GE Panametrics

Model XMT868

Programming Manual (One- and Two-Channel)

June 2003

Process Control Instruments

Model XMT868
Ultrasonic Flow Transmitter for Liquids (1- & 2-Channel)

Programming Manual *910-171PB*

GE Panametrics

Warranty

Each instrument manufactured by GE Panametrics 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 Panametrics. Fuses and batteries are specifically excluded from any liability. This warranty is effective from the date of delivery to the original purchaser. If GE Panametrics 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 transducers

If GE Panametrics 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 Panametrics, 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 or merchantability and fitness for a particular purpose, and warranties arising from course of dealing or usage or trade).

Return Policy

If a GE Panametrics instrument malfunctions within the warranty period, the following procedure must be completed:

1. Notify GE Panametrics, 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 Panametrics will issue a RETURN AUTHORIZATION NUMBER (RAN), and shipping instructions for the return of the instrument to a service center will be provided.
2. If GE Panametrics 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 Panametrics 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 is covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.
- If GE Panametrics determines that the damage is not 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 XMT868 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 XMT868's *User Program*.

The *User Program* provides access to the various programmable features of the Model XMT868. Step-by-step programming instructions are presented in this chapter. Refer to the appropriate section for a discussion of the following PROG menu features:

- CHx-ACTIV - activate one or both channels and select the desired measurement method
- CHx-SYSTM - enter the individual channel parameters
- CHx-PIPE - enter the pipe parameters
- CHx-I/O - set up the inputs and outputs
- CHx-SETUP - set the signal limits, response times and activating mass flow.
- GLOBL-SYSTM - enter the system units
- GLOBL-I/O - set up error handling, option cards and display
- GLOBL-COMM - set the serial port and MODBUS parameters

As a programming aid, a complete set of menu maps for the PROG menu is included in Appendix A, *Menu Maps*. The specific figure numbers will be referenced throughout this chapter, as required.

Programming Methods

There are two methods for programming the XMT868 flowmeter:

- **Remote Control Communications Unit (RCCU)** - a hand-held device that communicates with the XMT868 via wireless, infrared transmissions.
- **Instrument Data Manager (IDM)** - a PC-based, non-resident software program that communicates with the XMT868 via its RS232 serial port.

Note: *The XMT868 cannot be programmed from the electronics enclosure. One of the above methods must be used.*

Although the displays differ somewhat, the general procedures are the same for the RCCU and IDM methods. This chapter provides detailed RCCU programming instructions. If IDM is to be used, refer to Appendix C, *Instrument Data Manager*, and/or the *IDM User's Manual* for complete instructions.

Using the RCCU

The optional Remote Control Communications Unit (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 1-1 below and a detailed description of both the unshifted and shifted functions for each of the 24 keys is listed in Table 1-1 on page 1-3.

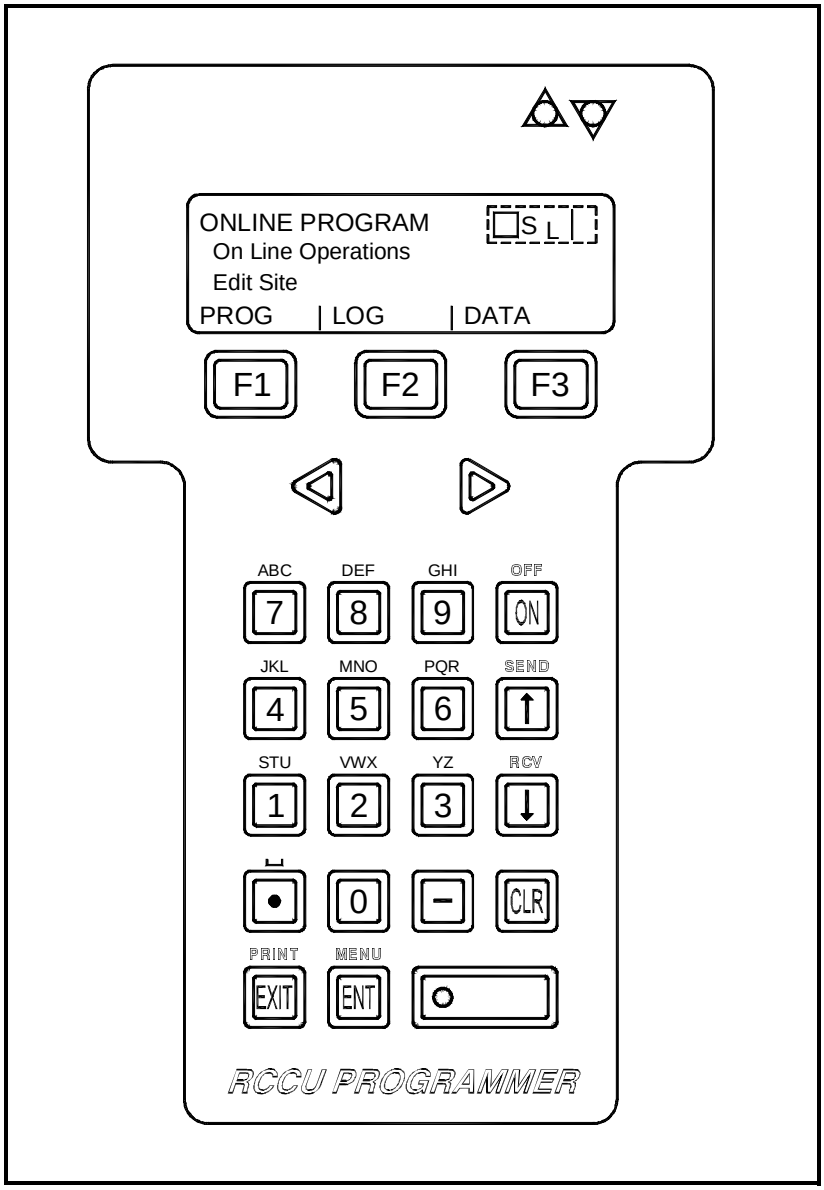


Figure 1-1: The RCCU Keypad

Table 1-1: The RCCU Key Functions

Key	Unshifted Function	Shifted Function
	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
	Zero Key - use to enter a number 0.	None
	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
	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
	Three Key - press to enter a number 3.	Press 1 time to enter the letter Y Press 2 times to enter the letter Z
	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 1-1: The RCCU Key Functions (Continued)

