputs and outputs via the Input/Output submenu. While following the programming instructions, refer to Figure A-3 in Appendix A. The following three submenus are included in this section:

- Error Handling - program the meter's response during an error condition (see below)

- Options - set up any option cards and the Slot 0 analog outputs (page 1-26)

- Display - set up the optional LCD display. Refer to Chapter 2, *Displaying and Handling Data*.

Note: *In this section,* Slot 1 *appears as an option only if a suitable option card is installed in Slot 1.*

Proceed to the appropriate section to program the option selection made at the above prompt. Remember to record all programmed data in Appendix B, *Data Records*.

Selecting Error Handling

This menu option permits programming of the manner in which the Model XGS868's outputs respond during an error condition. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of the built-in error codes.

2-Channel meters have an additional option for error handling. To access this submenu:

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Error Handling.

5. Use the pull-down menu to select the desired option for error handling and press Next Item/Enter. If you select Error Level in mA, proceed to Step 6. See Table 1-7 on the following page for a description of error handling options available and how the totalizers and analog output respond to them.

Note: *The error responses listed in Table 1-7 on the next page apply only to the* Channelx *measurement mode and to the* Sum/ Difference *measurement modes, if either or both channels are in error. Error handling in the* Average *measurement mode is set in Step 7.*

6. Enter a specific current that will signify meter errors and press Next Item/Enter. Then, do one of the following:

- For a 1-Channel meter, go to *Procedure Options* on the next page.

- For a 2-Channel meter - proceed to Step 7 on the next page.

Selecting Error Handling (cont.)

7. Use the pull-down menu to enable or disable 2-path error handling. Specific responses of the display and the totalizer are listed in Table 1-8 below.

The 2-path error handling option is intended for applications where two sets of transducers are installed in the same location in the same pipe to improve accuracy and the meter is operated in AVE mode. With this function enabled, the Model XGS868 performs error handling only if <u>both</u> channels are in error. If this function is disabled, error handling occurs when <u>either</u> channel goes into error.

Table 1-7: Error Response Options

Option	Output Response	Totalizer Response
Hold Last Value	Holds the last "good" reading.	Continues to totalize, based on the last "good" flow reading.
Force Low	Forces the outputs to the low set point.	Stops totalizing.
Force High	Forces the outputs to the high set point.	Stops totalizing.
Force High High	Forces the outputs ≈10% above the high set point.	Stops totalizing.
Error Level in mA	Forces outputs to entered mA level.	Stops totalizing during critical errors.

Table 1-8: 2-Path Error Response Options

Option	Display Response	Totalizer Response
No	Displays the average of Channel1 and Channel2, regardless of the error state of either channel.	Outputs the average of Channel1 and Channel2 totals, regardless of the error state of either channel.
Yes	1. If one channel is in error, the other channel's value is displayed as the average. 2. If both channels are in error, the last average reading is held.	1. If one channel is in error, totalizing continues. 2. If both channels are in error, totalizing stops.

Procedure Options

After completing the above steps, IDM returns to the Global I/O window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Setting Up Slot 0 and Slot 1 Input/Outputs

The Model XGS868 has two built-in analog outputs, which are assigned to Slot 0. Also, a variety of input/output option cards may be installed in Slot 1. See Chapter 1, *Installation*, of the *Startup Guide* for a complete description of the available option cards.

To set up option cards, refer to one of the following sections:

- Analog Outputs - refer to section below.

- Analog Inputs - see page 1-28

- RTD Inputs - see page 1-29

- Alarm Relays - see page 1-30

- Totalizer Outputs - see page 1-32

- Frequency Outputs - see page 1-34

Analog Outputs

While following the programming instructions, refer to Figure A-4 in Appendix A.

Accessing the Output

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Options.

5. Select Slot 0 or Slot 1 depending on which output you want to set up.

6. Use the pull-down menu to select the desired output and press Next Item/Enter.

Note: *Output letters (A, B, etc.) correspond to the output wiring terminal numbers from top to bottom. For example, Output A corresponds to pins 1,2 and 3; Output B corresponds to pins 4, 5 and 6; etc.*

Setting Up Output Scale

1. Use the pull-down menu to select the desired output scale and press Next Item/Enter.

2. Do one of the following:

- If you selected *Off*, IDM returns to the Input/Output window. Go to *Procedure Options* on the next page.

- If you selected *0-20 mA* or *4-20 mA*, and are using a

  - *1-Channel meter, proceed to Step 4.*

  - *2-Channel meter, proceed to the next step.*

Setting Up Output Scale (cont.)

3. Use the pull-down menu to select the desired channel option and press Next Item/Enter.

4. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter. See Table 1-9 below for a description of the available options.

5. At Zero, enter a flow rate value for the low end of the analog output range and press Next Item/Enter.

6. At Full, enter a flow rate value for the high end of the analog output range and press Next Item/Enter.

Table 1-9: Output Measurement Options

Options
Flow Velocity
Volumetric Flow
Forward Totalized Volume Flow
Reverse Totalized Volume Flow
Total Flow Measurement Time
Mass Flow
Forward Totalized Mass Flow
Reverse Totalized Mass Flow
Diagnostic Parameters*

The DIAG* option listed above represents all of the individual diagnostic parameters that appear at the previous prompt. See Chapter 3, *Diagnostics*, of the *Service Manual* for a complete description of these options.

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

Procedure Options

After completing the above steps, IDM returns to the Input/Output window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Analog Inputs

While following the programming instructions, refer to Figure A-4 in Appendix A.

Complete the following steps to set up the analog inputs of an option card installed in Slot 1:

Accessing the Input

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Options.

5. Select Slot 1.

6. Use the pull-down menu to select the desired input and press Next Item/Enter.

Note: *Input letters (A, B, etc.) correspond to the input wiring terminal numbers from top to bottom. For example, Input A corresponds to pins 1,2 and 3; Input B corresponds to pins 4, 5 and 6; etc.*

Setting Up the Input

1. Enter a label of up to eight characters for input and press Next Item/Enter.

2. Use the pull-down menu to select the desired input measurement and Next Item/Enter. Do one of the following:

   • If Off was selected, go to *Procedure Options* below.

   • If Pressure or Temperature was selected, proceed to Step 5.

   • If Special was selected to set up the input as a live special input, proceed to the next step.

3. Enter a name for the input and press Next Item/Enter.

4. Enter a unit of measurement for the input and press Next Item/Enter.

5. Enter a value (a temperature value for special inputs) for the low end of the analog input range and press Next Item/Enter.

6. Enter a value (a temperature value for special inputs) for the high end of the analog input range and press Next Item/Enter.

Procedure Options

After completing the above steps, IDM returns to the Input/Output window. Do one of the following:

   • To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

   • To leave the *User Program*, press Exit Page three times.

RTD Inputs

Option cards with RTD inputs have a temperature range of $-100°$ to $350°C$. While following the programming instructions, refer to Figure A-4 in Appendix A.

Complete the following steps to set up the RTD inputs of an option card installed in Slot 1:

Accessing the Input

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Options.

5. Select Slot 1.

6. Use the pull-down menu to select the desired input and press Next Item/Enter.

Note: *Input letters (A, B, etc.) correspond to the input wiring terminal numbers from top to bottom. For example, Input A corresponds to pins 1, 2 and 3; Input B corresponds to pins 4, 5 and 6; etc.*

Setting Up the RTD Input

1. Enter a label for the RTD input and press Next Item/Enter.

2. Use the pull-down menu to select the desired input type and Next Item/Enter. Do one of the following:

   • If Off was selected, go to *Procedure Options* below.

   • If Temperature was selected, proceed to the next step.

3. Enter a temperature value for the low end of the analog input range and press Next Item/Enter.

4. Enter a temperature value for the high end of the analog input range and press Next Item/Enter.

Procedure Options

After completing the above steps, IDM returns to the Input/Output window. Do one of the following:

   • To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

   • To leave the *User Program*, press Exit Page three times.

Alarm Relays

While following the programming instructions, refer to Figure A-4 in Appendix A.

Complete the following steps to set up the alarm relays of an option card installed in Slot 1:

Accessing the Alarm Relay

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Options.

5. Select Slot 1.

6. Use the pull-down menu to select the desired input and press Next Item/Enter.

Note: *Output letters (A, B, etc.) correspond to the output wiring terminal numbers from top to bottom. For example, Output A corresponds to pins 1,2 and 3; Output B corresponds to pins 4, 5 and 6; etc.*

Selecting the Alarm Type

1. Use the pull-down menu to select the desired alarm type and press Next Item/Enter.

2. Do one of the following:

   • If you selected *Off*, IDM returns to the Input/Output window. go to *Procedure Options* below.

   • If you selected *High*, *Low* or *Fault*, proceed to the next step.

3. Use the pull-down menu to select how the alarm will operate, standard or failsafe mode, and press Next Item/Enter. Refer to Chapter 1, *Installation*, of the *Startup Guide* for wiring instructions.

Selecting the Alarm Type (cont.)

4. Do one of the following:

  • If you are using a 1-Channel meter and selected

    • *high or low, proceed to Step 7.*

    • *fault, proceed to Step 9.*

  • If you are using a 2-Channel meter, proceed to the next step.

5. Use the pull-down menu to select the desired channel option and press Next Item/Enter.

6. Do one of the following:

    • *high or low, proceed to Step 7.*

    • *fault, proceed to Step 9.*

7. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter. See Table 1-10 below for a description of the available options.

Table 1-10: Output Measurement Options

Options
Flow Velocity
Volumetric Flow
Forward Totalized Volume Flow
Reverse Totalized Volume Flow
Total Flow Measurement Time
Mass Flow
Forward Totalized Mass Flow
Reverse Totalized Mass Flow
Diagnostic Parameters*

The DIAG* option listed above represents all of the individual diagnostic parameters that appear at the previous prompt. See Chapter 3, *Diagnostics*, of the *Service Manual* for a complete description of these options.

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

8. Enter a value for the trigger point of the alarm and press Next Item/Enter. Go to *Procedure Options* on the following page.

9. Use the pull-down menu to select the type of error (flow, non-flow or both) that will trigger the fault alarm and press Next Item/Enter.

Procedure Options

After completing the above steps, IDM returns to the Input/Output window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Totalizer Outputs

The totalizer output issues one pulse per selected volume of flow. The meter produces a pulse each time the programmed amount of flow passes through the pipe. While following the programming instructions, refer to Figure A-4 in Appendix A.

Complete the following steps to set up the totalizer outputs of an option card installed in Slot 1:

Accessing the Totalizer Output

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Options.

5. Select Slot 1.

6. Use the pull-down menu to select the desired input and press Next Item/Enter.

7. Do one of the following:

    - If you selected *Off*, IDM returns to the Input/Output window. Go to *Procedure Options on* the following page.

    - If you selected *Totalizer*, and are using a

        - *1-Channel meter, proceed to Step 2 in the next section.*

        - *2-Channel meter, proceed to Step 1 in the next section.*

    Note: *Output letters (A, B, etc.) correspond to the output wiring terminal numbers from top to bottom. For example, Output A corresponds to pins 1,2 and 3; Output B corresponds to pins 4, 5 and 6; etc.*

Setting Up the Totalizer

1. Use the pull-down menu to select the desired channel option and press Next Item/Enter.

2. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter. See Table 1-11 below for a description of the available options.

Table 1-11: Output Measurement Options

Options
Forward Totalized Volume Flow
Reverse Totalized Volume Flow
Forward Totalized Mass Flow
Reverse Totalized Mass Flow

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

3. Enter a value for the minimum pulse on time (between 1 μsec and 10,000 μsec) for the frequency of the totalizer pulses and press Next Item/Enter.

Note: *A complete pulse consists of equal amounts of* ON *and* OFF *times. Choose a value that is compatible with the frequency counter to be used.*

4. Enter a value for the number of measurement units represented by each pulse and press Next Item/Enter.

Procedure Options   After completing the above steps, IDM returns to the Input/Output window. Do one of the following:

• To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

• To leave the *User Program*, press Exit Page three times.

Frequency Outputs

The frequency output issues a continuous signal with a frequency proportional to the selected measurement. While following the programming instructions, refer to Figure A-4 in Appendix A.

Complete the following steps to set up the totalizer outputs of an option card installed in SLOT 1:

Accessing the Frequency Output

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Options.

5. Select Slot 1.

6. Use the pull-down menu to select the desired input and press Next Item/Enter.

7. Do one of the following:

   - If you selected *Off*, IDM returns to the Input/Output window. Go to *Procedure Options on* the following page.

   - If you selected *Frequency*, and are using a

     - *1-Channel meter, proceed to Step 2 in the next section.*

     - *2-Channel meter, proceed to Step 1 in the next section.*

Note: *Output letters (A, B, etc.) correspond to the output wiring terminal numbers from top to bottom. For example, Output A corresponds to pins 1, 2 and 3; Output B corresponds to pins 4, 5 and 6; etc.*

Setting Up the Frequency

1. Use the pull-down menu to select the desired channel option and press Next Item/Enter.

2. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter. See Table 1-12 on the next page for a description of the available options. Refer to page 3-2 in the *Service Manual* for a description of diagnostic parameters.

Setting Up the Frequency (cont.)

Table 1-12: Output Measurement Options

Options
Flow Velocity
Volumetric Flow
Forward Totalized Volume Flow
Reverse Totalized Volume Flow
Total Flow Measurement Time
Mass Flow
Forward Totalized Mass Flow
Reverse Totalized Mass Flow
Diagnostic Parameters*

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

3. Enter a value for the low end of the frequency output range and press Next Item/Enter.

Note: *A complete pulse consists of equal amounts of* ON *and* OFF *times. Choose a value that is compatible with the frequency counter to be used.*

4. Enter a value for the high end of the frequency output range and press Next Item/Enter.

5. Enter a value between 1 and 10,000 for the frequency at full scale and press Next Item/Enter.

Procedure Options   After completing the above steps, IDM returns to the Input/Output window. Do one of the following:

- To continue programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Configuring the
Communications Port

The Model XGS868 flowmeter is equipped with an RS232 or an RS485 serial interface. An RS485 option is also available with MODBUS capability. When the MODBUS option is present, the XGS868 may also have the standard RS232 serial interface.

The serial port is used to transmit stored data and displayed readings to a personnel computer by connecting the meter's serial interface to the serial port of the PC. In addition, the Model XGS868 can receive and execute remote commands, using the *Instrument Data Manager* software via this link.

Use the Comm Port submenu to set the communications port baud and MODBUS parameters. While following the programming instructions, refer to Figure A-3 in Appendix A.

Setting Up the Serial Port

Use the steps below to configure the communications port:

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Comm Port.

4. Enter a meter address (between 1 and 127) and press Next Item/ Enter. The default address is 1.

A meter address is only necessary for communication with the GE Infrastructure Sensing *Instrument Data Manager* software. See the *IDM User's Manual* (910-185) for more information.

IMPORTANT: *If the meter address or baud rate is changed, communication with the* Instrument Data Manager *must be re-established with the new parameters.*

5. Use the pull-down menu to select a baud rate and press Next Item/ Enter.

6. Do one of the following:

  • If you have the RS485 MODBUS option, proceed to Step 1 in *Setting Up MODBUS Communications* on the following page.

  • If you have the standard RS232 serial interface, go to *Procedure Options* on the next page.

Setting Up MODBUS Communications

Use the steps below to configure MODBUS communications:

Note: *The XGS868 MODBUS communications settings chosen in the next four steps must match those of the MODBUS control system.*

1. Use the pull-down menu to select a MODBUS baud rate and press Next Item/Enter.

2. Use the pull-down menu to select the MODBUS parity and press Next Item/Enter.

3. Use the pull-down menu to the MODBUS stop bits and press Next Item/Enter.

4. Enter a MODBUS meter address (between 1 and 254) and press Next Item/Enter. The default address is 1.

IMPORTANT: *You must reboot the XGS868 to load the new settings.*

Procedure Options

After completing the above steps, IDM returns to the Global PROGRAM window. Do one of the following:

• Refer to the following section *Requesting Parameters Using MODBUS* on the following page to retrieve data from the XGS868 using MODBUS.

• To continue regular programming, refer to Appendix A, *Menu Maps for IDM*, to navigate to the desired menu.

• To leave the *User Program*, press Exit Page twice.

Requesting Parameters Using MODBUS

To request specific parameters from the XGS868 via the MODBUS, the control system must enter the appropriate register number. Only registers 1 through 90 are available for MODBUS communications, while registers 508 through 512 are used by the XGS868 to store the MODBUS parameters. For details, see Table 1-13 below for a 1-Channel meter or Table 1-14 on the next page for a 2-Channel meter.