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
	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
	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
	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
	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
	Clear Key - press to enter the CLEAR menu. See Chapter 5, *Clearing Data*, for details.	None
	Exit Key - press to leave the current menu, saving entered values, and return to the next higher menu.	PRNT - not yet available
	Enter Key - press to accept the currently displayed value or text.	MENU - not yet available
	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

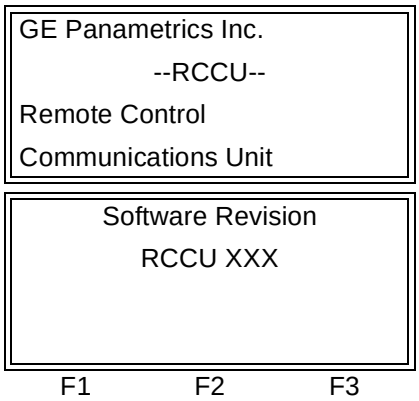
Using the RCCU (cont.)

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 1-1 on page 1-2 for the layout of the RCCU keypad and display.

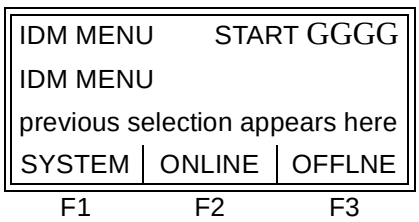
Note: *For instructions on replacing the RCCU's battery, refer to Chapter 4,* Parts Replacement, *in the* Service Manual.

For reliable RCCU communications, the infrared receiver in the window of the XMT868 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:



"XXX" represents the current software version.

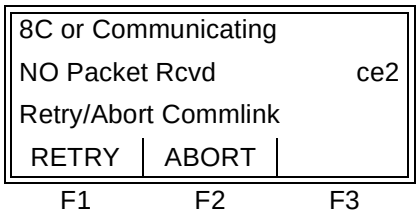


When the startup routine has been completed, this IDM Menu Start display appears.

The RCCU is now ready for operation.

Communications Failure

If an attempt to communicate with the XMT868 does not result in a proper connection with the RCCU, and error message such as the following appears:



At this display, press [F1] to try again or press [F2] to quit.

Make sure:

- the RCCU battery is not weak;
- the windows on both the RCCU and the XMT868 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 Chapter 4, *Parts Replacement*, in the *Service Manual* 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 1-1 on page 1-3) 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 ACTIV, SYSTM, and PIPE sub-menus of the CHx menu and the GLOBL-SYSTM menu are required for basic operation of the Model XMT868. 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 sub-menus.

Note: *Because it is so essential, instructions for programming* the ACTIV, SYSTM, PIPE and GLOBL-SYSTM *sub-menus are also included in the* Startup Guide. *If that programming has already been completed, skip those sections in this chapter.*

The User Program (cont.)

Except for the three sub-menus noted above, it is not necessary to program the Model XMT868 flowmeter in any particular order. Therefore, the sections of this chapter need not be completed in sequence. Enter the user program as described in *Accessing the User Program* below and proceed immediately to any section of interest.

Accessing the User Program

To access the XMT868'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 1-2 below). The XMT868 has various lights to indicate its communication status:

- The green light in the window glows continuously to indicate that the XMT868 is receiving power.
- 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 XMT868 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.

Note: *If the red (Fault) light blinks once or flickers briefly, a flow fault is indicated. This is unrelated to the RCCU, and the problem must be resolved by referring to Chapters 2 and 3,* Error Codes *and* Diagnostics, *in the* Service Manual.

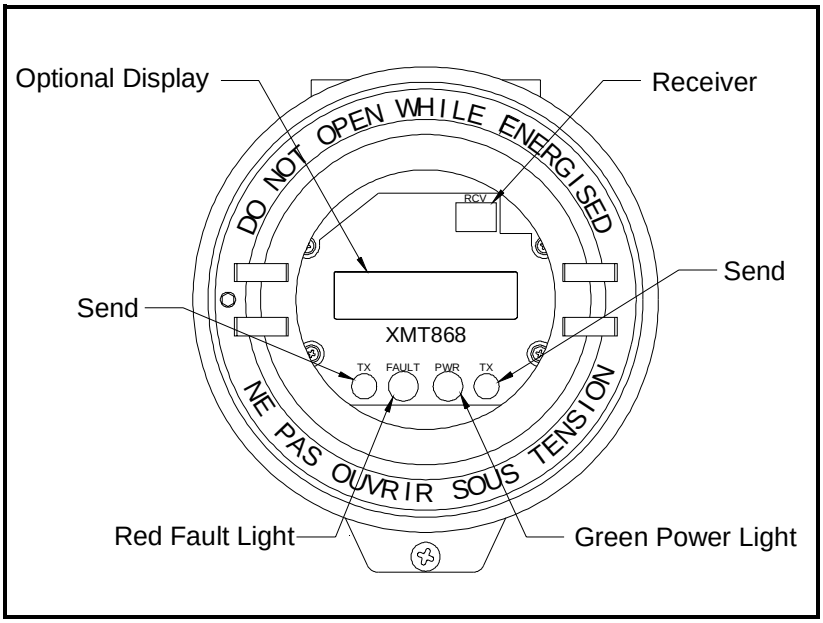
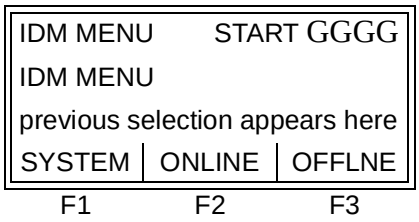


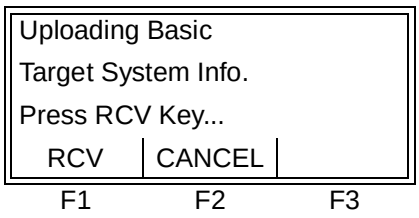
Figure 1-2: XMT868 Front Window

Accessing the User Program (cont.)