Note: *If you request Channel2 or Averaged data from a 1-Channel meter, the values will all be zero.*

Table 1-13: MODBUS Registers for a 1-Channel XGS868

MODBUS Reg #	DPR Hex Addr	Description	Scaling (decimal places)	Size in Bytes
1	0	[1]"Clear Ch1 Totalizers"	--	2 (16 bit signed)
2	2	Not Used	--	2 (16 bit signed)
3	4	Velocity	2	4 (2 16-bit int)
5	8	Act Volumetric	#Q DIGITS	4 (IEEE 32 bit)
7	C	Std Volumetric	#Q DIGITS	4 (IEEE 32 bit)
9	10	Fwd Totals	#T DIGITS	4 (2 16 bit int)
11	14	Rev Totals	#T DIGITS	4 (2 16 bit int)
13	18	#Tot Digits	0	2
14	1A	Mass Flow	#M DIGITS	4 (IEEE 32 bit)
16	1E	Fwd Mass Totals	#MT DIGITS	4 (2 16-bit int)
18	22	Rev Mass Totals	#MT DIGITS	4 (2 16-bit int)
20	26	#Mass Tot Digits	0	2
21	28	Timer	2	4 (2 16-bit int)
23	2C	Error Code	0	2
24	2E	Sound Speed	3	4 (2 16-bit int)
26	32	Steam Density	4	4 (2 16-bit int)
28	36	Signal Strength Upstream	1	4 (2 16-bit int)
30	3A	Signal Strength Downstream	1	4 (2 16-bit int)
32	3E	Temperature	2	4 (2 16-bit int)
34	42	Pressure	3	4 (2 16-bit int)
508	3F6	[2]MODBUS baud rate	0	2
509	3F8	[3]MODBUS parity	0	2
510	3FA	[4]MODBUS stop bits	0	2
511	3FC	MODBUS meter addr	0	2
512	3FE	RESERVED	---	---

Table 1-14: MODBUS Registers for a 2-Channel XGS868

MODBUS Reg #	DPR Hex Addr	Description	Scaling (decimal places)	Size in Bytes
1	0	[1]"Clear Ch1 Totalizers"	--	2 (16 bit signed)
2	2	[1]"Clear Ch2 Totalizers"	--	2 (16 bit signed)
3	4	Ch1 Velocity	2	4 (2 16-bit int)
5	8	Ch1 Act Volumetric	#Q DIGITS	4 (IEEE 32 bit)
7	C	Ch1 Std Volumetric	#Q DIGITS	4 (IEEE 32 bit)
9	10	Ch1 Fwd Totals	#T DIGITS	4 (2 16 bit int)
11	14	Ch1 Rev Totals	#T DIGITS	4 (2 16 bit int)
13	18	Ch1 #Tot Digits	0	2
14	1A	Ch1 Mass Flow	#M DIGITS	4 (IEEE 32 bit)
16	1E	Ch1 Fwd Mass Totals	#MT DIGITS	4 (2 16-bit int)
18	22	Ch1 Rev Mass Totals	#MT DIGITS	4 (2 16-bit int)
20	26	Ch1 #Mass Tot Digits	0	2
21	28	Ch1 Timer	2	4 (2 16-bit int)
23	2C	Ch1 Error Code	0	2
24	2E	Ch1 Sound Speed	3	4 (2 16-bit int)
26	32	Ch1 Steam Density	4	4 (2 16-bit int)
28	36	Ch1 Sig Strength Upstream	1	4 (2 16-bit int)
30	3A	Ch1 Sig Strength Downstream	1	4 (2 16-bit int)
32	3E	Ch1 Temperature	2	4 (2 16-bit int)
34	42	Ch1 Pressure	3	4 (2 16-bit int)
36	46	Ch2 Velocity	2	4 (2 16-bit int)
38	4A	Ch2 Act Volumetric	#Q DIGITS	4 (IEEE 32 bit)
40	4E	Ch2 Std Volumetric	#Q DIGITS	4 (IEEE 32 bit)
42	52	Ch2 Fwd Totals	#T DIGITS	4 (2 16 bit int)
44	56	Ch2 Rev Totals	#T DIGITS	4 (2 16 bit int)
46	5A	Ch2 #Tot Digits	0	2
47	5C	Ch2 Mass Flow	#M DIGITS	4 (IEEE 32 bit)
49	60	Ch2 Fwd Mass Totals	#MT DIGITS	4 (2 16-bit int)
51	64	Ch2 Rev Mass Totals	#MT DIGITS	4 (2 16-bit int)
53	68	Ch2 #Mass Tot Digits	0	2
54	6A	Ch2 Timer	2	4 (2 16-bit int)
56	6E	Ch2 Error Code	0	2
57	70	Ch2 Sound Speed	3	4 (2 16-bit int)
59	74	Ch2 Steam Density	4	4 (2 16-bit int)

Table 1-14: MODBUS Registers for a 2-Channel XGS868 (Continued)

MODBUS Reg #	DPR Hex Addr	Description	Scaling (decimal places)	Size in Bytes
61	78	Ch2 Sig Strength Upstream	1	4 (2 16-bit int)
63	7C	Ch2 Sig Strength Downstream	1	4 (2 16-bit int)
65	80	Ch2 Temperature	2	4 (2 16-bit int)
67	84	Ch2 Pressure	3	4 (2 16-bit int)
69	88	Avg Velocity	2	4 (2 16-bit int)
71	8C	Avg Act Volumetric	#Q DIGITS	4 (IEEE 32 bit)
73	90	Avg Std Volumetric	#Q DIGITS	4 (IEEE 32 bit)
75	94	Avg Fwd Totals	#T DIGITS	4 (2 16 bit int)
77	98	Avg Rev Totals	#T DIGITS	4 (2 16 bit int)
79	9C	Avg #Tot Digits	0	2
80	9E	Avg Mass Flow	#M DIGITS	4 (IEEE 32 bit)
82	A2	Avg Fwd Mass Totals	#MT DIGITS	4 (2 16-bit int)
84	A6	Avg Rev Mass Totals	#MT DIGITS	4 (2 16-bit int)
86	AA	Avg #Mass Tot Digits	0	2
87	AC	Avg Timer	2	4 (2 16-bit int)
89	B0	[5]Avg Error Code	0	2
90	B2	Avg Sound Speed	3	4 (2 16-bit int)
508	3F6	[2]MODBUS baud rate	0	2
509	3F8	[3]MODBUS parity	0	2
510	3FA	[4]MODBUS stop bits	0	2
511	3FC	MODBUS meter addr	0	2
512	3FE	RESERVED	---	---

Notes:

1. **Clear Totalizers:**
   flag from the 8051 to clear either the Channel 1 or Channel 2 totalizers.

2. **MODBUS baud rate:**
   5 = 2400, 6 = 4800, 7 = 9600

3. **MODBUS parity:**
   0 = none, 1 = odd, 2 = even

4. **MODBUS stop bits:**
   1 = 1 stop bit, 2 = 2 stop bits

5. **AVG Error Code:**
   0=Both Ch1 and Ch2 are in error.
   1=Ch1 only is in error
   2=Ch2 only is in error
   3=Both channels are error free

Chapter 2

Displaying and Handling Data

Introduction

Although there are various ways to display data, the most popular is the optional Liquid Crystal Display (LCD). If the Model XGS868 flow transmitter is equipped with the optional LCD, it may be programmed to display up to four variables in sequence.

Other operations may also be performed while displaying data. This chapter includes instructions for the following:

- Setting Up the LCD - see page 2-1.

- Adjusting Brightness and Contrast on the LCD - see page 2-3.

- Clearing Totals - page 2-3.

- Pausing and Restarting the Measurement - see page 2-4.

- Uploading Files to the PC - see page 2-4.

- Deleting Files from the XGS868 Memory - see page 2-5.

- Printing Data - see page 2-5.

Setting Up the LCD

Use the *Instrument Data Manager* (IDM) to establish communications with the XGS868. Then, complete the following instructions to display the desired data on the LCD (refer to Figure A-3 in Appendix A):

Use the following steps to set up the display:

1. Open the SITE EDIT MENU from the Edit Functions menu.

2. Select Global.

3. Select Input/Output.

4. Select Display.

5. Select LCD.

6. Use the pull-down menu to select the desired number of parameters to be sequentially displayed and press Next Item/ Enter.

7. Do one of the following:

- If you are using a 1-Channel meter, proceed to Step 9.

- If you are using a 2-Channel meter, proceed to the next step.

Setting Up the LCD (cont.)

8. Use the pull-down menu to select the desired channel option and press Next Item/Enter.

9. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter.

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

10. Repeat Steps 8 and 9 until all of the specified # OF LCD PARAMS have been set up.

After leaving the *User Program*, the XGS868 will reset itself and will begin to display the parameters specified in this section. If more than one parameter was set up, each of the parameters will be displayed in sequence, with a pause of several seconds between display changes.

Procedure Options

After completing the above steps, IDM returns to the Global Input/ Output window. Do one of the following:

- To continue regular programming, refer to Appendix A, *Menu Maps*, to navigate to the desired menu.

- To leave the *User Program*, press Exit Page three times.

Adjusting LCD Contrast and Brightness

Both the contrast and the brightness of the optional LCD may be adjusted to suit individual needs. As shown in the upper right view of Figure 4-1 on page 4-12 of the *Service Manual*, there are two 3/4-turn adjustment potentiometers located on the LCD circuit board. Using these pots for the LCD adjustment, complete the following steps:

!WARNING!
Never remove the covers from the XGS868 in a hazardous environment while the line power is on.

---

1. Make sure the XGS868 is in a safe environment, and loosen the set screw to remove the front cover (see Chapter 4, *Parts Replacement*, in the *Service Manual* for details, if necessary).

IMPORTANT: *If the XGS868 is to be installed in a hazardous environment, adjust the LCD brightness and contrast in a safe area, before mounting the enclosure.*

2. With power still applied to the meter, carefully use a small screwdriver to adjust the LCD brightness. Turning the BKLT (backlight) pot fully clockwise yields maximum brightness.

3. In a similar manner, adjust the CONT (contrast) pot to set the LCD contrast as desired. At either extreme of the CONT pot, the display is unreadable; turn the pot fully counterclockwise and then turn it clockwise very slowly until the display is clear.

4. Readjust the BKLT control, as desired.

5. Replace the front cover on the XGS868, and secure it in place with the set screw.

The meter may now be placed back into service.

Clearing Totals

When clearing totals, the totals for both channels will be reset. Refer to Figure A-6 in Appendix A.

1. Open the System menu.

2. Select Clear Instrument Totalizers.

3. IDM automatically clears the totalizers and exits the System menu.

Pausing and Restarting the Measurement

IDM offers a unique command that enables you to pause and start the measurement display (refer to Figure A-6 on page A-6).

Pausing the Measurement Display

1. Open PAUSE MEASUREMENT from the Edit Functions menu.

2. Select Stop Measurement.

3. IDM automatically stops taking measurements and exits the Edit Functions menu.

Restarting the Measurement Display

1. Open PAUSE MEASUREMENT from the Edit Functions menu.

2. Select Measure Flow.

3. IDM automatically begins taking measurements and exits the Edit Functions menu.

Uploading Files to the PC

Any files stored in the XGS868's memory may be uploaded to the PC's disk. The files may then be displayed and examined via IDM.

To upload a log file, complete the following steps (see Figure A-6 on page A-6):

1. Open the FILE MENU from the Edit Functions menu.

2. Select Upload File.

3. Use the pull-down menu to select the desired memory location and press Next Item/Enter.

Note: *The* PCMCIA *option only appears if such a card has been installed.*

4. IDM displays the available files. Press Next Item/Enter.

5. Enter the filename and press Next Item/Enter.

6. Select the desired directory, enter a new filename and press Next Item/Enter.

IDM uploads the selected file and automatically exits the menu.

Deleting Files from the XGS868 Memory

Any files stored in the XGS868's memory may be deleted. To delete a file, complete the following steps (see Figure A-6 in Appendix A):

1. Open the FILE MENU from the Edit Functions menu.

2. Select Delete File.

3. Use the pull-down menu to select the desired memory location and press Next Item/Enter.

Note: *The* PCMCIA *option only appears if such a card has been installed.*

4. IDM displays the available files. Press Next Item/Enter.

5. Enter the filename and press Next Item/Enter.

IDM deletes the file from the XGS868's memory and automatically exits the menu.

Printing Data

The Model XGS868 flowmeter has no ability to print any of its data either directly or using the RCCU. However, any of the data stored in its memory may be printed via the built-in RS232 communications port, using a computer terminal. In order to use the capability, the XGS868 must be linked to the computer terminal with the optional *Instrument Data Manager* (IDM) software.

Note: *See Chapter 1,* Installation*, of the* Startup Guide *for instructions on wiring the RS232 serial port. For more information on serial communications refer to your* EIA-RS Serial Communications *manual (916-054).*

After making the hardware connections and installing the IDM software, the following data may be output to a printer connected to the personal computer:

• live data in numeric or graphical format

• log file in numeric or graphical format

• site file in tabular format

• transducer signal array data in tabular format

For detailed instructions on printing any of the data types listed above, consult the *User's Manuals* for the IDM software, the personal computer, and the printer.

Chapter 3

Logging Data

Introduction

In order to log data to the Model XGS868 it must be fitted with an optional data logging option card in Slot 2. See Chapter 4, *Parts Replacement*, of the *Service Manual* for instructions on installing the card. After the option card has been installed, further memory expansion is possible by plugging an industry-standard PCMCIA memory card into a connector on the data logging option card.

If you do not have the data logging option card, you can log data on a remote computer terminal via the meter's RS232 serial port. This requires the use of the optional Instrument Data Manager (*IDM*) software. Refer to the IDM *User's Manual* in the chapter discussing the Real Time Menu.

This chapter explains how to log data to the Model XGS868's using the optional data logging card and IDM. Also refer Appendix A, *Menu Maps*.

Note: *After the specified data has been logged, the log file may be uploaded to the Remote Control Communications Unit (RCCU) via an infrared transmission. See Appendix C,* Remote Control Communications Unit*.*

Setting Up a Standard Log

A standard log is used to record up to six flow rate measurement parameters in a *log file* stored in the XGS868's memory. Complete the following steps to set up a log (see Figure A-5 in Appendix A).

1. Open the LOG EDIT MENU from the Edit Functions menu.

2. Select Create Standard Log.

3. Use the pull-down menu to select the desired option. The memory location chosen at the above prompt must have sufficient room for the expected size of the log file being created. After the memory location for the log file has been specified, IDM displays the amount of that type of memory available.

IMPORTANT: *If a circular log is being set up, **DO NOT** choose* FLASH *as the memory location for the log file.*

Note: *The* PCMCIA *option only appears if such a card has been installed.*

4. Enter a log name up to five characters and press Next Item/Enter.

5. Enter a log message of up to twenty-one characters and press Next Item/Enter.

6. Enter the number of parameters to be logged (1-6) and press Next Item/Enter. These parameters will be refered to as channels by the meter.

Setting Up a Standard Log (cont.)

7. Do one of the following:

   • For 1-Channel meter, proceed to Step 2 in S*electing the Log Channels* below.

   • For a 2-Channel meter, proceed to Step 1 in *Selecting the Log Channels* below.

Selecting the Log Channels

1. Use the pull-down menu to select the desired channel option and press Next Item/Enter.

2. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter. See Table 3-1 below for a list of the available options.

Table 3-1: Output Measurement Options

Description
Flow Velocity
Volumetric Flow
Forward Totalized Volume Flow
Reverse Totalized Volume Flow
Total Flow Measurement Time
Mass Flow
Forward Totalized Mass Flow
Reverse Totalized Mass Flow
Diagnostic Parameters

The DIAG* option listed in the table above represents all of the individual diagnostic parameters that appear. See Chapter 3, *Diagnostics*, of the *Service Manual* for a complete description of these options.

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

3. Repeat Steps 1 and 2 until until all of the log channels have been set up.

4. Do one of the following:

   • If you selected a totalized value, proceed to the next step.

   • If you selected a non-totalized value for the log and

      • *selected* FLASH *as the log memory location, proceed to Selecting the Start Time on the next page.*

      • *selected* NVR *or* PCMCIA *as the log memory location, proceed to Step 6.*

Selecting the Log Channels (cont.)

5. Use the pull-down menu to clear or keep current log totals and press Next Item/Enter.

Note: *Responding* YES *at the above prompt clears only the log totals; it does not clear the meter totalizers. To reset meter totals, see* Clearing Totals *on page 2-3.*

6. Use the pull-down menu to create a circular or linear log and press Next Item/Enter.

A *circular log* records data continuously, but only the data from the most recent log cycle is saved. The circular log begins recording data at the specified START TIME and continues to record data until a manual STOP command is issued. At the end of each log cycle, as defined by the DURATION time, previously recorded data is overwritten by the new data.

IMPORTANT: *If there is insufficient memory available to store a specified log, setup of that log will not be permitted.*

Selecting the Start Time

1. Use the pull-down menu to select the desired start time for the log and press Next Item/Enter.

2. If you selected:

- OK, proceed to *Selecting the Start Date* below.

- EDIT, proceed to the next step.

- NOW and the log is

    - *non-circular, proceed to Selecting the End Time on the next page.*

    - *circular, proceed to Selecting the Duration on page 3-5.*

3. Use the pull-down menu to select AM or PM. Then, enter the desired hour (1-12) and press Next Item/Enter.

Note: *If you enter a start time earlier that the current time and error will occur.*

4. Enter the desired minutes (0 to 59) and press Next Item/Enter.

5. Enter the desired seconds (0 to 59) and press Next Item/Enter.

Selecting the Start Date

1. Use the pull-down menu to select the desired start date for the log and press Next Item/Enter.

2. If you selected:

   • OK or TODAY and the log is

       • *non-circular, proceed to Selecting the End Time below.*

       • *circular, proceed to Selecting the Duration on the next page.*

   • EDIT, proceed to the next step.

3. Enter the desired year (0-99) and press Next Item/Enter.

4. Use the pull-down menu to select the desired month and press Next Item/Enter.

5. Enter the desired day (1 to the number of days in the selected month) and press Next Item/Enter.

6. Do one of the following:

   • If you are creating a non-circular log, proceed to *Selecting the End Time* below.

   • If you are creating a circular log, proceed to *Selecting the Duration* on the next page.

Selecting the End Time

1. Use the pull-down menu to select the desired start time for the log and press Next Item/Enter.

2. If you selected:

   • OK, proceed to *Selecting the End Date* below.

   • EDIT, proceed to the next step.

   • TIMED, use the pull-down menu to select how long you want the log to run and press Next Item/Enter. Then, proceed to *Selecting the Time Increment* on the next page.

3. Use the pull-down menu to select AM or PM. Then, enter the desired hour (1-12) and press Next Item/Enter.

Note: *If you enter a start time earlier that the current time and error will occur.*

4. Enter the desired minutes (0 to 59) and press Next Item/Enter.

5. Enter the desired seconds (0 to 59) and press Next Item/Enter.

Selecting the End Date

1. Use the pull-down menu to select the desired end date for the log and press Next Item/Enter.

2. If you selected:

   • OK or TODAY, proceed to *Selecting the Time Increment* below.

   • EDIT, proceed to the next step.

3. Enter the desired year (0-99) and press Next Item/Enter.

4. Use the pull-down menu to select the desired month and press Next Item/Enter.

5. Enter the desired day (1 to the number of days in the selected month) and press Next Item/Enter.

6. Proceed to *Selecting the Time Increment* below.

Selecting the Duration

1. Use the pull-down menu to select the desired units of measure.

2. Enter the desired number of hours/days and press Next Item/Enter.

3. Proceed to the *Selecting the Time Increment* below.

Selecting the Time Increment

1. Use the pull-down menu to select the desired time increment and Next Item/Enter.

   The time increment is the frequency at which the Model XGS868 takes and records data measurements. If any reading takes longer than the programmed time increment, the log is filled in with the next consecutive reading. For example, assume that a velocity value of 3 ft/sec is recorded at 12:00:00 in a log with a time increment of five seconds. If the next reading is 8 ft/sec and it takes the meter 12 seconds to read this value, then both of the missed readings (12:00:05 and 12:00:10) will be filled in with the 8 ft/sec value.

2. Press Next Item/Enter to acknowledge the message.

Note: *Although each log is restricted to six logged parameters, it is still possible to log more than six parameters. Simply re-enter the* Create Standard Log *submenu as many times as necessary to set up additional logs. Select the other desired parameters, and run these logs simultaneously with the first log.*

Setting Up an Error Log   An error log updates every 5 seconds (or whenever the display updates), but only if a new error condition occurs. Error logs have a fixed length of 2 pages and contain sixty records per page. Each record shows the time of the error, the measurement parameter values at that time, and the error code message. The logged values of the chosen measurement parameters at the time of the error condition provide valuable troubleshooting information.

Complete the following steps to set up an error log (see Figure A-5 in Appendix A).

Setting Up the Log   **1.** Open the LOG EDIT MENU from the Edit Functions menu.

2. Select Create Error Log.

3. Use the pull-down menu to select the desired option. The memory location chosen at the above prompt must have sufficient room for the expected size of the log file being created. After the memory location for the log file has been specified, IDM displays the amount of that type of memory available.

IMPORTANT: *If a circular log is being set up, **DO NOT** choose FLASH as the memory location for the log file.*

Note: *The PCMCIA option only appears if such a card has been installed.*

4. Enter a log name up to five characters and press Next Item/Enter.

5. Enter a log message of up to twenty one characters and press Next Item/Enter.

6. Enter the number of parameters to be logged (1-6) and press Next Item/Enter. These parameters will be refered to as channels by the meter.

Note: *For a 1-Channel XGS868, the data for Channel 1 is logged automatically. However, for a 2-Channel meter, the channel data to be logged must be specified.*

7. Do one of the following:

  • For 1-Channel meter, proceed to Step 2 in *Selecting the Log Channels* on the next page.

  • For a 2-Channel meter, proceed to Step 1 in *Selecting the Log Channels* on the next page.

Selecting the Log Channels   **1.** Use the pull-down menu to select the desired channel option and press Next Item/Enter.

2. Use the pull-down menu to select the desired measurement parameter and press Next Item/Enter. See Table 3-1 below a list of the available options.

Table 3-2: Output Measurement Options

Description
Flow Velocity
Volumetric Flow
Forward Totalized Volume Flow
Reverse Totalized Volume Flow
Total Flow Measurement Time
Mass Flow
Forward Totalized Mass Flow
Reverse Totalized Mass Flow
Diagnostic Parameters

The DIAG* option listed in the table above represents all of the individual diagnostic parameters that appear. See Chapter 3, *Diagnostics*, of the *Service Manual* for a complete description of these options.

Note: *The measurement units that appear in these prompts are those selected in the* Global-System *window earlier in this section.*

3. Repeat Steps 1 and 2 until until all of the log channels have been set up.

4. Do one of the following:

- If you selected a totalized value, proceed to the next step.

- If you selected a non-totalized value for the log and

  - *selected* FLASH *as the log memory location, proceed to Selecting the Start Time on the next page.*

  - *selected* NVR *or* PCMCIA *as the log memory location, proceed to Step 6.*

5. Use the pull-down menu to clear or keep current log totals and press Next Item/Enter.

Note: *Responding* YES *at the above prompt clears only the log totals; it does not clear the meter totalizers. To reset meter totals, see* Clearing Totals *on page 2-3.*

Selecting the Log Channels (cont.)

6. Use the pull-down menu to create a circular or linear log and press Next Item/Enter.

A *circular log* records data continuously, but only the data from the most recent log cycle is saved. The circular log begins recording data at the specified START TIME and continues to record data until a manual STOP command is issued. At the end of each log cycle, as defined by the DURATION time, previously recorded data is overwritten by the new data.

IMPORTANT: *If there is insufficient memory available to store a specified log, setup of that log will not be permitted.*

Selecting the Start Time

1. Use the pull-down menu to select the desired start time for the log and press Next Item/Enter.

2. If you selected:

• OK, proceed to *Selecting the Start Date* below.

• EDIT, proceed to the next step.

• NOW, press Next Item/Enter to acknowledge the message. You have completed creating an error log.

3. Use the pull-down menu to select AM or PM. Then, enter the desired hour (1-12) and press Next Item/Enter.

Note: *If you enter a start time earlier that the current time and error will occur.*

4. Enter the desired minutes (0 to 59) and press Next Item/Enter.

5. Enter the desired seconds (0 to 59) and press Next Item/Enter.

Selecting the Start Date

1. Use the pull-down menu to select the desired start date for the log and press Next Item/Enter.

2. If you selected:

• OK or TODAY, proceed to Step 6.

• EDIT, proceed to the next step.

3. Enter the desired year (0-99) and press Next Item/Enter.

4. Use the pull-down menu to select the desired month and press Next Item/Enter.

5. Enter the desired day (1 to the number of days in the selected month) and press Next Item/Enter.

Selecting the Start Date (cont.)

6. Press Next Item/Enter to acknowledge the message.

Note: *To log more than six parameters, simply re-enter the* Create Error Log *submenu as many times as necessary to set up additional logs. Select the other desired parameters, and run these logs simultaneously with the first log.*

Checking the XGS868 Memory

Use the Memory submenu to verify that the available log memory is sufficient for the desired log. If the expected amount of logged data will exceed the remaining memory capacity, the Model XGS868 suggests that some old logs be cleared to make room for the new log. Refer to Figure A-5 in Appendix A.

Complete the following steps to set up an error log:

1. Open the LOG EDIT MENU from the Edit Functions menu.

2. Select Memory.

3. IDM displays the available memory. Press EXIT PAGE.

Stopping a Log

Use the Stop submenu to terminate a logging process that is currently active. Refer to Figure A-5 in Appendix A.

Complete the following steps to set up an error log:

1. Open the LOG EDIT MENU from the Edit Functions menu.

2. Select Stop Logging.

3. Use the pull-down menu to find the desired log and press Next Item/Enter.

Note: *Once a log is stopped it cannot be restarted, but the log remains in memory. To clear the log from memory, refer to* Deleting Files from the XGS868 Memory *on page 2-5.*

Appendix A

Menu Maps

Figure A-1: Channel-Status, System, Pipe Parameters & I/O Menu Map

IDM Main Menu

| Global | Data | Help |

Meter Window Menu

| System | Upload/Download | Edit Functions | Real Time |

Connect to a New Instrument
Select an Existing Instrument
Scan Network for Instruments
Preferences
Dial Modem
Hang Up Modem
Exit

SITE EDIT MENU
CALIBRATION/TEST
PAUSE MEASUREMENT
LOG EDIT MENU*
FILE MENU†

[*Only if data logging option card installed]

[*for 2-Channel meter only]

| Channel 1 | Channel 2* | Global |

| System | Input/Output | Comm Port |

See Figure A-3

| Status | System | Pipe Parameters | Input/Output | SET UP |
See Figure A-1 / See Figure A-1 / See Figure A-1 / See Figure A-1

Signal

SIGNAL LOW LIMIT
CORR. PEAK LIMIT
SOUNDSPEED +- LIMIT
VELOCITY LOW LIMIT
VELOCITY HIGH LIMIT
ACCELERATION LIMIT
AMP. DISCRIM LOW
AMP. DISCRIM HIGH
DELTA T OFFSET
SKAN T OFFSET
% OF PEAK

XMIT SAMPLE SIZE

| 2 | 4 | 8 |
| 16 | 32 |

M>S SWITCH
SHIFTS
A DIVISOR
TRANSMIT PULSES
T WINDOW
R WINDOW

V averaging

RESPONSE TIME

| 0.2 | 1 | 4 | 10 |
| 30 | 60 | STATS |

Default Setup

Press YES to Default

| NO | YES |

Advanced Features

Multiple K Factors

Activate Multi K Fact?

| Off | On |

Edit table?

| NO | YES |

Enter # of K Factors
Velocity #*
K Factor #*

*Repeat for the # of K Factors entered previously

Mass flow calculation

Mass from Static Dens?

| No | Yes |
Fluid Density

Figure A-2: Channel-SETUP Menu Map

Figure A-3: Global-System, I/O (Error Handling/Display), Comm Port Menu Map

Figure A-4: Global–Input/Output, Options Menu Map

IDM Main Menu

| Global | Data | Help |

Connect to a New Instrument
Select an Existing Instrument
Scan Network for Instruments
Preferences
Dial Modem
Hang Up Modem
Exit

Meter Window Menu

| System | Upload/Download | Edit Functions | Real Time |

SITE EDIT MENU
CALIBRATION/TEST
PAUSE MEASUREMENT
LOG EDIT MENU*
FILE MENU*

[*Only if data logging option card installed]

[For 2-Channel meter only]

| Channel 1 | Channel 2* | Global |
See Figure A-1

| System |
See Figure A-3

| Input/Output |

| Comm Port |
See Figure A-3

| Error Handling |
See Figure A-3

| Options |

| Display |
See Figure A-3

I/O [*appears only if option card installed]

| SLOT0 | SLOT1 |

Slot 0 Outputs
| A | B |

Slot 0 Output A
| Off | 0-20m | 4-20m |

Channel [only appears for 2-Channel meter]
| CH1 | CH2 | SUM | DIF | AVE |

Measurement Name
| VEL | VOLUM | +TOTL | -TOTL | TIME | MDOT | +MASS | -MASS | DIAG* |
[*all diagnostic parameters appear here]

ZERO
FULL

Totalizer Outputs
| A | B | C | D |

Slot 1 Outputs
| OFF | TTLZR |

Channel [only appears for 2-Channel meter]
| CH1 | CH2 | SUM | DIF | AVE |

Measurement Name
| +TOTL | -TOTL | +MASS | -MASS |

UNITS/PULSE   MINIMUM ON PULSE TIME

Frequency Outputs
| A | B | C | D |

Slot 1 Outputs
| OFF | FREQ |

Channel [only appears for 2-Channel meter]
| CH1 | CH2 | SUM | DIF | AVE |

Measurement Name
| VEL | VOLUM | +TOTL | -TOTL | TIME | MDOT | +MASS | -MASS | DIAG* |

FULL SCALE FREQUENCY   BASE [*all diagnostic parameters appear here]
FULL

Alarm Relays
| A | B | C | D |

Slot 1 Outputs
| OFF | HIGH | LOW | FAULT |

Failsafe?
| NO | YES |

Channel [only appears for 2-Channel meter]
| CH1 | CH2 | SUM | DIF | AVE |

HIGH/LOW FAULT

Fault Type
| FLOW | OTHER | ALL |

Measurement Name
| VEL | VOLUM | +TOTL | -TOTL | TIME | MDOT | +MASS | -MASS | DIAG* |

Trigger point [*all diagnostic parameters appear here]

Analog Outputs
| A | B |

Slot 1 Outputs
| OFF | 0-20m | 4-20m |

Channel [only appears for 2-Channel meter]
| CH1 | CH2 | SUM | DIF | AVE |

Measurement Name
| VEL | VOLUM | +TOTL | -TOTL | TIME | MDOT | +MASS | -MASS | DIAG* |

ZERO
FULL   [*all diagnostic parameters appear here]

RTD Inputs
| A | B | C | D |

LABEL

Input measurement
| OFF | TEMP |

ZERO Value
FULL Scale Value

Analog Inputs
| A | B | C | D |

LABEL

Input measurement
| OFF | PRESR | TEMP | SPEC | INPUT NAME

ZERO Value   INPUT UNITS
FULL Scale Value

NOTE: Plain text represents prompt area messages and
boxed text represents option bar choices.
Fx represent function keys to select option bar choices.

IDM Main Menu

| Global | Data | Help |

Connect to a New Instrument
Select an Existing Instrument
Scan Network for Instruments
Preferences
Dial Modem
Hang Up Modem
Exit

Meter Window Menu

| System | Upload/Download | Edit Functions | Real Time |

SITE EDIT MENU
CALIBRATION/TEST
PAUSE MEASUREMENT
LOG EDIT MENU *
FILE MENU*

[*only if data logging option card installed]

Create Standard Log

LOG LOCATION

| NVR | FLASH | PCMCIA* |

[*only appears if PCMCIA card installed]   LOG NAME

LOG MESSAGE

Log how many vars?

[repeats until all channels set up]

[only appears for 2-Channel meter]   Channel 1

| CH1 | CH2 | SUM | DIF | AVE |

Measurement Name 1

VEL	VOLUM	+TOTL
-TOTL	TIME	MDOT
+MASS	-MASS	POWER
+ENRG	-ENRG	DIAG*

[*all diagnostic parameters available]

(totalized value)   (non-totalized value)

Set LOG Totals to 0 ?

| NO | YES |

(NVR or PCMCIA)   (FLASH)

Is LOG circular ?

| NO | YES |

Memory

Log Memory

START TIME

| OK | EDIT | NOW |

HOUR

| AM | PM |

MINUTES

SECONDS

START DATE

| OK | EDIT | TODAY |

YEAR

MONTH

| JAN | · · · · · | DEC |

(12 choices)

DAY

Stop Logging

Log Name

Stop Logging ?

| NO | YES |

Create Error Log

(for STANDARD log)

(non-circular log)   (circular log)

END TIME   DURATION

| OK | EDIT | TIMED | | HOURS | DAYS |

HOUR   LOG TIME

| AM | PM | 10min | · · · · · | 24 HR |

(7 choices)

MINUTES

SECONDS

END DATE

| OK | EDIT | TODAY |

YEAR

MONTH

| JAN | · · · · · | DEC |

(12 choices)

DAY

TIME INCREMENT

| 5sec | · · · · · | 60min |

(9 choices)

| OK |

log created

(for ERROR log)

Figure A-5: Log Edit Menu

Figure A-6: File Menu, Clear Totalizers & Pause Measurement Menu Map

IDM Main Menu

| Global | Data | Help |

Connect to a New Instrument *
Select an Existing Instrument
Scan Network for Instruments
Preferences
Dial Modem
Hang Up Modem
Exit

Meter Window Menu

| System | Upload/Download | Edit Functions | Real Time |

SITE EDIT MENU
CALIBRATION/TEST
PAUSE MEASUREMENT
LOG EDIT MENU *
FILE MENU*

[*only if data logging option card installed]

PAUSE: Measure Flow

| MEASURE FLOW | STOP MEASUREMENT |

Read Instrument Clock
Set Instrument/PC Clock
Print Site
Delete Stored Site
Clear Instrument Totalizers
Erase Log from Instrument
Close Connection to Instrument

CLEARING TOTALIZERS

Upload File

FILE LOCATION

| NVR | FLASH | PCMCIA* |

[*only appears if
PCMCIA card installed]

DIRECTORY

ENTER FILENAME

SELECT NEW FILE LOCATION

Delete File

FILE LOCATION
DIRECTORY
ENTER FILENAME

Repair Disk

FILE LOCATION

| NVR | FLASH | PCMCIA* |

[*only appears if PCMCIA card installed]

ATTEMPT REPAIR

| Do not attempt repair | Proceed with repair |

REPAIR COMPLETED

Appendix B

Data Records

Available Option Cards The Model XGS868 can hold one option card in Slot 1 and one in Slot 2. The available configurations are listed in Table B-1 below.

Table B-1: Option Card Configurations

Card #	Slot #	Configuration
1215-02	1	FF - 4 Frequency Outputs
1215-03		TT - 4 Totalizer Outputs
1215-04		FT - 2 Frequency Outputs/2 Totalizer Outputs
1215-05		FO - 2 Frequency Outputs
1215-06		TO - 2 Totalizer Outputs
1215-07		AA - 4 Standard Alarms
1215-08		HH - 4 Hermetic Alarms
1215-09		FA - 2 Frequency Outputs/2 Standard Alarms
1215-10		FH - 2 Frequency Outputs/2 Hermetic Alarms
1215-11		TA - 2 Totalizer Outputs/2 Standard Alarms
1215-12		TH - 2 Totalizer Outputs/2 Hermetic Alarms
1223-02		OI - 2 Current Inputs
1223-03		OR - 2 RTD Inputs
1223-04		TI - 2 Current Inputs/2 Totalizer Outputs
1223-05		TR - 2 RTD Inputs/2 Totalizer Outputs
1223-06		FI - 2 Current Inputs/2 Frequency Outputs
1223-07		FR - 2 RTD Inputs/2 Frequency Outputs
1223-08		AI - 2 Current Inputs/2 Standard Alarms
1223-09		HI - 2 Current Inputs/2 Hermetic Alarms
1223-10		AR - 2 RTD Inputs/2 Standard Alarms
1223-11		HR - 2 RTD Inputs/2 Hermetic Alarms
1225-13		CO - 2 Current Outputs
1225-14		CF - 2 Current Outputs/2 Frequency Outputs
1225-15		CT - 2 Current Outputs/2 Totalizer Outputs
1225-16		CA - 2 Current Outputs/2 Standard Alarms
1225-17		CH - 2 Current Outputs/2 Hermetic Alarms
1233-02		RR - 4 RTD Inputs
1233-03		IR - 2 RTD Inputs/2 Current Inputs
1233-04		II - 4 Current Inputs
1272-02		CI - 2 Current Outputs/2 Current Inputs
1272-03		CR - 2 Current Outputs/2 RTD Inputs
1272-04		CIR - 2 Current Outputs/1 Current Input/1 RTD Input
1146-02	2	512 KB Memory + PCMCIA Card Connector
1146-03		2 MB Memory + PCMCIA Card Connector
1310		Modbus Communications Protocols

Option Cards Installed Whenever an option card is installed or changed in the Model XGS868 flow transmitter, record the type of card and any additional setup information in the appropriate row of Table B-2 below.

Table B-2: Option Cards Installed

Slot #	Type of Option Card	Additional Setup Information
0	Analog Outputs (A, B)	
1		
2		

Setup Data   After the Model XGS868 flow transmitter has been installed, setup data must be entered via the *User Program* prior to operation. Record that information in Table B-3 below.

Table B-3: Setup Data

General Information						
Model #				Serial #		
Software Vers.				Setup Date		
Global - System						
Meter Message				Tot. Dec. Digits		
System Units	English	Metric		Mass Flow		
Pressure Units				Mass Flow Time		
Vol. Units				MDOT Dec. Digit		
Vol. Time Units				Mass Totals		
Vol. Dec. Digits				Mass Dec. Digits		
Totalizer Units						
Global - Input/Output - Error Handling						
Error Handling				2-Path Error	No	Yes
Global - Communications Port						
Meter Address				MOD. Parity		
Baud Rate				MOD. Stop Bits		
MOD. Baud Rate				MOD. Address		
Channel - Status						
Channel 1				Channel 2		
Channel Status	Off	Burst		Channel Status	Off	Burst
Measure Mode	Skan	S/M		Measure Mode	Skan	S/M
Channel - System						
Channel Label				Channel Label		
Site/Channel Msg.				Channel Message		
Vol. Units				Vol. Units		
Vol. Time Units				Vol. Time Units		
Vol. Dec. Digits				Vol. Dec. Digits		
Totalizer Units				Totalizer Units		
Tot. Dec. Digits				Tot. Dec. Digits		
Mass Flow				Mass Flow		
Mass Flow Time				Mass Flow Time		
MDOT Dec. Dig.				MDOT Dec. Dig.		
Mass Totalizer				Mass Totalizer		
Mass Dec. Dig.				Mass Dec. Dig.		

Table B-3: Setup Data (cont.)