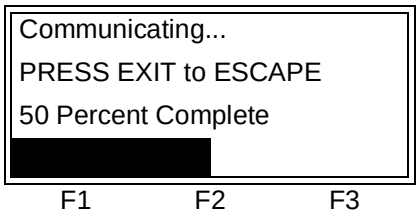
At this display, press [F2] to select ONLINE.

IMPORTANT: *Always keep the RCCU pointed directly at the XMT868 while communicating with the meter.*

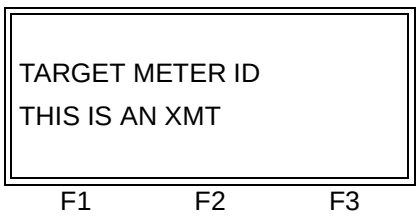


Press the [F1] key to select RCV and begin communications, or press [F2] to select CANCEL and abort the operation.

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

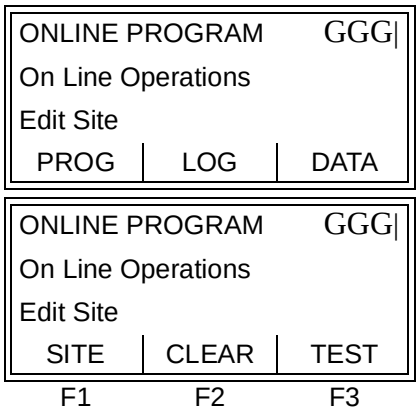


This display shows the status of the communication attempt.



When the connection is established, this message appears briefly and is then replaced by the following display.

Accessing the User Program (cont.)



The XMT868 is now ready to be programmed. To begin programming, press [F1] to select PROG.

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

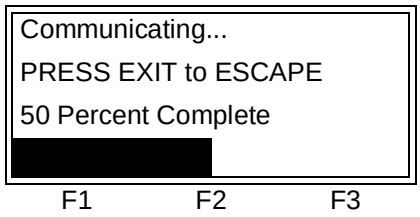
Note: *The arrow in the upper right corner of the display indicates that additional options are available. These are accessed by pressing the* [◁] *or* [▷] *key.*

Proceed to the appropriate section for further instructions on using the PROG menu.

The PROG Menu

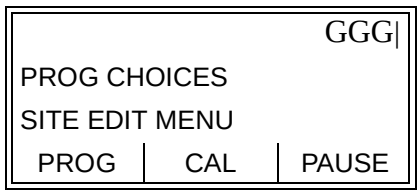
After pressing [ENT] or one of the [Fx] keys on the RCCU, the following screen appears:

IMPORTANT: *Be sure to record all programming data in Appendix B,* Data Records.

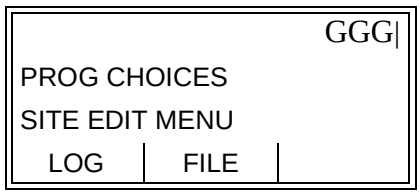


This display shows the status of the communication attempt.

IMPORTANT: *Wait for the RCCU and the XMT868 to communicate and for the next prompt to appear before pressing any other keys. Although the above display always appears, it will not be specifically shown in this manual after every selection entry.*

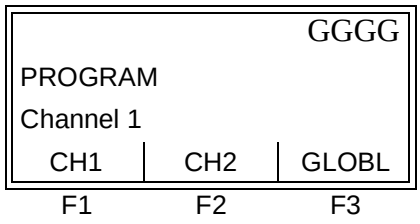


Press [F1] to enter the PROG menu.



(These additional options, which only appears if a data logging option card is installed in Slot 2, are accessed by pressing the [◁] or [▷] key.)

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 procedures presented for Channel 1.*

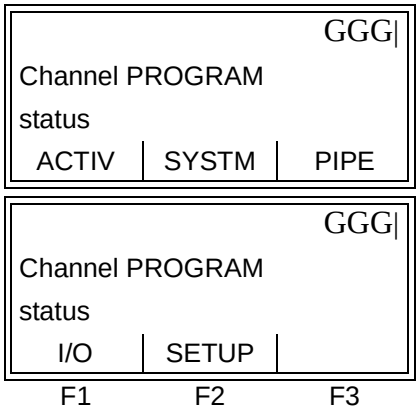


Press the [Fx] under the desired option to select it. (Note that the CH2 option does not appear for a 1-Channel meter.)

Based on the selection made at the above prompt, proceed to the appropriate section for instructions.

The CHx Menu

Upon entering the CHx menu, where x = 1 or 2, the following prompt appears:

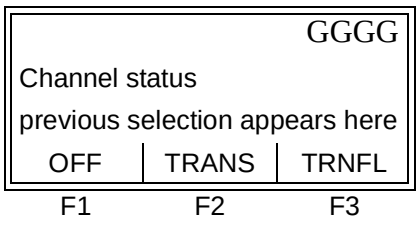


Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired option to select it.

Proceed to the appropriate sub-section for further instructions.

The ACTIV Sub-Menu

The ACTIV sub-menu 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 XMT868. While following the programming instructions, refer to Figure A-1 on page A-1 of Appendix A, *Menu Maps*. Enter the ACTIV sub-menu by pressing [F1] at the Channel PROGRAM prompt shown above:

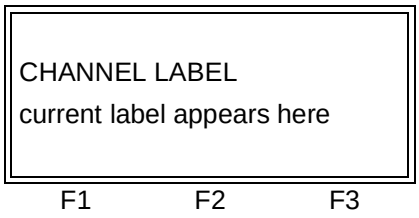


Press the appropriate function to make a selection.
Note: All of the possible selections are shown to the left; however, the function key assignments will be different depending on the XMT868 options installed.

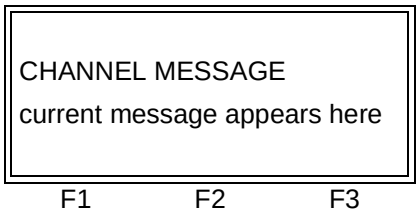
After responding to the previous prompt, the meter returns to the Channel PROGRAM prompt (see above). To leave the *User Program*, press the [EXIT] key twice.

The CHx-SYSTM Sub-Menu

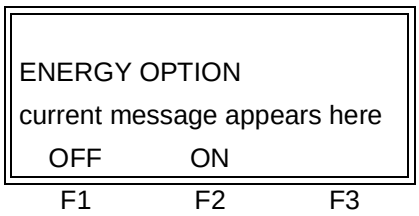
While following the programming instructions, refer to Figure A-1 on page A-1 of Appendix A, *Menu Maps*. Enter the SYSTM sub-menu by pressing [F2] at the Channel PROGRAM prompt on page 1-11:



Key in the desired CHANNEL LABEL (up to 9 characters) and press [ENT].

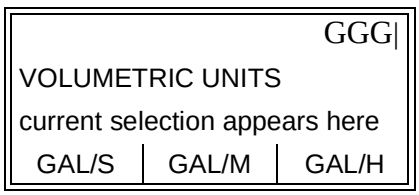


Key in the desired CHANNEL MESSAGE (up to 21 characters) and press [ENT]. (For a 1-Channel meter, this prompt is called SITE MESSAGE.)

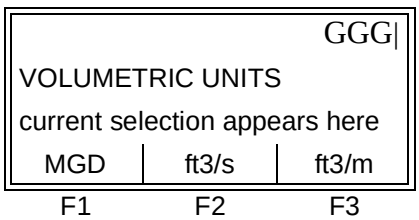


For the ENERGY OPTION, press [F1] for OFF, or [F2] for ON.

Refer to Figure A-1 on page A-1 if you selected OFF or refer to Figure A-2 on page A-2 if you selected ON of Appendix A, *Menu Maps*.



Press [F1]-[F3] to select the desired volumetric units for the flow rate display.



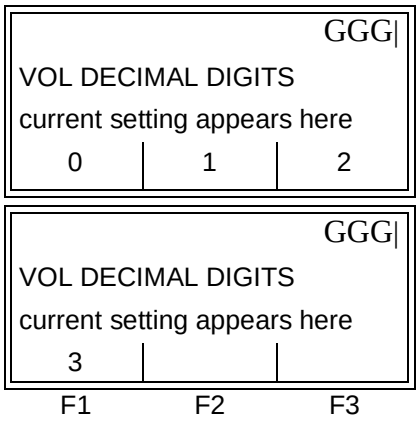
Use the [◁] and [▷] keys to access the additional choices shown.

The abbreviations and definitions of all the available volumetric and totalizer units are shown in Table 1-2 on page 1-13.

The CHx-SYSTM Sub-Menu (cont.)

Table 1-2: Available Volumetric Units

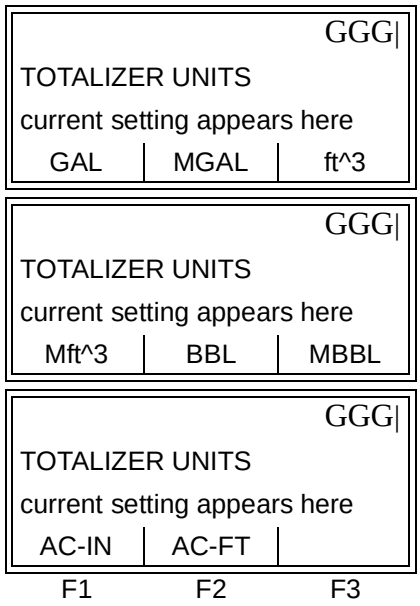
English	Metric
GAL/S = gallons/second	L/S = liters/second
GAL/M = gallons/minute	L/M = liters/minute
GAL/H = gallons/hour	ML/D = million liters/day
MGD = million gallons/day	m^3/s = cubic meters/second
ft3/s = cubic feet/second	m^3/m = cubic meters/minute
ft3/m = cubic feet/minute	m^3/h = cubic meters/hour
ft3/h = cubic feet/hour	m^3/d = cubic meters/day
Mf3/d = millions cubic feet/day	Mm^3/d = million cubic meters/day
BBL/S = barrels/second	BBL/S = barrels/second
BBL/M = barrels/minute	BBL/M = barrels/minute
BBL/D = barrels/day	BBL/H = barrels/hour
MBBL/D = millions barrels/day	MBL/D = million barrels/day
A-I/S = acre-inches/second	
A-I/M = acre-inches/minute	
A-I/H = acre-inches/hour	
A-I/D = acre-inches/day	
A-F/S = acre-feet/second	
A-F/M = acre-feet/minute	
A-F/H = acre-feet/hour	
A-F/D = acre-feet/day	



Press [F1]-[F3] to select the desired number of digits to the right of the decimal point in the volumetric flow rate display.

Use the [◁] and [▷] keys to access the additional choice shown.

The CHx-SYSTM Sub-Menu (cont.)



Press [F1]-[F3] to select the desired units for the totalized flow rate display.

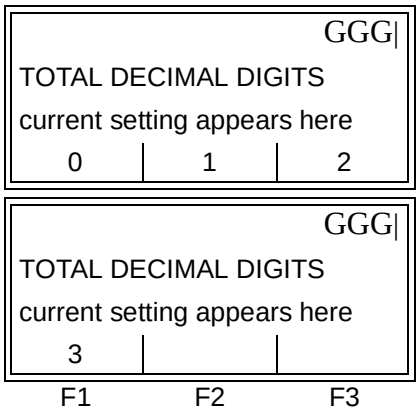
Use the [◁] and [▷] keys to access the additional choices shown.