Channel - Pipe Parameters						
Channel 1				**Channel 2**		
Trans. Type	STD	SPEC		Trans. Type	STD	SPEC
Transducer #				Transducer #		
Spec. Trans. Hz				Spec. Trans. Hz		
Spec. Trans. Tw				Spec. Trans. Tw		
Pipe O.D.				Pipe O.D.		
Pipe Wall				Pipe Wall		
Path Length (P)				Path Length (P)		
Axial Length (L)				Axial Length (L)		
Fluid Type	Steam	Other		Fluid Type	Steam	Other
Other/Sndspd				Other/Sndspd		
Calibration Factor				Calibration Factor		
Channel - Input/Output						
Zero Cutoff				Zero Cutoff		
Assume Sat.	No	Yes		Assume Sat.	No	Yes
Steam Input Type	Temp	Pressure		Steam Input Type	Temp	Pressure
Temp. Input				Temp. Input		
Base Temp.				Base Temp.		
Pressure Input				Pressure Input		
Base Pressure				Base Pressure		
Low Press. Switch	No	Yes		Low Press. Switch	No	Yes
Pressure Limit				Pressure Limit		
Quality Input				Quality Input		
Channel - SETUP - V Averaging						
Response Time				Response Time		
Channel - SETUP - Advanced Features - Multi K Factors						
K-Factor #	Velocity	K-Factor		K Factor #	Velocity	K-Factor
1				1		
2				2		
3				3		
4				4		
5				5		
6				6		
7				7		
8				8		
9				9		
10				10		

Table B-3: Setup Data (cont.)

Channel - SETUP - Advanced Features - Multi K Factors (cont.)						
K-Factor #	Velocity	K-Factor		K Factor #	Velocity	K-Factor
11				11		
12				12		
13				13		
14				14		
15				15		
16				16		
17				17		
18				18		
19				19		
20				20		

Appendix C

Remote Control Communications Unit

Using the RCCU

To energize the Remote Control Communications Unit (RCCU), press the [ON] key on its keypad. The LCD display, which consists of 4 lines x 20 characters, is activated. See Figure C-1 below for the layout of the RCCU keypad and display.

For reliable RCCU operation, the XGS868's infrared receiver should:

* have a clear line of sight to the RCCU

* be located within 8 ft (2.5 m) of the RCCU

* have an angle of incidence of no more than 15°
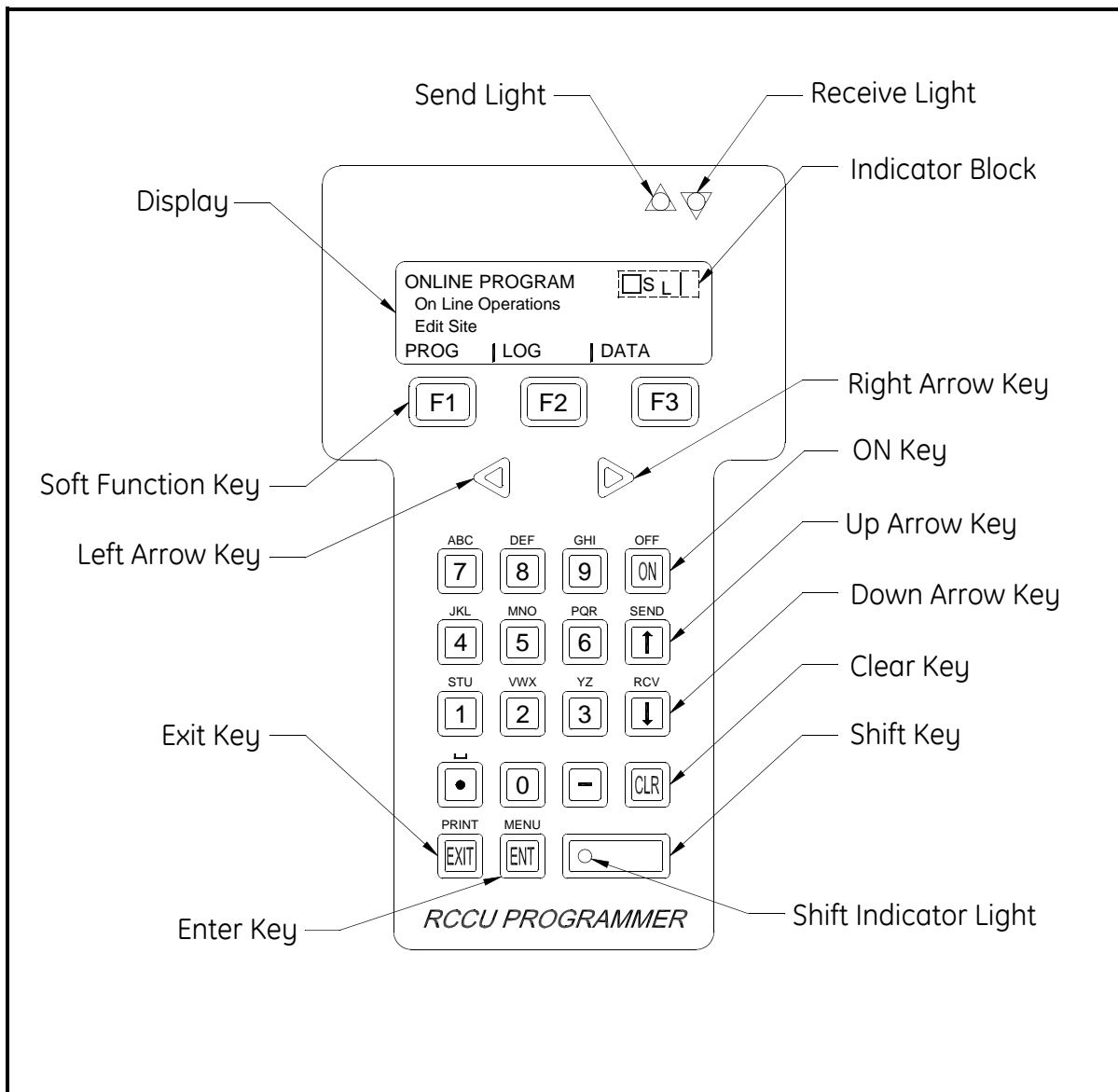
Figure C-1: RCCU Components

Using the RCCU (cont.)   The optional RCCU keypad contains 24 keys, which are labeled with their primary (unshifted) functions. In addition, pressing the red [SHIFT] key will access the secondary functions assigned to most of the keys.

The complete keypad is illustrated in Figure C-2 below and a detailed description of both the unshifted and shifted functions for each of the 24 keys is listed in Table C-4 on the next page.
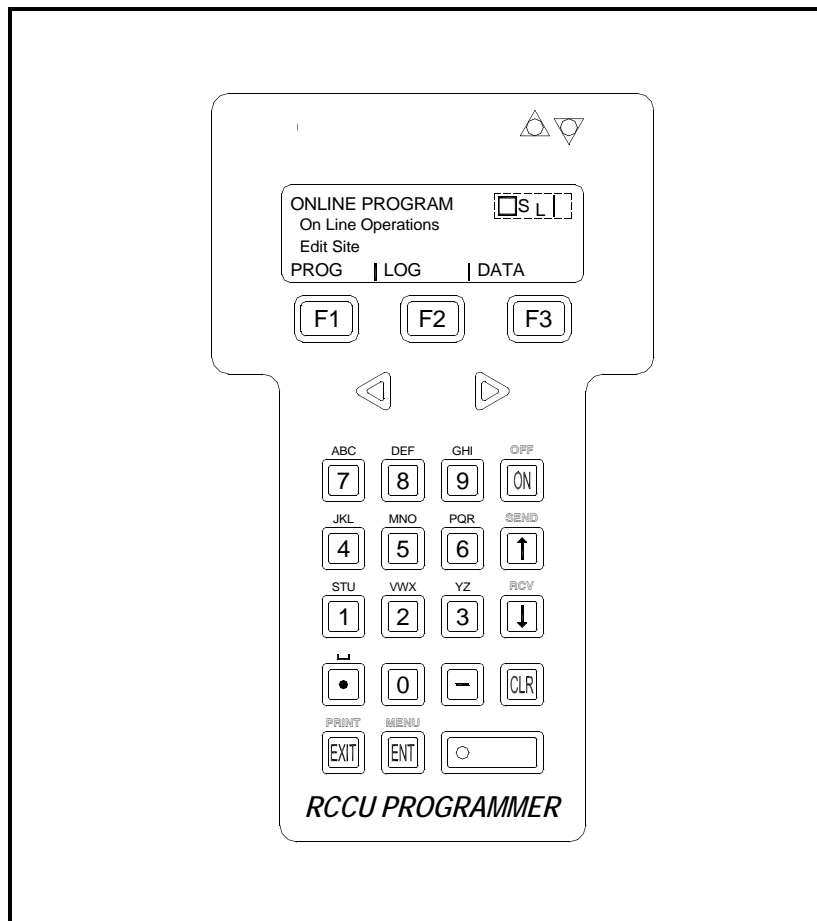
Figure C-2: The RCCU Keypad

Table C-4: The RCCU Key Functions

Key	Unshifted Function	Shifted Function
F2 F3	Software Function Keys - press to select the functions displayed directly above them in the display window.	None
●	Shift Key - press to access the shifted functions of the other keys; the light indicates that shifted mode is active. Press once to shift next entry only, press twice to lock shift mode, press again to unlock shift mode.	None
◁	Left Arrow Key - press to scroll through menu options; when entering text, moves the cursor one space to the left and deletes character in that space.	None
▷	Right Arrow Key - press to scroll through menu options; when entering text, deletes rest of entry and moves cursor one space to the right.	None
↑	Up Arrow Key - in programming mode, press to return to the previous prompt.	SEND - not yet available
↓	Down Arrow Key - in programming mode, press to move to the next prompt.	RCV - not yet available
0	Zero Key - use to enter a number 0.	None
1	One Key - press to enter a number 1.	Press 1 time to enter the letter S Press 2 times to enter the letter T Press 3 times to enter the letter U
2	Two Key - press to enter a number 2.	Press 1 time to enter the letter V Press 2 times to enter the letter W Press 3 times to enter the letter X
3	Three Key - press to enter a number 3.	Press 1 time to enter the letter Y Press 2 times to enter the letter Z
4	Four Key - press to enter a number 4.	Press 1 time to enter the letter J Press 2 times to enter the letter K Press 3 times to enter the letter L

Table C-4: The RCCU Key Functions (cont.)

Key	Unshifted Function	Shifted Function
	Five Key - press to enter a number 5.	Press 1 time to enter the letter M Press 2 times to enter the letter N Press 3 times to enter the letter O
6	Six Key - press to enter a number 6.	Press 1 time to enter the letter P Press 2 times to enter the letter Q Press 3 times to enter the letter R
7	Seven Key - press to enter a number 7.	Press 1 time to enter the letter A Press 2 times to enter the letter B Press 3 times to enter the letter C
8	Eight Key - press to enter a number 8.	Press 1 time to enter the letter D Press 2 times to enter the letter E Press 3 times to enter the letter F
9	Nine Key - press to enter a number 9.	Press 1 time to enter the letter G Press 2 times to enter the letter H Press 3 times to enter the letter I
CLR	Clear Key - press to enter the CLEAR menu. See Chapter 5, *Clearing Data*, for details.	None
EXIT	Exit Key - press to leave the current menu, saving entered values, and return to the next higher menu.	PRNT - not yet available
ENT	Enter Key - press to accept the currently displayed value or text.	MENU - not yet available
ON	ON Key - press once to power up the RCCU. Hold down to turn on the display backlight.	OFF - press to power down the RCCU
•	Decimal Point Key - press to enter a decimal point during numeric entry.	Space - press to enter a space
-	Minus Key - press to enter a minus sign or a dash.	None

Using the RCCU (cont.)

To energize the RCCU, press the [ON] key on its keypad. The RCCU's LCD display, which consists of 4 lines x 20 characters, will be activated. See Figure C-2 on page C-2 for the layout of the RCCU keypad and display.

For reliable RCCU communications, the infrared receiver in the window of the XGS868 should have a clear line of sight to the RCCU and should be located within 8 ft (2.5 m) of the RCCU with an angle of incidence of no more than 15°.

Immediately upon activation, the RCCU will perform its normal startup routine. This results in a display of the GE Panametrics logo, followed by these informational displays:

```
┌─────────────────────────┐
│ GE Panametrics Inc.      │
│         --RCCU--         │
│ Remote Control           │
│ Communications Unit      │
└─────────────────────────┘
```

```
┌─────────────────────────┐
│     Software Revision    │
│        RCCU R1B          │
│                          │
│                          │
└─────────────────────────┘
     F1        F2        F3
```

```
┌─────────────────────────┐
│ IDM MENU     START GGGG  │
│ IDM MENU                 │
│ previous selection appears here │
│ SYSTEM │ ONLINE │ OFFLNE │
└─────────────────────────┘
     F1        F2        F3
```
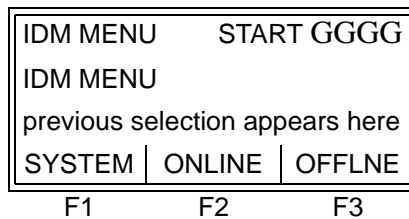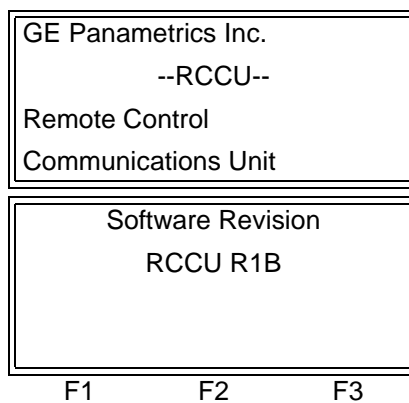
When the startup routine has been completed, this IDM Menu Start display appears.

The RCCU is now ready for operation.

Communications Failure

If an attempt to communicate with the XGS868 does not result in a proper connection with the RCCU, an error message such as the following appears:

```
┌─────────────────────────────────┐
│ 8C or Communicating             │
│ NO Packet Rcvd            ce2   │
│ Retry/Abort Commlink            │
│  RETRY  │  ABORT  │             │
└─────────────────────────────────┘
    F1        F2         F3
```
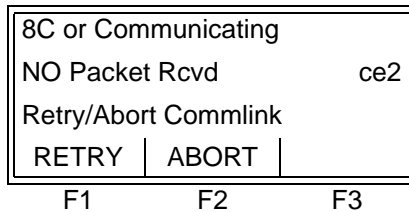
At this display, press [F1] to try again or press [F2] to quit.

Make sure that the RCCU battery is not weak, the windows on both the RCCU and the XGS868 are clean, the transmission distance does not exceed 8 ft (2.5 m), the angle of incidence does not exceed 15° and there is an unobstructed line of sight between the two devices. Then, carefully aim the RCCU and try again. If this fails to resolve the problem, see *Replacing the RCCU Battery* on page C-14 for instructions on RCCU battery replacement. If a fresh battery does not solve the problem, contact GE Panametrics for help.

The User Program

Use the RCCU keypad (see Table C-4 on page C-3) to navigate through the PROG menu of the *User Program*. The menu map may be followed in sequence, or the [↑] and [↓] keys may be used to scroll through the prompt screens. The [←] key may be used to delete the last alphanumeric character that was entered from the keypad.

Note: *Be sure to record all the programming data entered in this chapter in Appendix B,* Data Records.

Programming of the CHx-ACTIV, CHx-SYSTM, CHx-PIPE, and GLOBL-SYSTM submenus is required for basic operation of the Model XGS868. Failure to accurately enter all of the necessary information will result in unreliable flow rate data. Therefore, be sure to complete at least the sections of this chapter pertaining to those three submenus. Refer to Figures C-7 through C-12 on pages C-16 through C-21.

Except for the three submenus noted above, it is not necessary to program the Model XGS868 flowmeter in any particular order.

Accessing the User
Program

To access the XGS868's *User Program*, the RCCU must be pointed
directly at the receiver in the window on the electronics enclosure
whenever data is being sent or received (see Figure C-3 below).
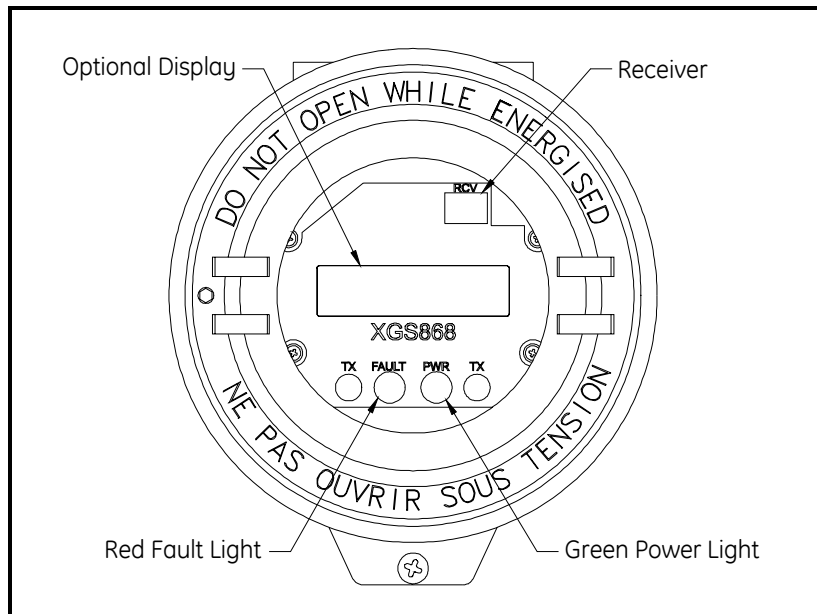
Figure C-3: XGS868 Front Window

The green light in the window glows continuously to indicate that the
XGS868 is receiving power, while the red light should glow for more
than two seconds whenever a signal from the RCCU is initiated. If the
red light blinks repeatedly, the XGS868 is <u>not</u> receiving the RCCU
signal correctly. The Send/Receive lights on the RCCU blink once to
indicate the sending/receiving of a signal.

IDM MENU	START GGGG
IDM MENU	
previous selection appears here	
SYSTEM	ONLINE	OFFLNE
F1	F2	F3
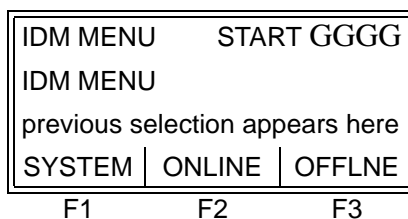
At this display, press [F2] to
select ONLINE

IMPORTANT: *Always keep the RCCU pointed directly at the
XGS868 while communicating with the meter.*

Accessing the User
Program (cont.)

```
Uploading Basic
Target System Info.
Press RCV Key...
   RCV    | CANCEL  |
```
   F1   F2   F3
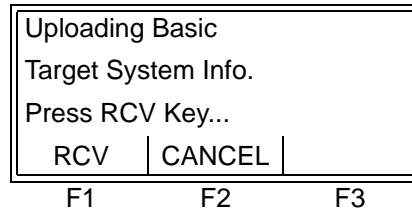
Press the [F1] key to select
RCV and begin communica-
tions, or press [F2] to select
CANCEL and abort the opera-
tion.