The abbreviations and definitions of all the available volumetric and totalizer units are shown in Table 1-3 below.

Table 1-3: Totalizer Units

English	Metric
GAL = gallons	L = liters
MGAL = million gallons	ML = megaliters
ft^3 = cubic feet	m^3 = cubic meters
Mft^3 = million cubic feet	Mm^3 = million cubic meters
BBL = barrels	BBL = barrels
BBL = million barrels	MBBL = million barrels
AC-IN = acre-inches	
AC-FT = acre-feet	

The CHx-SYSTM Sub-Menu (cont.)

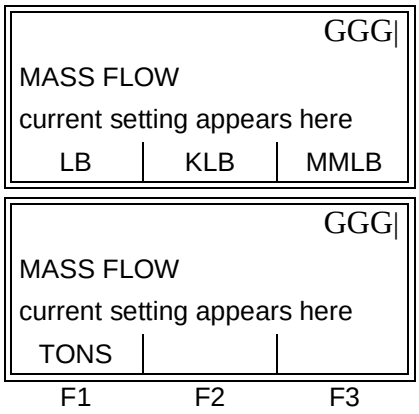


Press [F1]-[F3] to select the desired number of digits to the right of the decimal point in the totalized flow rate display.

Use the [◁] and [▷] keys to access the additional choice shown.

Do one of the following:

- MASS FLOW is ON - proceed to the MASS FLOW prompt below.
- MASS FLOW is OFF and
  - ENERGY OPTION is ON - proceed to the POWER prompt on page 1-18.
  - ENERGY OPTION is OFF - the meter returns to the Channel PROGRAM prompt shown on page 1-11. To leave the *User Program*, press the [EXIT] key twice.



Press [F1]-[F3] to select the desired mass flow units for flow rate display.

Use the [◁] and [▷] keys to access the additional choice shown.

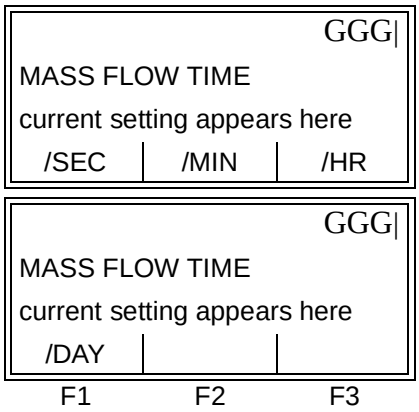
Note: *The prompt above shows English units, as an example. If Metric units were specified, these appear instead.*

The CHx-SYSTM Sub-Menu (cont.)

The abbreviations and definitions of the available mass flow units are shown in Table 1-4 below. The choices shown in the above prompt are determined by the selection made at the SYSTEM UNITS prompt.

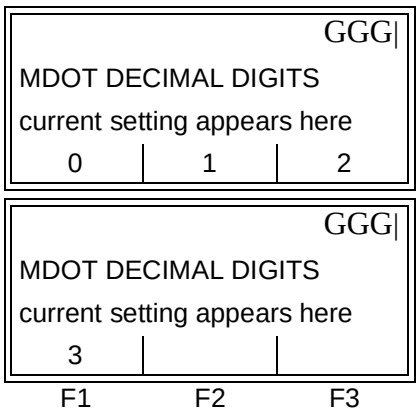
Table 1-4: Available Mass Flow Units

English	Metric
LB = Pounds	KG = Kilograms
KLB = Thousands of LB	TONNE = Metric Tons (1000 KG)
MMLB = Millions of LB	
TONS = Tons (2000 LB)	



Press [F1]-[F3] to select the desired time units for the mass flow rate display.

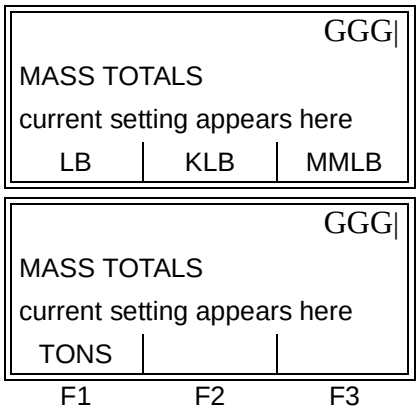
Use the [◁] and [▷] keys to access the additional choice shown.



Press [F1]-[F3] to select the desired number of digits to the right of the decimal point in the mass flow rate display.

Use the [◁] and [▷] keys to access the additional choice shown.

The CHx-SYSTM Sub-Menu (cont.)

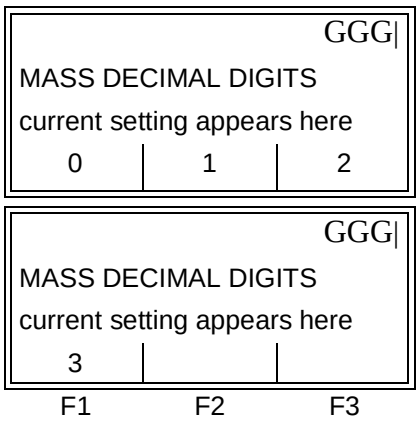


Press [F1]-[F3] to select the desired units for the totalized mass flow rate display.

Use the [◁] and [▷] keys to access the additional choice shown.

Note: *The prompt above shows English units, as an example. If Metric units were specified, these appear instead.*

The available mass flow units are shown in Table 1-4 on page 1-16. The choices shown in the above prompt are determined by the selection made at the SYSTEM UNITS prompt.



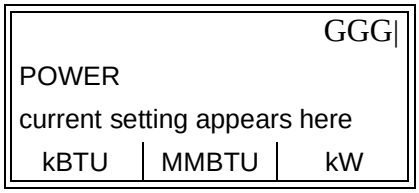
Press [F1]-[F3] to select the desired number of digits to the right of the decimal point in the totalized mass flow display.

Use the [◁] and [▷] keys to access the additional choice shown.