If the operation was aborted, the RCCU resets to the main menu.
Otherwise, proceed to the next display.

```
Communicating...
PRESS EXIT to ESCAPE
50 Percent Complete
████████████
```
   F1   F2   F3

This display shows the status
of the communication attempt.

```
TARGET METER ID
THIS IS AN XGS
```
   F1   F2   F3
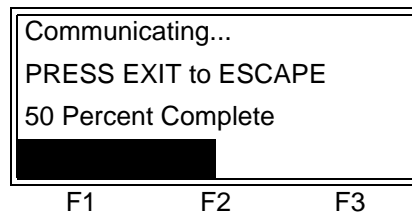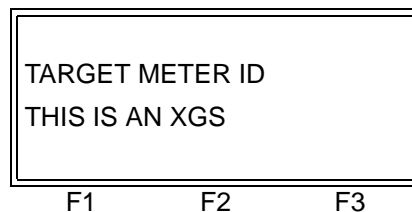
When the connection is estab-
lished, this message appears
briefly and is then replaced by
the following display.

```
ONLINE PROGRAM     GGG|
On Line Operations
Edit Site
  PROG  |   LOG   |   DATA
```
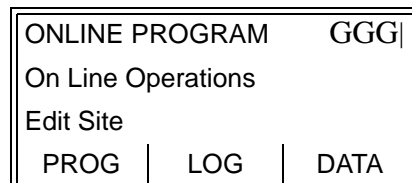
The XGS868 is now ready to
be programmed. To begin pro-
gramming, press [F1] to select
PROG.

```
ONLINE PROGRAM     GGG|
On Line Operations
Edit Site
  SITE  |  CLEAR  |   TEST
```
   F1   F2   F3
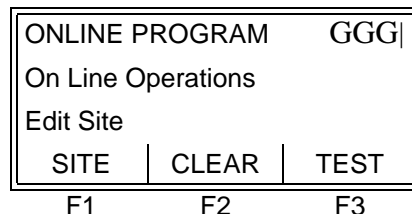
(These additional options are
accessed by pressing the [←]
and/or [→] keys.)

Note: *The arrow in the upper right corner of the display indicates
that additional options are available. These are accessed by
pressing the [←] or [→] key.*

Displaying Measurements

The components of the optional RCCU display are shown in Figure C-4 below, along with a typical mass flow rate readout.
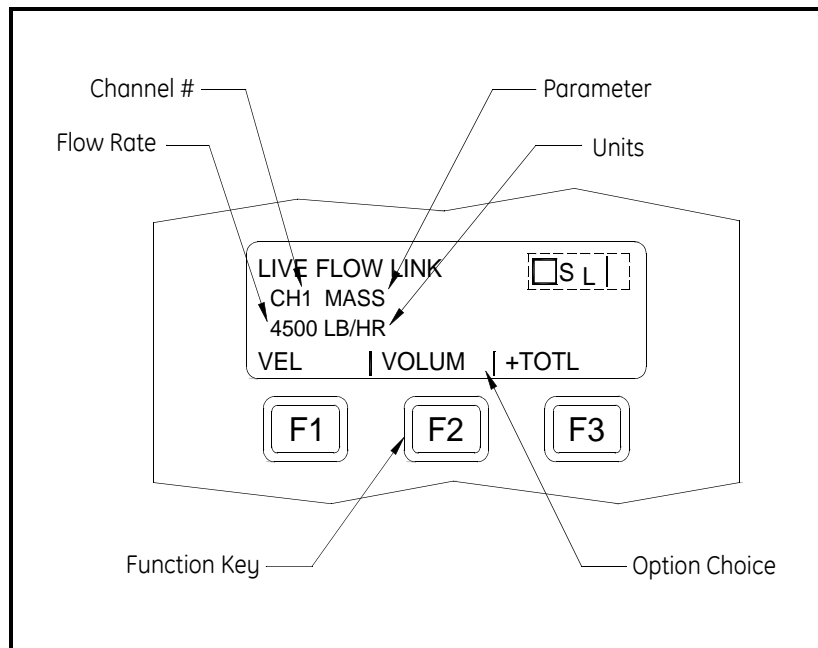
Figure C-4: A Typical RCCU Flow Rate Display

As shown in Figure C-4 above, the display screen includes the following information:

- Channel Number

- Flow Parameter

- Units of Measure

- Parameter Option Choices

- Flow Rate Value

The example in Figure C-4 above is typical, but the first three items in the list above may be reprogrammed to display those parameters that are most frequently used. See the following section for general instructions on changing these parameters.

Note: *Error code messages may appear in the upper right corner of the LCD display. For information about these error codes and how to respond to them, refer to page C-13.*

Setting Up the Display   Flow rate data and diagnostic parameters may be displayed on the
RCCU screen. To access and program this display, establish a link
between the RCCU and the XGS868, and enter the ONLINE program
(see *Accessing the User Program* on page C-7). Then, refer to
Figure C-9 on page C-19 and complete the following instructions to
display the desired data:

```
ONLINE PROGRAM        GGG|

On Line Operations

previous selection appears here
  PROG    |   LOG    |   DATA
```

Press the [F3] key to select
DATA.

```
ONLINE PROGRAM        GGG|

On Line Operations

previous selection appears here
  SITE    |  CLEAR   |   TEST
    F1          F2         F3
```

(These additional options are
accessed by pressing the [←]
and/or [→] keys.)

Upon entering the ONLINE-DATA submenu, the following display
appears:

```
ONLINE PROGRAM        GGG|

Live Data Update

current setting appears here
  5sec    |  10sec   |  30sec
```

Use the [←] and [→] keys to
find the desired time between
data updates, and press the [Fx]
key under it to select that
interval.

```
ONLINE PROGRAM        GGG|

Live Data Update

current setting appears here
  1min    |   3min   |   6min
```

(These additional options are
accessed by pressing the [←]
and/or [→] keys.)

```
ONLINE PROGRAM        GGG|

Live Data Update

current setting appears here
  12min   |          |
    F1          F2         F3
```

(These additional options are
accessed by pressing the [←]
and/or [→] keys.)

Setting Up the Display
(cont.)

Note: *For a 1-Channel XGS868, only the* CH1 *option in the* [F1]
position appears at the next prompt.

```
                              GGG|
CHAN NAMES

current selection appears here
   CH1        CH2        SUM
```

Use the [←] and [→] keys to
find the desired channel
option, and press the [Fx] key
under it to select it.

```
                              GGG|
CHAN NAMES

current selection appears here
   DIF        AVE
   F1         F2         F3
```

(These additional options are
accessed by pressing the [←]
and/or [→] keys.)

IMPORTANT: *Both channels must be activated to make all of the
above channel options available. If one of the
channels is disabled, only the individual active
channel appears.*

See Table C-5 below for a complete description of the channel
display options available at the above prompt.

Table C-5: Channel Display Options

Display Type	Description
[F1] = CH1	Channel 1
[F2] = CH2	Channel 2
[F3] = SUM	(Channel 1) + (Channel 2)
[→] + [F1] = DIF	(Channel 1) - (Channel 2)
[→] + [F2] = AVE	[(Channel 1) + (Channel 2)]/2

```
Uploading Chan Names
To Start Upload
Press RCV Key...
   RCV    | CANCEL
   F1        F2         F3
```

Press the [F1] key to select
RCV and begin uploading live
data, or press [F2] to select
CANCEL and abort the opera-
tion.

```
Communicating...
PRESS EXIT to ESCAPE
50 Percent Complete
████████
   F1        F2         F3
```

This display shows the status
of the communication attempt.

The RCCU Display (cont.)   After the previous response has been communicated to the XGS868, the RCCU is connected to the meter by a *Live Flow Link* and displays the current flow rate value for the channel option specified. At this time, the flow parameter to be displayed may be changed as follows:

```
┌─────────────────────────────┐
│ LIVE FLOW Link         GGG|  │
│ CH1 Mass flow                │
│          4500 LB/HR          │
│   VEL  │  VOLUM  │  +TOTL    │
└─────────────────────────────┘
```

Use the [←] and [→] keys to find the desired flow parameter, and press the [Fx] key to select it.

```
┌─────────────────────────────┐
│ LIVE FLOW Link         GGG|  │
│ CH1 Mass flow                │
│          4500 LB/HR          │
│  -TOTL │  TIMER  │   MDOT    │
└─────────────────────────────┘
```

(These additional options are accessed by pressing the [←] and/or [→] keys.)

```
┌─────────────────────────────┐
│ LIVE FLOW Link         GGG|  │
│ CH1 Mass flow                │
│          4500 LB/HR          │
│  +MASS │  -MASS  │   DIAG*   │
└─────────────────────────────┘
      F1        F2        F3
```

(These additional options are accessed by pressing the [←] and/or [→] keys.)

Table C-6 below describes the measurement parameters that are available at the above prompt.

Table C-6: Display Parameter Options

Available Choice	Description
[F1] = VEL	Flow Velocity
[F2] = VOLUM	Volumetric Flow
[F3] = +TOTL	Forward Totalized Volume Flow
[→] + [F1] = –TOTL	Reverse Totalized Volume Flow
[→] + [F2] = TIME	Total Flow Measurement Time
[→] + [F3] = MDOT	Mass Flow
[→] + [→] + [F1] = +MASS	Forward Totalized Mass Flow
[→] + [→] + [F2] = –MASS	Reverse Totalized Mass Flow
[→] + [→] + [F3] = DIAG*	Diagnostic Parameters*
The DIAG* option represents all of the individual diagnostic parameters. See Chapter 3, *Diagnostics*, of the *Service Manual* for a complete description of these options.	

Note: *To terminate the live data connection between the XGS868 and the RCCU, simple press the* [EXIT] *key on the RCCU keypad, between actual data transmissions.*

RCCU Errors

The following RCCU errors may be encountered during operation of the XGS868 with an RCCU unit:

Note: *Error codes that begin with a* "ce" *indicate a communications error between the RCCU and the XGS868.*

ce1: No Link

Indicates: The RCCU has received no communication from the XGS868

ce2: No Packet Rcvd

Indicates: The RCCU received a signal from the XGS868, but the information was not recognizable.

ce3: CRC Error

Indicates: Cyclical Redundancy Check. The RCCU received a signal from the XGS868, but the command was not recognizable.

ce4: NAK Error

Indicates: Not Acknowledged error. The communications link works, but the XGS868 did not understand the signal from the RCCU.

Replacing the RCCU Battery

The RCCU is powered by one disposable, standard 9-V battery. When the battery has been depleted, it must be replaced with a fresh battery of the same type. Both *Standard* and *Intrinsically-Safe (IS)* versions of the optional RCCU are available. Follow the instructions appropriate to the specific unit being used.

Note: *The RCCU cannot recharge batteries. A depleted battery must be replaced with a new one.*

Standard Version

1. Loosen the two (2) screws along the bottom edge of the back of the RCCU housing, as illustrated in Figure C-5 below. Remove the battery compartment cover.

2. Remove the battery connector from the top of the old battery.

3. Install the battery connector on the top of the new battery.

4. Replace the battery and the battery compartment cover. Tighten the two (2) screws on the cover.
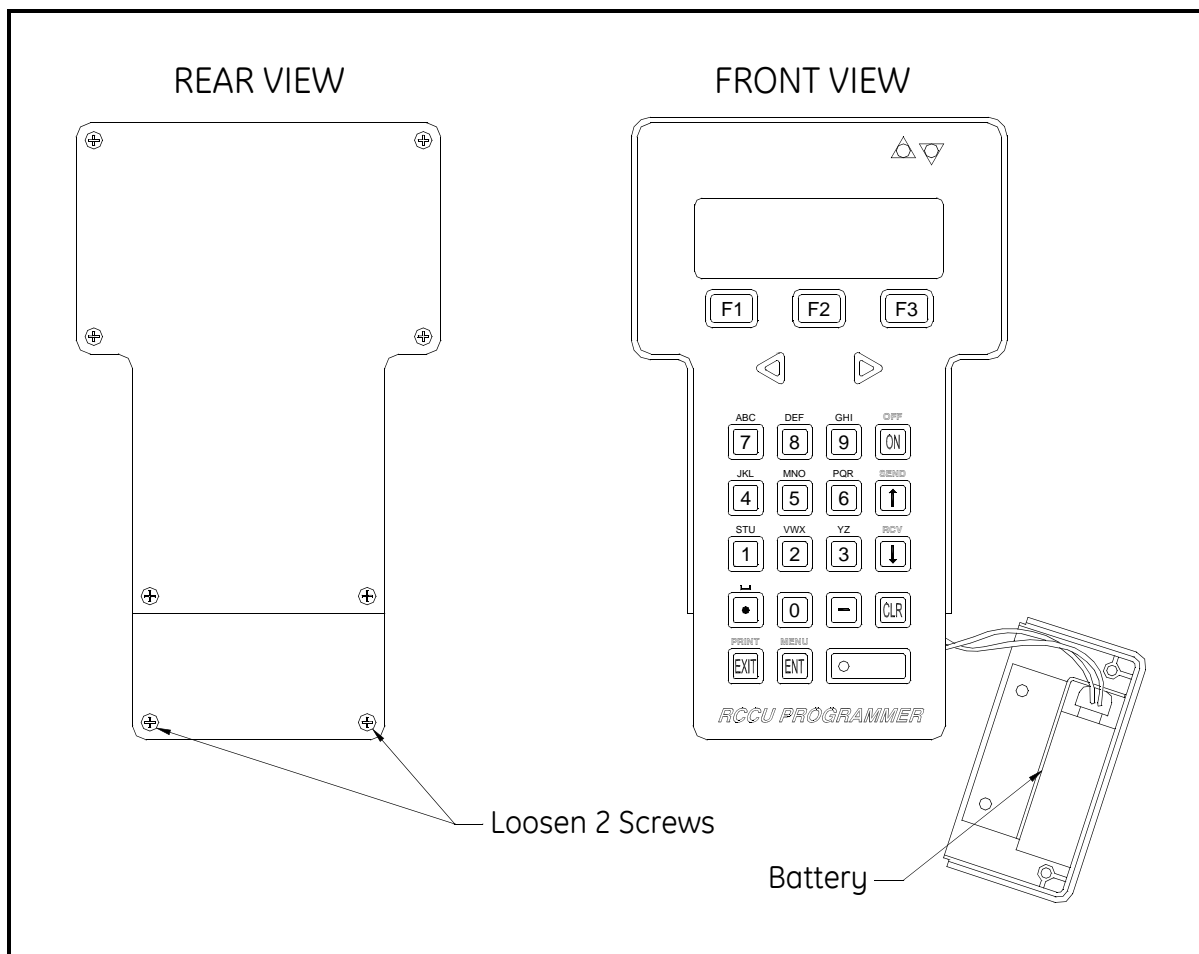
Figure C-5: Replacing the Battery (Standard RCCU)

Intrinsically-Safe Version

!WARNING!
Do not open the RCCU enclosure in a hazardous environment.

1. Remove the RCCU to a safe area before opening the unit. Loosen the two (2) screws along the bottom edge of the back of the RCCU housing, as illustrated in Figure C-5 on the previous page. Remove the battery compartment cover.

2. Unfasten the Velcro strap that secures the battery to the cover, and remove the battery connector from the top of the old battery. See Figure C-6 below. Dispose of the old battery properly.

3. Install the battery connector on the top of the new battery and secure the new battery to the cover with the Velcro strap.

4. Replace the battery compartment cover and tighten the two (2) screws on the cover. The RCCU may now be safely brought into a hazardous environment.
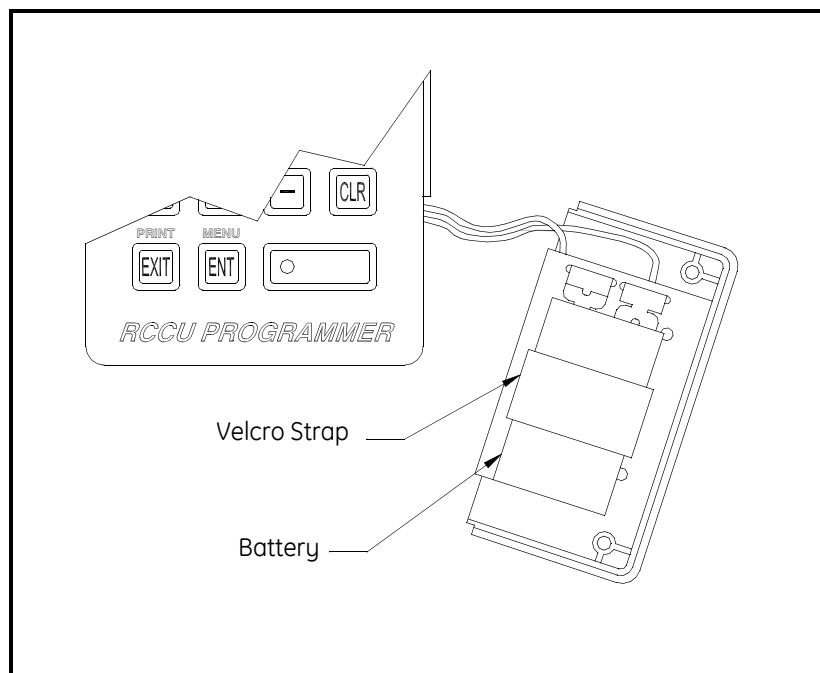
Figure C-6: Battery and Cover (IS Version)
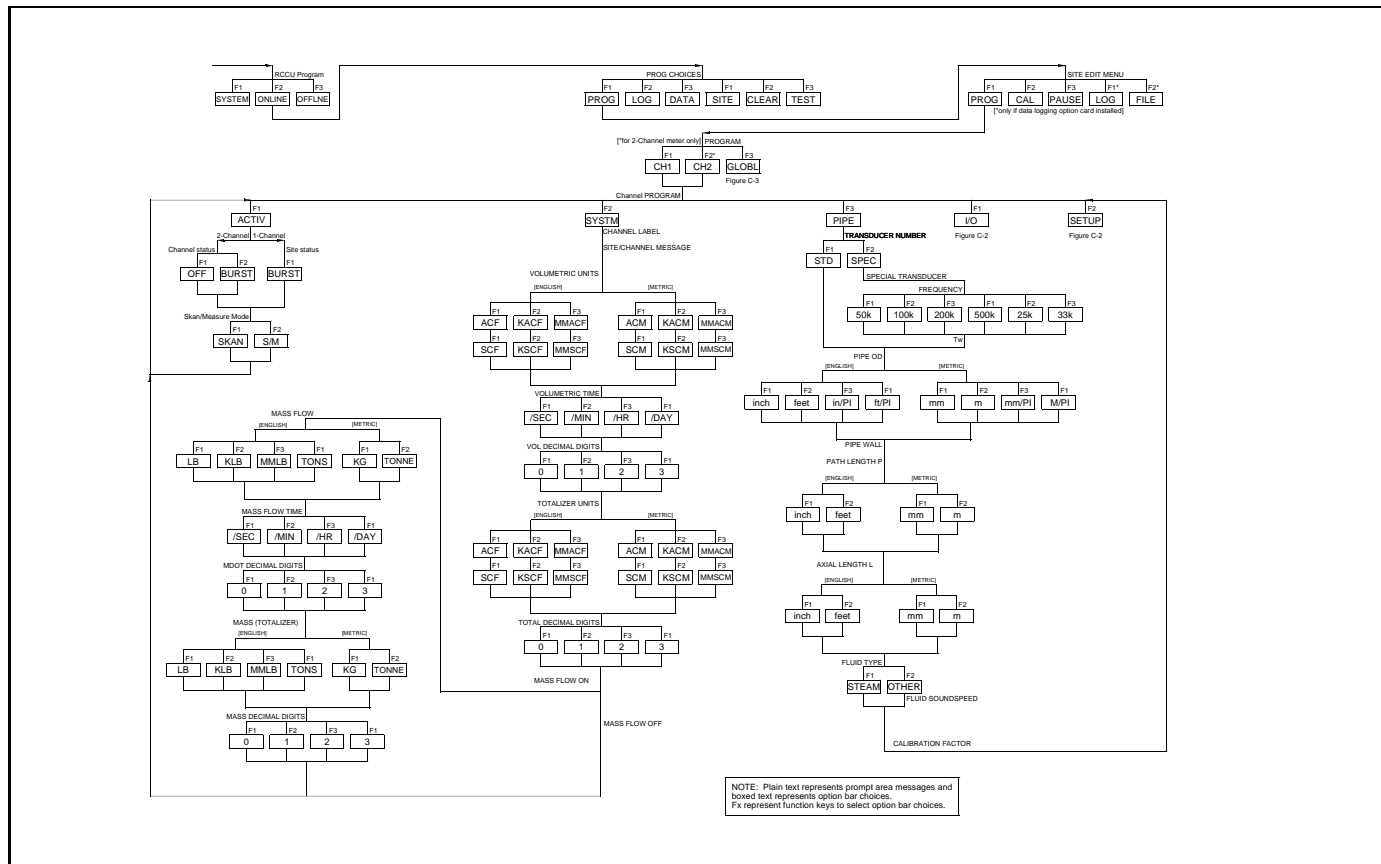
Figure C-7: CHx-ACTIV, SYSTM and PIPE Menu Maps

NOTE: Plain text represents prompt area messages and boxed text represents option bar choices. Fx represent function keys to select option bar choices.

RCCU Program
| F1 | F2 | F3 |
| SYSTEM | ONLINE | OFFLNE |

PROG CHOICES
| F1 | F2 | F3 | F1 | F2 | F3 |
| PROG | LOG | DATA | SITE | CLEAR | TEST |

SITE EDIT MENU
| F1 | F2 | F3 | F1* | F2* |
| PROG | CAL | PAUSE | LOG | FILE |
[*only if data logging option card installed]

[*for 2-Channel meter only] PROGRAM
| F1 | F2* | F3 |
| CH1 | CH2 | GLOBL |
Figure C-3

Channel PROGRAM
| F1 | F2 | F3 | F1 | F2 |
| ACTIV | SYSTM | PIPE | I/O | SETUP |
Figure C-1   Figure C-1   Figure C-1

ZERO CUTOFF
ASSUME SATURATION
| F1 | F2 |
| NO | YES |

TEMP INPUT
| F1 | F2 | [*only if input option is installed] |
| FIXED | SLOT1 | |

A:LABEL B:LABEL
| F1 | F2 |
| A | B |

FIXED TEMP.

STEAM INPUT TYPE
| F1 | F2 |
| TEMP | PRESR |

Steam Input Type = Temp   BASE TEMP.

PRESSURE INPUT
| F1 | F2 | [*only if input option is installed] |
| FIXED | SLOT1 | |

A:LABEL B:LABEL
| F1 | F2 |
| A | B |

FIXED PRESSURE

BASE PRESSURE
Low Pressure Switch
| F1 | F2 |
| NO | YES |
PRESSURE LIMIT

QUALITY INPUT
| F1 | F2 |
| FIXED | SLOT1 |

A:LABEL B:LABEL
| F1 | F2 |
| A | B |

FIXED QUAL.

SET UP

SIGNL
| F1 |
SIGNAL LOW LIMIT
COR. PEAK LIMIT
SOUNDSPEED +- LIMIT
VELOCITY LOW LIMIT
VELOCITY HIGH LIMIT
ACCELERATION LIMIT
AMP. DISCRIM LOW
AMP. DISCRIM HIGH
DELTA T OFFSET
Skan T OFFSET [*Set to 0 for Active Skan T Offset]
% of Peak

XMIT SAMPLE SIZE
| F1 | F2 | F3 | F1 | F2 |
| 2 | 4 | 8 | 16 | 32 |

AVRG
| F2 |
RESPONSE TIME
| F1 | F2 | F3 | F1 | F2 | F3 |
| 1 | 2 | 5 | 10 | 30 | 60 | STATS |

M>S_Switch
shifts
A Divisor
Transmit Pulses
T WINDOW (cycles)
R WINDOW (cycles)

INIT
| F3 |
Press YES to Default
| F1 | F2 |
| NO | YES |

ADVAN
| F4 |

MULTK
Multi K-factors
| F1 | F2 |
| OFF | ON |

Edit table?
| F1 | F2 |
| NO | YES |
# of K factors
Velocity # x
K Factor # x

MASS
Static Density
| F1 | F2 |
| NO | YES |
FLUID DENSITY

NOTE: Plain text represents prompt area messages and boxed text represents option bar choices. Fx represent function keys to select option bar choices.

Figure C-8: Channel SET UP Menu Maps

Figure C-9: Global–System, SLOT0 and Communication Port Menu Maps

RCCU Program
F1 F2 F3
SYSTEM ONLINE OFFLNE

PROG CHOICES
F1 F2 F3 SITE CLEAR TEST
PROG LOG DATA

SITE EDIT MENU
F1 F1* PAUSE LOG F2*
PROG CAL FILE
[*only if data logging option card installed]

[*for 2-Channel meter only] PROGRAM
F1 F2* F3
CH1 CH2 GLOBL
Figures C-1 and C-2 **Global PROGRAM**

SYSTM
METER MESSAGE
SYSTEM UNITS
F1 F2
English Metric

PRESSURE UNITS
[ENGLISH] F1 F2 PSIa PSIg
[METRIC] F1 F2 F3 BARa BARg Kpaa Kpag

1-CHANNEL UNITS
2-CHANNEL UNITS
VOLUMETRIC UNITS
[ENGLISH] F1 F2 F3 ACF KACF MMACF SCF KSCF MMSCF
[METRIC] ACM KACM MMACM SCM KSCM MMSCM

VOLUMETRIC TIME
F1 F2 F3 F1 /SEC /MIN /HR /DAY

VOL DECIMAL DIGITS
F1 F2 F3 F1 0 1 2 3

TOTALIZER UNITS
[ENGLISH] ACF KACF MMACF SCF KSCF MMSCF
[METRIC] ACM KACM MMACM SCM KSCM MMSCM

TOTAL DECIMAL DIGITS
F1 F2 F3 F1 0 1 2 3

MASS FLOW OFF   MASS FLOW ON
MASS FLOW UNITS
[English] F1 F2 F3 F1 LB KLB MMLB TONS
[Metric] F1 F2 KG TONNE

MASS FLOW TIME
F1 F2 F3 F1 /SEC /MIN /HR /DAY

MDOT DECIMAL DIGITS
F1 F2 F3 F1 0 1 2 3

MASS TOTALS
[English] LB KLB MMLB TONS
[Metric] KG TONNE

MASS DECIMAL DIGITS
F1 F2 F3 F1 0 1 2 3

I/O
F2*
I/O

Global I/O
F1 F2 F3
ERROR OPTN LCD
Figures C-4

OF LCD PARMS
F1 F2 F3 F1 F2
OFF 1 2 3 4

[only appears for 2-Channel meter] Channel 1   [until all channels set up]
F1 F2 F3 F1 F2
CH1 CH2 SUM DIF AVE

Measurement Name 1
F1 F2 F3 F1 F2 F3 F1 F2 F3
VEL VOLUM +TOTL -TOTL TIME MDOT +MASS -MASS DIAG*
[*all diagnostic parameters appear here]

I/O
F1 F2*
SLOT0 SLOT1
[*only appears if option card installed]

Slot 0 Outputs
F1 F2
A B

Slot 0 Output A
F1 F2 F3
OFF 0-20m 4-20m

Channel [only appears for 2-Channel meter]
F1 F2 F3 F1 F2
CH1 CH2 SUM DIF AVE

Measurement Name
F1 F2 F3 F1 F2 F3 F1 F2 F3*
VEL VOLUM +TOTL -TOTL TIME MDOT +MASS -MASS DIAG
ZERO FULL [*all diagnostic parameters appear here]

F3
COMM
Meter Address
BAUD RATE
F1 F2 F3 F1 F2 F3 F1
300 600 1200 2400 4800 9600 19200

MODBUS OPTION INSTALLED
MODBUS BAUD RATE
F1 F2 F3
2400 4800 9600

MODBUS PARITY
F1 F2 F3
None Odd Even

MODBUS STOP BITS
F1 F2
1 Bit 2 Bits

MODBUS ADDRESS

Live Data Update
F1 F2 F3 F1 F2 F1
5sec 10sec 30sec 1min 3min 6min 12min

CHAN NAMES [only appears for 2-Channel meter]
F1 F2 F3 F1 F2
CH1 CH2 SUM DIF AVE

Measurement Name
F1 F2 F3 F1 F2 F3 F1 F2 F3*
VEL VOLUM +TOTL -TOTL TIME MDOT +MASS -MASS DIAG
[*all diagnostic parameters appear here]

NOTE: Plain text represents prompt area messages and boxed text represents option bar choices. Fx represent function keys to select option bar choices.

Figure C-10: Global Slot 1 Menu Maps

RCCU Program

F1	F2	F3
SYSTEM	ONLINE	OFFLNE

PROG CHOICES

F1	F2	F3	F1	F2	F3
PROG	LOG	DATA	SITE	CLEAR	TEST

SITE EDIT MENU

F1	F2	F3	F1*	F2*
PROG	CAL	PAUSE	LOG	FILE

[*only if data logging option card installed]

LOGGING

F1		F2		F3		F1
STD		MEM		STOP		ERROR

NOT AVAILABLE

LOG LOCATION

F1	F2	F3*
NVR	FLASH	PCMCIA

[*only appears if PCMCIA card installed]

Log Name

F1	F2	F3	
LOG1	LOG2	LOG3	LOG4

Stop Logging ?

F1	F2
NO	YES

LOG NAME
LOG MESSAGE
Log how many vars?

[repeats until all channels set up]

[only appears for 2-Channel meter] Channel 1

F1	F2	F3	F1	F2
CH1	CH2	SUM	DIF	AVE

Measurement Name 1

F1	F2	F3	F1	F1	F2	F3
VEL	VOLUM	+TOTL	-TOTL	TIME	MDOT	+MASS	-MASS	DIAG*

[*all diagnostic parameters available]

(totalized value)   (non-totalized value)

Set LOG Totals to 0 ?

F1	F2
NO	YES

(Flash)

(NVR or PCMCIA)

Is LOG circular ?

F1	F2
NO	YES

STARTTIME

F1	F2	F3
OK	EDIT	NOW

HOUR

F1	F2
AM	PM

MINUTES
SECONDS

START DATE

F1	F2	F3
OK	EDIT	TODAY

YEAR
MONTH

F1	F3
JAN · · · · · DEC

(12 choices)

DAY

(for STANDARD log)

(non-circular log)   (circular log)

END TIME   DURATION

F1	F2	F3		F1	F2
OK	EDIT	TIMED		HOURS	DAYS

HOUR   LOG TIME

F1	F2		F1	F1
AM	PM		10min · · · · · 24 HR

(7 choices)

MINUTES
SECONDS

END DATE

F1	F2	F3
OK	EDIT	TODAY

YEAR
MONTH

F1	F3
JAN · · · · · DEC

(12 choices)

DAY

TIME INCREMENT

F1	F3
5sec · · · · · 60min

(9 choices)

F1
OK

log created

(for ERROR log)

NOTE: Plain text represents prompt area messages and boxed text represents option bar choices.
Fx represent function keys to select option bar choices.

Figure C-11: PROG-LOG Menu Map

Figure C-12: LOG and CLEAR Menu Maps

Appendix D

PanaView™ for IDM-Compatible Meters (916-086B)

Introduction

The *PanaView™* graphical user interface offers interactive communications between Windows-based PCs and GE Infrastructure Sensing flowmeters compatible with the company's IDM protocol. (Compatible 32-bit Windows operating systems include Windows 98SE, NT 4.0 (with Service Pack 6), 2000, XP and ME). With *PanaView™*, you can:

- load and save site file data

- create and save graph and log files

- display text output and graphs of live measurement data

- create custom templates for displaying text, graph and log data

- interface with multiple GE Infrastructure Sensing instruments.

This document focuses on particular applications suitable for flowmeters that use the GE Infrastructure Sensing *PanaView™* protocol. For general *PanaView™* applications such as creating graph and log files, displaying live measurement data, and creating custom templates, please refer to the general *PanaView™ User's Manual* (910-211).

IDM-Compatible Flowmeters

To determine if your flowmeter uses the IDM protocol, please check the list of compatible flowmeters below. If your meter is not on this list, please consult the factory for appropriate instrument interface software:

• AT868	• GN868	• XGM868
• DF868	• GS868	• XGS868
• GC868	• PT868	• XMO2/IDM
• GF868	• UPT868-C	• XMT868
• GM868	• UPT868-P	• XMTC

IMPORTANT: PanaView™ *does not support any IDM protocol-based meters with multidrop RS485.*

Wiring the RS232 Interface

All IDM-protocol instruments utilize an RS232 interface to communicate with a PC. For details on wiring your RS232 interface, please refer to the *Installation* chapter of your instrument's User's Manual, and to the document *EIA-RS Serial Communications* (916-054).

Starting Up

When the above connections have been made, power up the meter and the PC, then start up *PanaView™*. If a message appears as in Figure D-1 below, *PanaView™* is not able to communicate with the meter. Select Don't Load Meter (this session only), click OK and then proceed to *Setting Up the Communications Port* on page D-3.
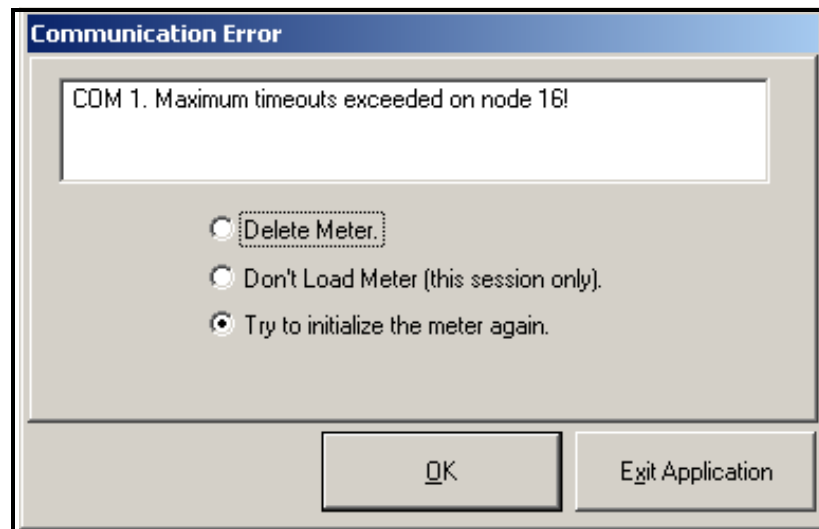
Figure D-1: Communication Error Window

**Setting Up the
Communications Port**

Use the steps below to establish communications with an IDM-compatible flowmeter.

1. Open the *"New Meter Browser"* window and expand the network tree. Then, highlight the *My Computer(Name)* branch by clicking on it.

2. Pull down the *"Edit"* menu by clicking on it in the menu bar.

3. Click on the *"New"* menu option to select it, and a submenu opens with two choices on it (see Figure D-2 below).
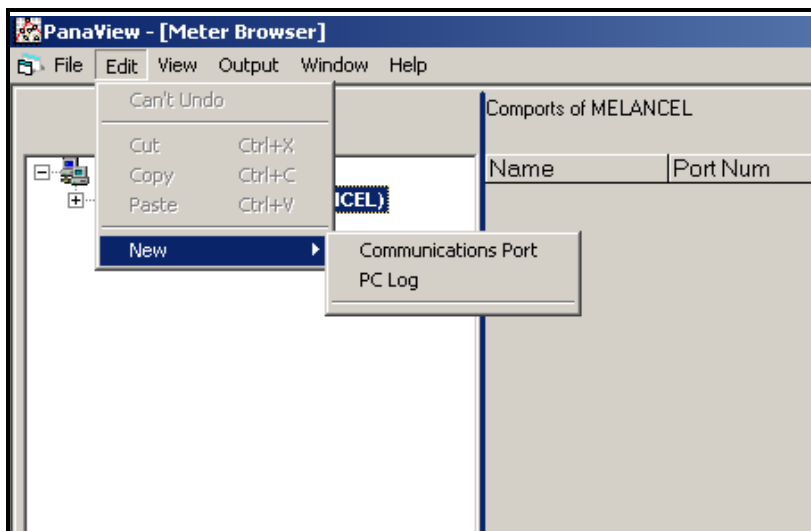
Figure D-2: The Edit Menu

Setting Up the Communications Port (cont.)

4. Click on the *"Communications Port"* option to select it. The *Setup Communications* screen appears similar to Figure D-3 below.
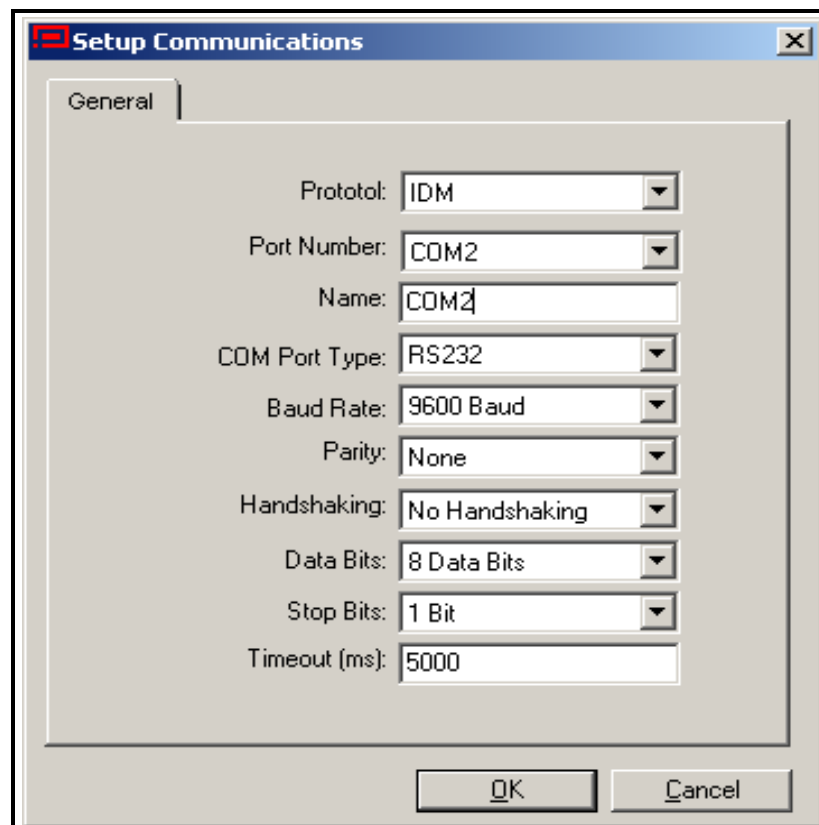
Figure D-3: *Setup Communications* **Screen**

5. Open the Protocol menu (the first of the drop-down menus) and click on *IDM*.

6. Select any suitable available baud rate. A baud rate of 19,200 is appropriate for almost all applications. However, if you experience periodic communication reliability problems, you may wish to consider lowering the baud rate on your instrument and in *PanaView*™.