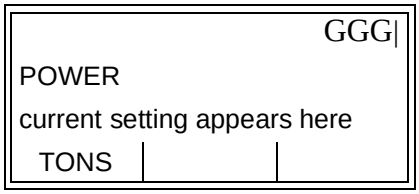
The CHx-SYSTM Sub-Menu (cont.)

If the ENERGY OPTION is OFF, the meter returns to the Channel PROGRAM prompt shown on page 1-11. To leave the *User Program*, press the [EXIT] key twice.

If the ENERGY OPTION is ON, the following series of prompts appear.



Press [F1]-[F3] to select the desired power units.

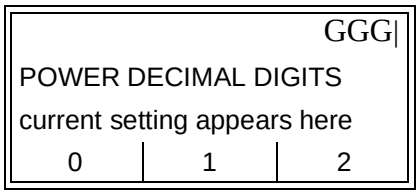


Use the [◁] and [▷] keys to access the additional choice shown.

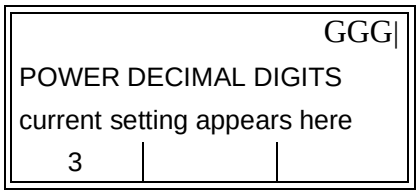
The abbreviations and definitions of all the available power units are shown in Table 1-5 below.

Table 1-5: Available Power Units

English	Metric
kBTU/hr = Thousands of BTUs/ hour	kCAL/sec = Kilocalories/sec
MMBTU/hr = Millions of BTUs/hour	MCal/sec = Megacalories/sec
kWATT = Kilowatt	kWATT = Kilowatt
TONS = Tons (2000 LB)	MWATT - Megawatt

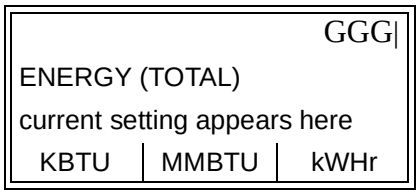


Press [F1]-[F3] to select the desired power decimal digits.

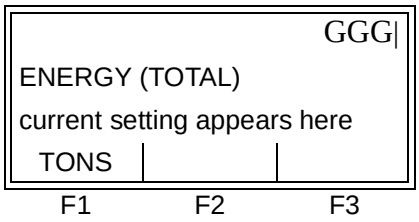


Use the [◁] and [▷] keys to access the additional choice shown.

The CHx-SYSTM Sub-Menu (cont.)



Press [F1]-[F3] to select the desired energy units.

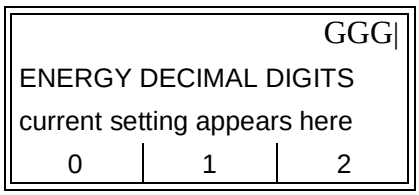


Use the [◁] and [▷] keys to access the additional choice shown.

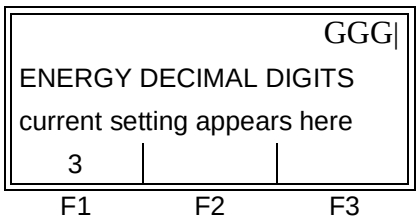
The abbreviations and definitions of all the available total energy units are shown in Table 1-6 below.

Table 1-6: Available Total Energy Units

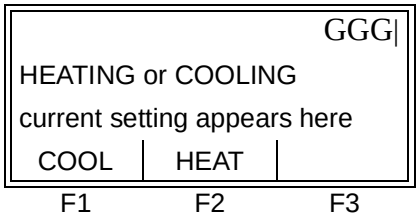
English	Metric
kBTU/hr = Thousands of BTUs/hr	kCalories = Kilocalories
MMBTU/hr = Millions of BTUs/ hour	MCalories = Megacalories
kWATT-Hr = Kilowatt-hour	kWATT-Hr = Kilowatt-hour
TONS = Tons (2000 LB)	MWATT-Hr - Megawatt-hour



Press [F1]-[F3] to select the desired energy decimal digits.

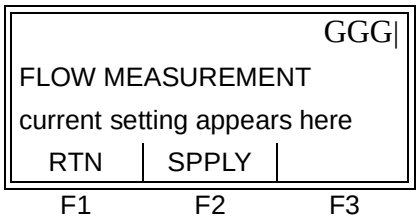


Use the [◁] and [▷] keys to access the additional choice shown.



Press [F1] for a cooling system, or [F2] for a heating system.

The CHx-SYSTM Sub-Menu (cont.)

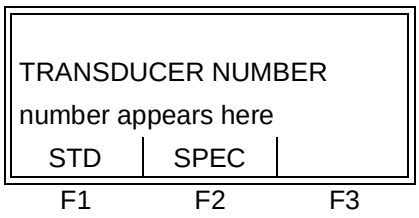


This prompt asks whether you want to measure flow at the point of return (where the liquid exits) or at the point of supply (where the liquid enters). Press [F1] for return, or [F2] for supply.

The display now returns you to the top menu, ACTIV, SYSTM, PIPE, I/O and SETUP.

The PIPE Sub-Menu

Enter the transducer and pipe parameters via the PIPE sub-menu. While following the programming instructions, refer to Figure A-1 on page A-1 of Appendix A, *Menu Maps*. Enter the PIPE sub-menu by pressing [F3] at the Channel PROGRAM prompt shown on page 1-11.



For a standard transducer, press [F1], enter the number engraved on the transducer head, and press [ENT]. If there is no number engraved on the transducer head, press [F2] and then press [ENT].

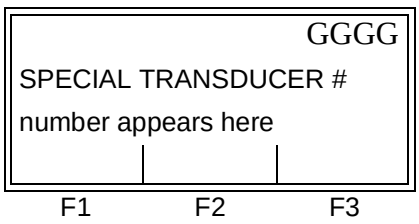
IMPORTANT: *Special transducers, which have no engraved number on the head, are rarely used. Examine the transducer head carefully for a number.*

To program the XMT868 for use with the type of transducer being used, do one of the following:

- Special transducers - proceed to the section below.
- Standard wetted transducers - proceed to the PIPE OD prompt on page 1-23.
- Standard clamp-on transducers - proceed to the PIPE MATERIAL prompt on page 1-22.

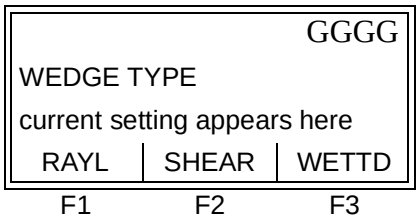
Special Transducers

The next three prompts apply only to special transducers. If a standard clamp-on transducer is being used, skip ahead to the PIPE OD prompt on page 1-23.

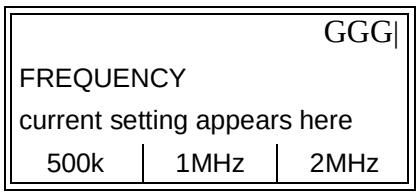


Assign a number between 91 and 99 to the special transducer and press [ENT].

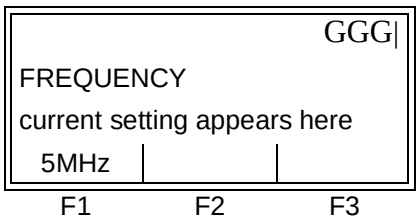
Special Transducers (cont.)



Press [F1]-[F3] to select the wedge type.

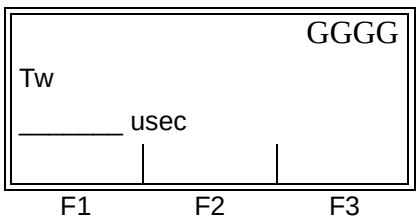


Press [F1]-[F3] to select the frequency of the special transducer.



Use the [◁] and [▷] keys to access the additional choices shown.

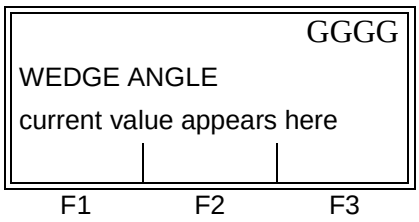
IMPORTANT: *The frequency is required to transmit an excitation voltage at the transducer's natural frequency.*



Enter the special transducer time delay value supplied by GE Panametrics and press [ENT].

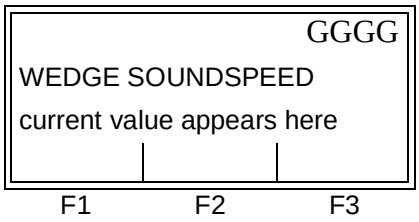
Tw is the time required for the transducer signal to travel through the transducer and its cable. This time delay must be subtracted from the transit times of the upstream and downstream transducers to ensure an accurate measurement.

The following two prompts only appear if special clamp-on transducers are being used. If special wetted transducers are being used, proceed to PIPE OD on page 1-23.



Enter the wedge angle of the transducer and press [ENT].

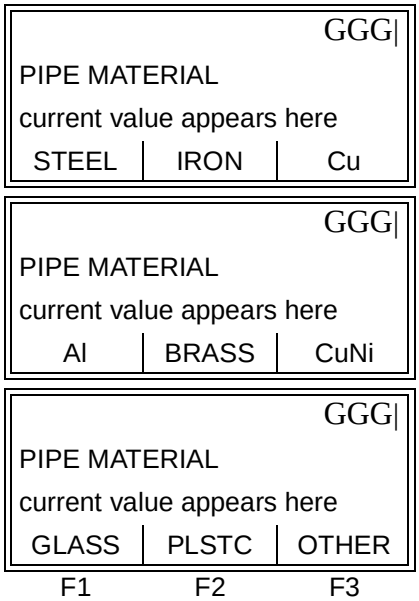
Special Transducers (cont.)



Enter the wedge sound speed of the transducer and press [ENT].

Pipe Material

If a standard clamp-on transducer is being used, the programming sequence should be rejoined here.



Press [F1]-[F3] to select the appropriate pipe material and press [ENT].

Use the [◁] and [▷] keys to access the additional choice shown.

Some of the pipe materials above require additional selections. See a complete list of choices in Table 1-7.

Table 1-7: Pipe Material Choices

Material	Types
STEEL	CARBON - Carbon Steel SS - Stainless Steel
IRON	DUCT - Ductile Iron CAST - Cas Iron
Cu (Copper)	no additional selection required
Al (Aluminum)	no additional selection required
BRASS	no additional selection required
CuNi (Copper Nickel)	30%Ni - 70/30 Copper/Nickel 10%Ni - 90/10 Copper/Nickel
GLASS	PYREX FLINT CROWN

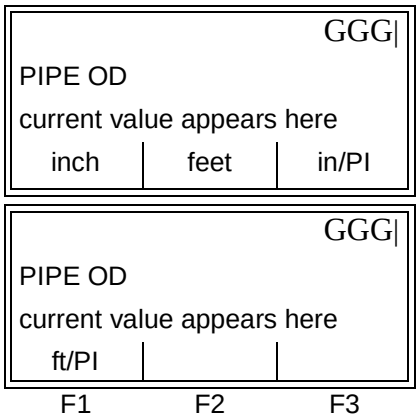
Pipe Material (cont.)

Table 1-7: Pipe Material Choices

Material	Types
PLSTC (Plastic)	NYLON PLOYE - Polyethylene POLYP - Polypropylene PVC - Polyvinyl Chloride ACRYL - Acrylic
OTHER	Enter the soundspeed of the pipe material and press [ENT]. If the soundspeed is unknown, refer to the *Sound Speeds and Pipe Size Data* manual (914-004).

Pipe OD

The programming sequence should be rejoined here for all transducers.



Press [F1]-[F3] to select the appropriate units and enter the known pipe outside diameter or circumference and press [ENT].