IMPORTANT: *Be sure all the communications port settings match those made in setting up the meter's serial port.*

7. Click on [OK] to complete data entry.

Adding an IDM-Compatible Meter

To add a meter on the IDM-configured communications port, complete the following steps:

1. Highlight the communication port to which the meter will be added by clicking on it, and then open the *"Edit"* menu on the menu bar (if the communication port is not highlighted first, the *"New Meter"* option is not active in the *"Edit"* menu).

2. Click on the *"New"* option in the *"Edit"* menu (see Figure D-4 below).
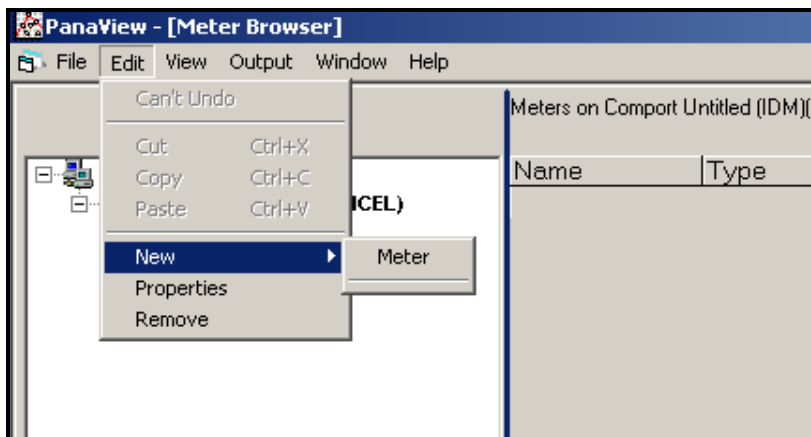
Figure D-4: *"New"* Option in the *"Edit"* Menu

3. After clicking on the *"New"* option, the *"Meter"* menu option appears. Click on this option to select it.

4. The *"New IDM Meter"* screen (shown in Figure D-5 below) opens. Enter the Network ID number for the meter, and click [OK].

Figure D-5: New IDM Meter Screen

Adding an IDM-Compatible Meter (cont.)

IMPORTANT: *The Network ID number must match the Network ID programmed in the meter's Communications menu.*

If the initialization is successful, the Meter Browser shows a listing similar to Figure D-6 below.
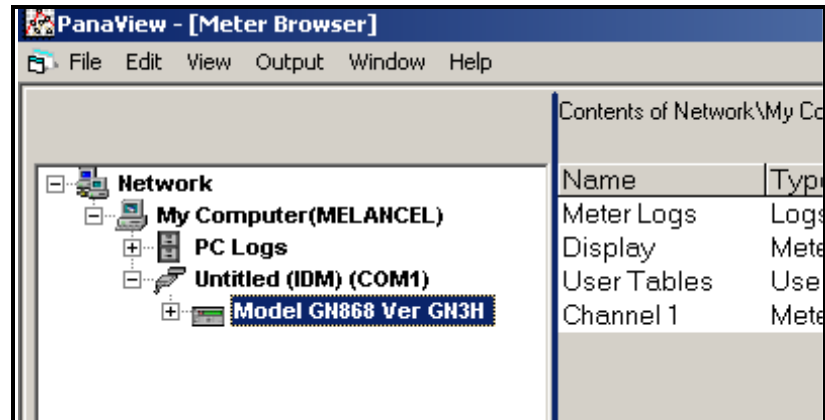
Figure D-6: The Updated Network Tree

However, if the settings do not match, or there is some other difficulty, a screen appears similar to Figure D-7 below.
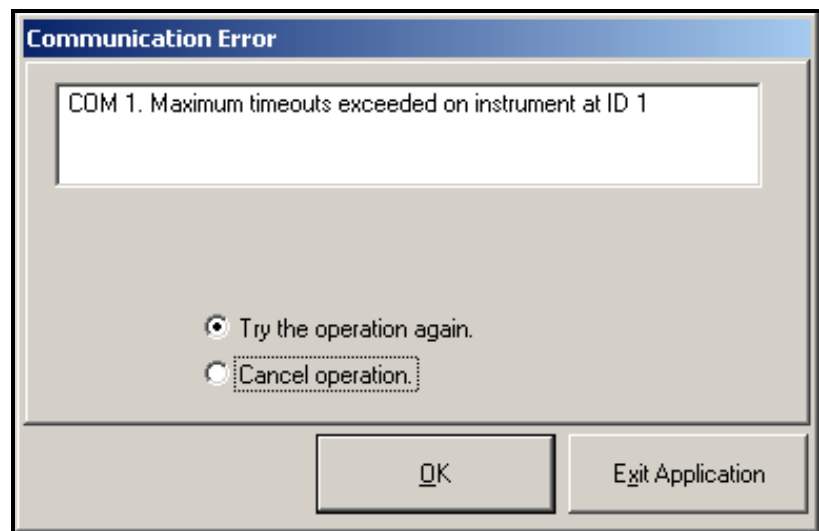
Figure D-7: Communication Error Screen

The screen offers the options of trying again or of canceling the operation. Click on the desired choice, and then on [OK] to confirm the choice or on [Exit Application] to close *PanaView™*.

Editing Meter Properties   Through *PanaView*™, you can edit the properties of your IDM-
compatible flowmeter. You can:

- Set the meter clock, or synchronize it with the PC clock

- Read, plot and save transducer signals

- Clear totalizers

- Save site files to the meter or PC

- Clear sites from the meter

- Print site files to the PC

To edit the properties of your IDM-compatible meter:

1. Highlight the meter (as shown in Figure D-6 on page D-6).

2. Open the *"Edit"* menu and select the *"Properties"* option, as
shown in Figure D-8 below.
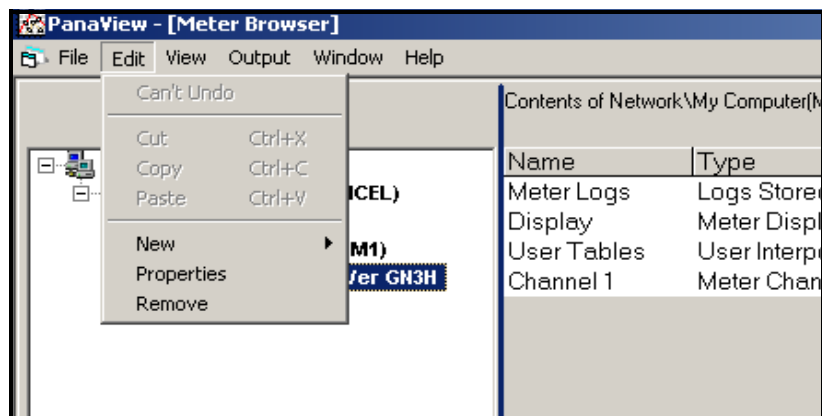
Figure D-8: The *Properties* Option in the *Edit* Menu

Editing Meter Properties (cont.)

The window appears similar to Figure D-9 below. To perform a specific task, refer to the appropriate section on the following pages.

- Setting the Meter Clock (page D-9)

- Reading Transducer Signals (page D-10)

- Plotting Transducer Signals (page D-11)

- Saving Transducer Signals (page D-11)

- Clearing Totalizers (page D-11)

- Handling Site Files (page D-12)
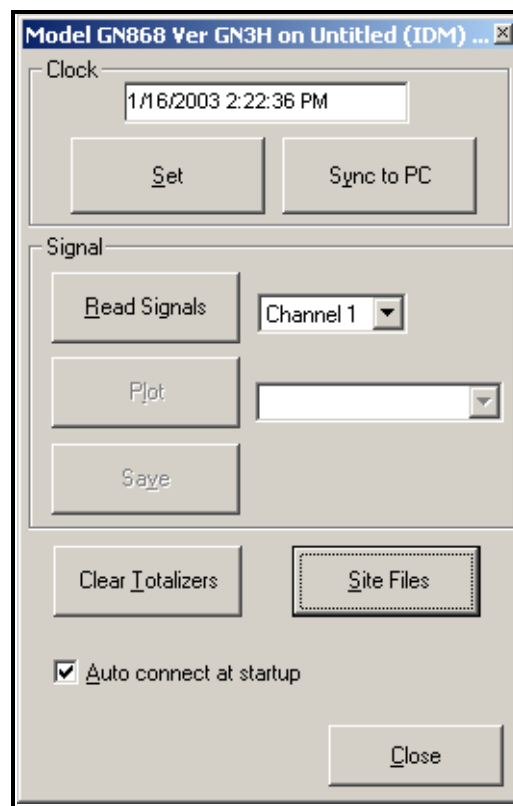
Figure D-9: Properties Window for IDM-Based Meter

Note: *For illustration purposes, the meter shown here is a one-channel GN868 flowmeter. Specific parameters will vary with your particular meter.*

Setting the Meter Clock   The meter's *Time* may be reset in three different ways:

- manually enter the time and date in the text box, or

- click on the [Sync to PC] option button to have *PanaView*™ set the time and date to the current PC setting, or

- click on the [Set] option button to open the dialog box shown in Figure D-10 below. Set the desired date and time as indicated, and click on the [OK] option button.

Figure D-10: Time and Date Selection Window

Reading Transducer
Signals

To read a *Signal* from the meter:

1. Click on the *Read Signals* button. (If the meter is a multi-channel instrument, open the Channel drop-down menu and click on the desired channel.) After a moment, the *Properties* window appears similar to Figure D-11 below.
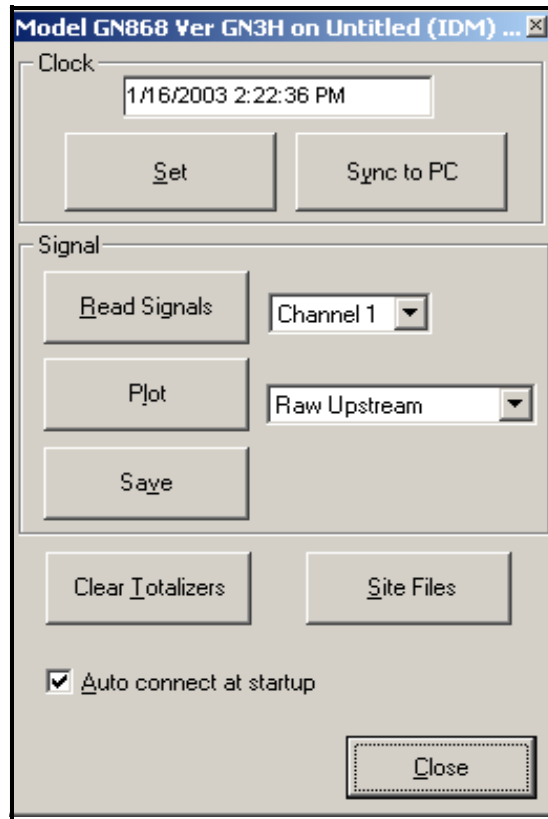
Figure D-11: Active Signal Options in Properties Window

2. To select a different signal type, open the signal menu at the right (shown here with *Raw Upstream* highlighted) and click on the desired signal.

Plotting Transducer Signals

To *plot* the selected signal, click on *Plot*. A graphical window opens, as shown in Figure D-12 below.
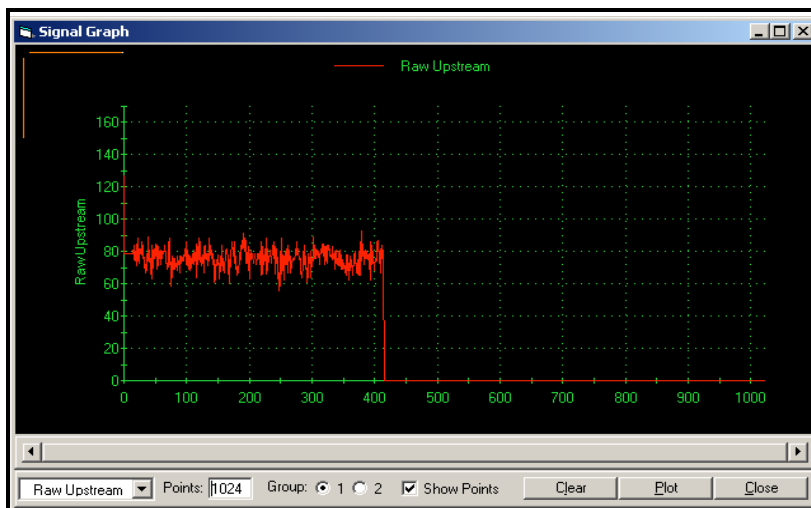
Figure D-12: *Signal Graph* **Window**

Saving Transducer Signals

To *save* the raw signal, click *Save.* A window opens similar to Figure D-13 below. Enter the desired name, and click *Save* to save the signal as a text file.
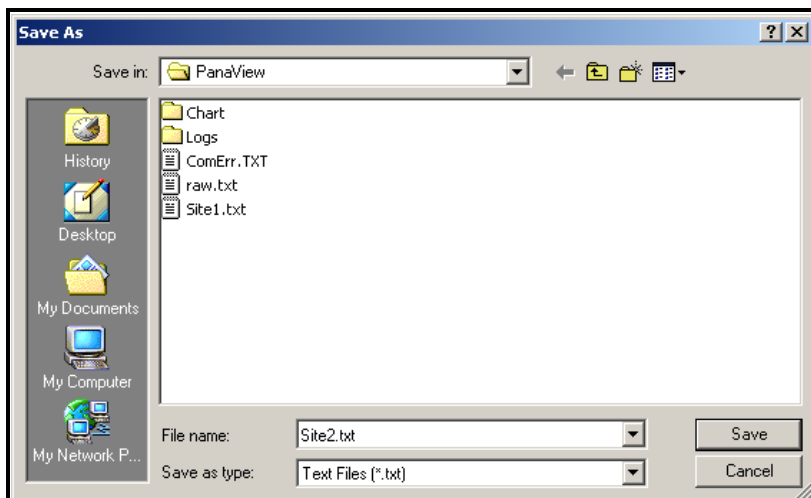
Figure D-13: *Save As* **Window**

Clearing Totalizers

To clear the meter totalizers, click on the *Clear Totalizers* button in the *Properties* window. The meter totalizers are reset to 0.

Handling Site Files

To access site files, click on the *Site Files* button in the *Properties* window. The *Site File Operations* window (shown in Figure D-14 below) opens.
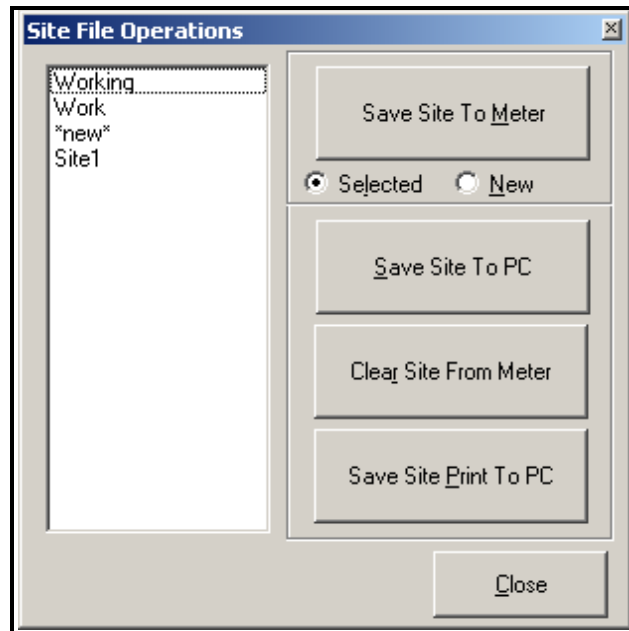
Figure D-14: The *Site File Operations* Window

Saving an Existing Site to the Meter

To save an existing site to the meter:

1. Select the radio button for *Selected* and highlight an existing site in the left pane.

2. Then click on the *Save Site to Meter* button. A screen opens similar to Figure D-15 below.
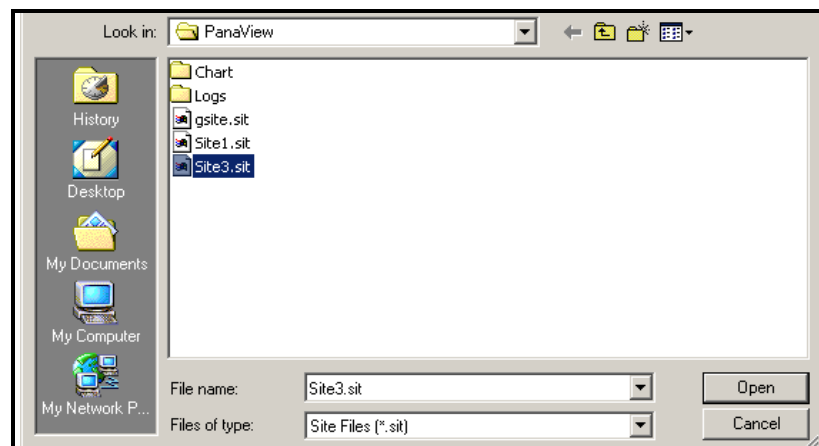
Figure D-15: Site File Selection

3. Highlight the desired site and click *Open. PanaView*™ sends the site to the meter.

Saving a New Site to the Meter

To save a new site to the meter:

1. Select the radio button for *New* and click on the *Save Site to Meter* button.

2. A window opens similar to Figure D-16 below. Enter the desired name, and click [OK].
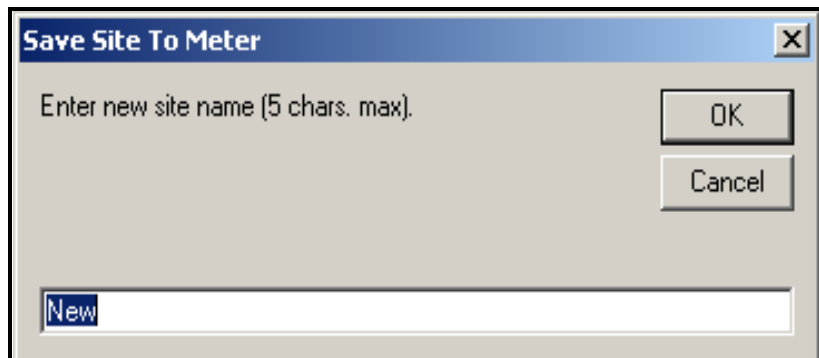
Figure D-16: Site Name Entry Window

3. The *Site File Selection* window (Figure D-15 on page D-12) opens. Highlight a site with the desired settings, and click [Open]. *PanaView*™ saves the site in the meter with the new name and the desired settings.

Saving a Site to the PC

To save a site to the PC:

1. Highlight the desired site in the left pane. (See Figure D-14 on page D-12.)

2. Click *Save Site to PC*. A window opens similar to Figure D-13 on page D-11.

3. Enter the desired site name and click [Save]. *PanaView*™ saves the site in the *PanaView*™ folder unless otherwise specified.

Note: *If you have created a site on the meter after opening the* Site File Operations *window, you must close and reopen the window to click on the new site.*

Clearing a Site from the Meter
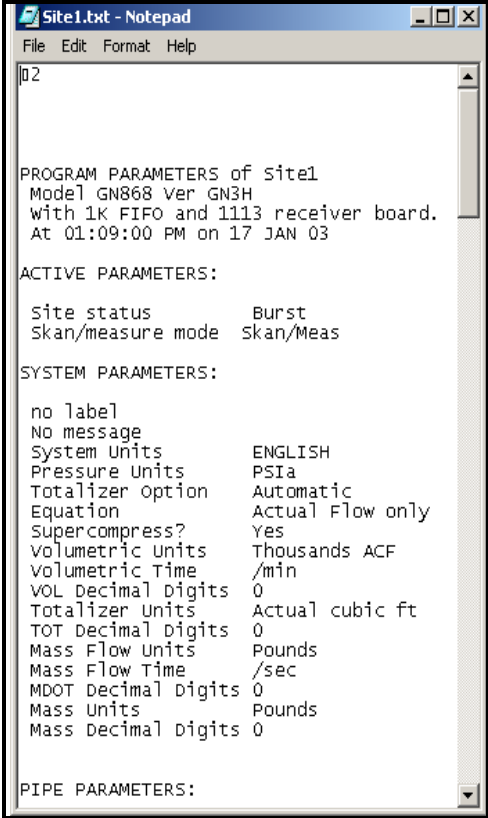
To clear a site from the meter:

1. Highlight the site in the left pane (see Figure D-14 on page D-12).

2. Click *Clear Site From Meter.*

3. The program asks for confirmation. Click [OK]. The meter deletes the designated file.

Saving a Site in Text Form

To store the data from a site file as a text file for display or printout:

1. Highlight the site in the left pane (see Figure D-14 on page D-12).

2. Click *Save Site Print to PC.*

3. The *Site File Selection* window opens (Figure D-15 on page D-12). Enter the desired site name (now with a .prt suffix) and click [Save]. *PanaView™* displays a text version of the site, as shown in Figure D-17 below.

Figure D-17: Printout of Site File

4. Click [Close] once to close the *Site File Operations* window, and a second time to close the *Properties* window and return to the *Meter Browser.*

Changing Meter Settings   Through *PanaView™*, users of IDM-compatible meters can handle remote programming of the meter. They can:

- Program and change a meter's operating parameters;

- Set up, start, and stop logs;

- Calibrate and test inputs and outputs;

- Clear various files.

To access meter programming:

1. Enter the *New Meter Browser* option from the "File" menu.

2. Expand the network tree until you reach the desired meter.

3. Then expand the meter tree as shown in Figure D-18 below.
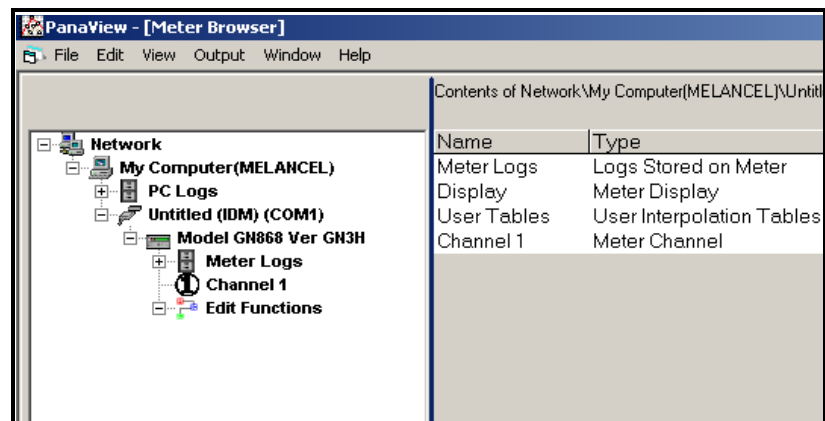
Figure D-18: *New Meter Browser* with Meter Branch

Changing Meter Settings (cont.)

4. From the meter tree, expand the *Edit Functions* option. The window now appears similar to Figure D-19 below, with a list of available menus. The menus listed are those available on the meter. (For illustration purposes, the specific menus shown are those for a one-channel GN868 flowmeter.)
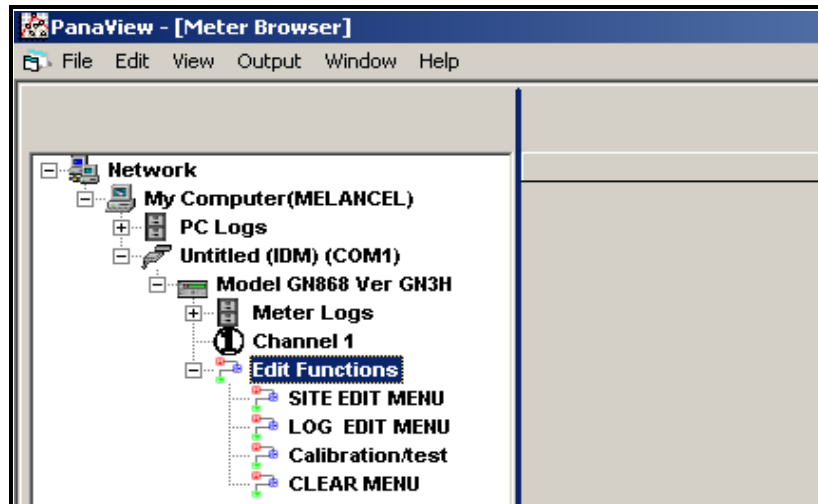
Figure D-19: Meter Tree with *Edit Functions* Option

5. To open a particular menu, double-click on that menu on the tree. For example, if you double-click on the Site Edit Menu, a window opens similar to Figure D-20 below.
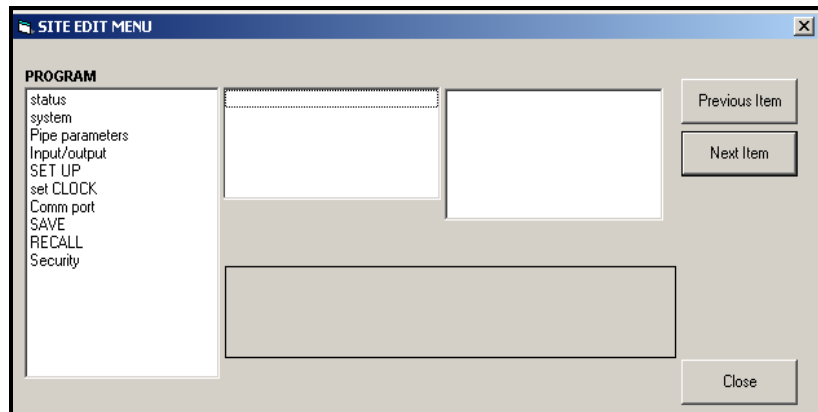
Figure D-20: The *Site Edit Menu* Window

Note: *The options listed in the left pane correspond to the options available in the GN868 PROGRAM menu. For more information about the options in your instrument program and about appropriate parameters, consult the user's manual for your particular instrument.*

Changing Meter Settings (cont.)

6. To enter a particular option:

   a. Highlight and double-click on the desired option in the left pane. Figure D-21 below shows the first entry (Transducer Number) in the Pipe parameters option. The title above the center pane lists the current entry, while the center pane displays the available selections for that entry.

   b. Click on the desired choice; if the entry requires a numeric value, change the value displayed in the right pane.
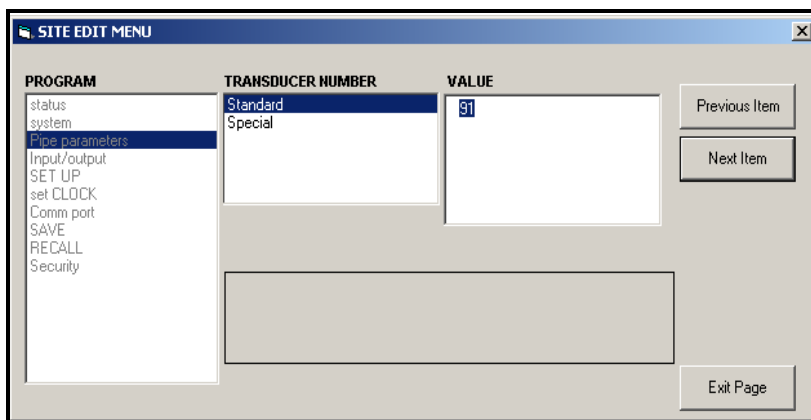
Figure D-21: The Pipe Parameters Option in the Site Edit Menu

   c. Do one of the following:

   Click on [Next Item] to proceed to the next menu item,

   or

   Click on [Previous Item] to return back through the menu to a previous item.

Note: *If you click on either* [Next Item] *or* [Previous Item] *without changing the settings, the current settings remain unchanged.*

As you step through the menu, the bottom panel lists the current settings you have modified or left unchanged (see Figure D-22 on page D-18). If you modify or step through more than five items, a scroll bar at the right of the panel lets you review the earlier settings.

Changing Meter Settings (cont.)
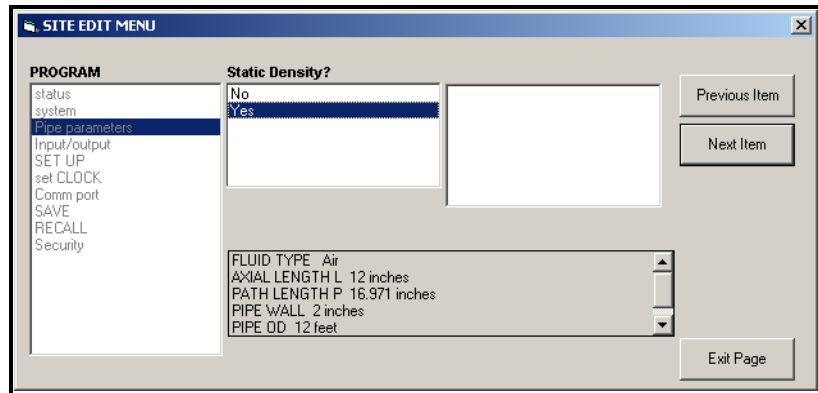
Figure D-22: Site Edit Menu with Current Settings

7. When you have completed entering parameters in a given option, click [Exit Page] to close the option. You can then double-click on another option, or click [Close] to close the window.

You can double-click on another menu to modify its settings, or return to the *New Meter Browser.* For additional *PanaView™* functions, refer to the *PanaView™ User's Manual.*

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V

Z

We,   **GE Infrastructure Sensing, Inc.**
1100 Technology Park Drive
Billerica, MA 01821-4111
U.S.A.

as the manufacturer, declare under our sole responsibility that the product

XGS868 Steam Mass Ultrasonic Flow Transmitter

to which this document relates, in accordance with the provisions of ATEX Directive 94/9/EC Annex II, meets the following specifications:

$C\,E_{1180}$ ⟨Ex⟩ **II 2 GD EEx d IIC T5 (-20°C to +65°C)**
ISSeP02ATEX008 T95°C IP66

Furthermore, the following additional requirements and specifications apply to the product:

- Having been designed in accordance with EN 50014, EN 50018, and EN 50281, the product meets the fault tolerance requirements of electrical apparatus for category "d".

- The product is an electrical apparatus and must be installed in the hazardous area in accordance with the requirements of the EC Type Examination Certificate. The installation must be carried out in accordance with all appropriate international, national and local standard codes and practices and site regulations for flameproof apparatus and in accordance with the instructions contained in the manual. Access to the circuitry must not be made during operation.

- Only trained, competent personnel may install, operate and maintain the equipment.

- The product has been designed so that the protection afforded will not be reduced due to the effects of corrosion of materials, electrical conductivity, impact strength, aging resistance or the effects of temperature variations.

- The product cannot be repaired by the user; it must be replaced by an equivalent certified product. Repairs should only be carried out by the manufacturer or by an approved repairer.

- The product must not be subjected to mechanical or thermal stresses in excess of those permitted in the certification documentation and the instruction manual.

- The product contains no exposed parts which produce surface temperature infrared, electromagnetic ionizing, or non-electrical dangers.

GE Infrastructure
Sensing

We,
**Panametrics Limited
Shannon Industrial Estate
Shannon, County Clare
Ireland**

declare under our sole responsibility that the

**IGM878 Industrial Gas Ultrasonic Flow Transmitter
XGF868 Flare Gas Ultrasonic Flow Transmitter
XGM868 Multi-Purpose Gas Ultrasonic Flow Transmitter
XGN868 Natural Gas Ultrasonic Flow Transmitter
XGS868 Steam Mass Ultrasonic Flow Transmitter
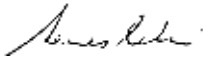XMT868 Liquid Ultrasonic Flow Transmitter**

to which this declaration relates, are in conformity with the following standards:

- EN 50014:1997+A1+A2:1999

- EN 50018:2000

- EN50281-1-1:1998

- II 2 GD EEx d IIC T5; ISSeP02ATEX008
  ISSeP, B7340 Colfontaine, Belgium

- EN 61326:1998, Class A, Annex A, Continuous Unmonitored Operation

- EN61010-1:1993+A2:1995, Overvoltage Category II, Pollution Degree 2

- EN 60529:1991+A1:2000
  IP66

following the provisions of the 89/336/EEC EMC Directive, the 94/9/EC ATEX Directive and the 73/23/EEC Low Voltage Directive.

The *units listed above and any transducers supplied with them (spoolpieces are addressed under a separate declaration of conformity)* do not bear CE marking for the Pressure Equipment Directive, as they are supplied in accordance with Article 3, Section 3 (sound engineering practices and codes of good workmanship) of the Pressure Equipment Directive 97/23/EC for DN<25.

Shannon - July 1, 2003

Mr. James Gibson
GENERAL MANAGER

CE

I.S. EN ISO 9002
Shannon

TÜV
TÜV ESSEN
ISO 9001
U.S.

CERT-DOC-H4

August 2004

GE Infrastructure
Sensing

Nous,
**Panametrics Limited
Shannon Industrial Estate
Shannon, County Clare
Ireland**

déclarons sous notre propre responsabilité que les

**IGM878 Industrial Gas Ultrasonic Flow Transmitter
XGF868 Flare Gas Ultrasonic Flow Transmitter
XGM868 Multi-Purpose Gas Ultrasonic Flow Transmitter
XGN868 Natural Gas Ultrasonic Flow Transmitter
XGS868 Steam Mass Ultrasonic Flow Transmitter
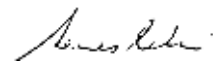XMT868 Liquid Ultrasonic Flow Transmitter**

rélatif á cette déclaration, sont en conformité avec les documents suivants:

- EN 50014:1997+A1+A2:1999

- EN 50018:2000

- EN50281-1-1:1998

- II 2 GD EEx d IIC T5; ISSeP02ATEX008
  ISSeP, B7340 Colfontaine, Belgium

- EN 61326:1998, Class A, Annex A, Continuous Unmonitored Operation

- EN61010-1:1993+A2:1995, Overvoltage Category II, Pollution Degree 2

- EN 60529:1991+A1:2000
  IP66

suivant les régles de la Directive de Compatibilité Electromagnétique 89/336/EEC, d'ATEX 94/9/EC et de la Directive Basse Tension 73/23/EEC.

Les *matériels listés ci-dessus ainsi que les transducteurs pouvant être livrés avec (les manchettes faisant l'objet d'une déclaration de conformité séparée)* ne portent pas le marquage CE de la directive des équipements sous pression, car ils sont fournis en accord avec la directive 97/23/EC des équipements sous pression pour les DN<25, Article 3, section 3 qui concerne les pratiques et les codes de bonne fabrication pour l'ingénierie du son.

Shannon - July 1, 2003

Mr. James Gibson
DIRECTEUR GÉNÉRAL

**I.S. EN ISO 9002
Shannon**

**TÜV ESSEN
ISO 9001
U.S.**

CERT-DOC-H4

August 2004

GE Infrastructure
Sensing

Wir,
> **Panametrics Limited**
> **Shannon Industrial Estate**
> **Shannon, County Clare**
> **Ireland**

erklären, in alleiniger Verantwortung, daß die Produkte

> **IGM878 Industrial Gas Ultrasonic Flow Transmitter**
> **XGF868 Flare Gas Ultrasonic Flow Transmitter**
> **XGM868 Multi-Purpose Gas Ultrasonic Flow Transmitter**
> **XGN868 Natural Gas Ultrasonic Flow Transmitter**
> **XGS868 Steam Mass Ultrasonic Flow Transmitter**
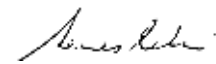> **XMT868 Liquid Ultrasonic Flow Transmitter**

folgende Normen erfüllen:

- EN 50014:1997+A1+A2:1999

- EN 50018:2000

- EN50281-1-1:1998

- II 2 GD EEx d IIC T5; ISSeP02ATEX008
  ISSeP, B7340 Colfontaine, Belgium

- EN 61326:1998, Class A, Annex A, Continuous Unmonitored Operation

- EN61010-1:1993+A2:1995, Overvoltage Category II, Pollution Degree 2

- EN 60529:1991+A1:2000
  IP66

gemäß den Europäischen Richtlinien, Niederspannungsrichtlinie Nr.: 73/23/EG und EMV-Richtlinie Nr.: 89/336/EG und ATEX Richtlinie Nr. 94/9/EG

Die *oben aufgeführten Geräte und zugehörige, mitgelieferte Schallwandler (Messrohre werden in einer separaten Konformitätserklärung behandelt)* tragen keine CE-Kennzeichnung gemäß der Druckgeräte-Richtlinie, da sie in Übereinstimmung mit Artikel 3, Absatz 3 (gute Ingenieurpraxis) der Druckgeräte-Richtlinie 97/23/EG für DN<25 geliefert werden.

Shannon - July 1, 2003

Mr. James Gibson
GENERALDIREKTOR

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August 2004