Use the [◁] and [▷] keys to access the additional choice shown.

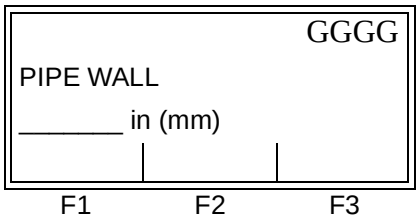
Note: *The prompt above shows English units, as an example. Refer to Table 1-8 for a list of English and metric units.*

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).

Table 1-8: Available Pipe OD Units

English	Metric
inch = pipe OD in inches	mm = pipe OD in millimeters
feet = pipe OD in feet	m = pipe OD in meters
in/PI = pipe circumference in inches	mm/PI = pipe circumference in millimeters
ft/PI = pipe circumference in feet	m/PI = pipe circumference in meters

Pipe OD (cont.)



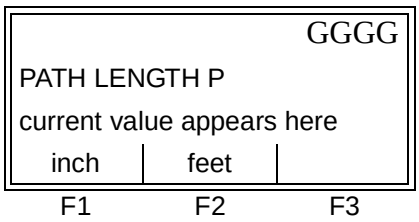
Enter the known thickness of the pipe wall and press [ENT].

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).

Proceed with one of the following:

- All wetted transducers - proceed to the following prompt, PATH LENGTH below.
- All clamp-on transducers - proceed to LINING on page 1-25.

Path Length



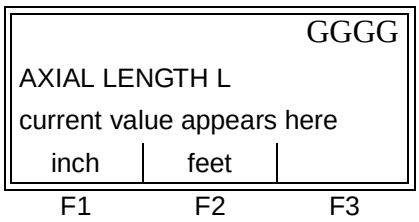
Press [F1] or [F2] to select the desired units. Then, enter the path length of the ultrasonic signal and press [ENT].

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.*

The next series of prompts differ depending on the measurement mode:

- For Transit-Time mode - proceed to AXIAL LENGTH L below.
- For TransFlection mode - proceed to TRANSDUCER ANGLE on the next page.

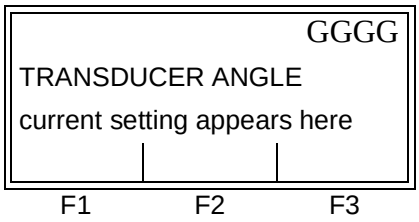
Axial Length L



Press [F1] or [F2] to select the desired units. Then, enter the axial length of the ultrasonic signal and press [ENT].

Proceed to TRACKING WINDOWS on page 1-26.

Transducer Angle

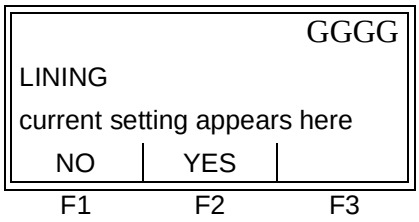


Enter the transducer angle and press [ENT].

Proceed to one of the following sections:

- For Transit-Time mode - proceed to TRACKING WINDOWS on page 1-26.
- For TransFlection mode - proceed to FLUID TYPE on page 1-27.

Lining

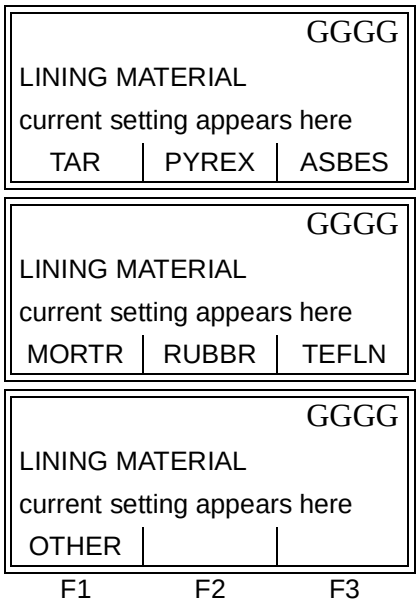


Press [F1] for NO. Press [F2] for YES and proceed to the prompt below.

If you selected YES, proceed to the following prompt on the next page. If you selected NO at LINING, proceed to one of the following sections:

- For Transit-Time mode - proceed to TRACKING WINDOWS on page 1-26.
- For TransFlection mode - proceed to FLUID TYPE on page 1-27.

Lining (cont.)



Press [F1]-[F3] to select the desired lining material.

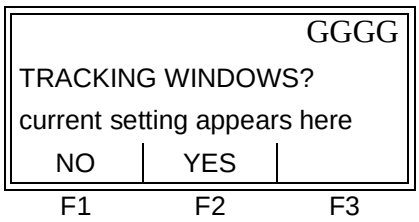
Use the [◁] and [▷] keys to access the additional choices shown.

If OTHER is selected, enter the lining sound speed, press [ENT]; then enter the lining thickness and press [ENT].

Proceed to one of the following sections:

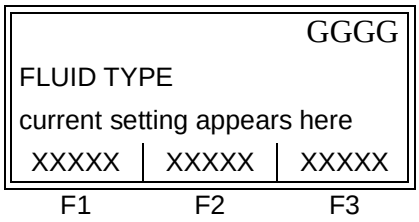
- For Transit-Time mode - proceed to TRACKING WINDOWS below.
- For TransFlection mode - proceed to FLUID TYPE on the following page.

Tracking Windows



Press [F1] for NO. Press [F2] for YES.

Fluid Type



Use the [◁] and [▷] keys to access the additional choices. Then, press [F1]-[F3] to select the desired fluid type.

The selections for fluid type vary depending on whether:

- the ENERGY OPTION is ON or OFF; and
- the TRACKING WINDOW is enabled or disabled.

Refer to Table 1-9 below if ENERGY OPTION is OFF, or refer to Table 1-10 on the next page if ENERGY OPTION is ON.

Note: *Some of the fluid types may require additional selections as shown in the following tables.*

Table 1-9: Fluid Types for ENERGY OFF

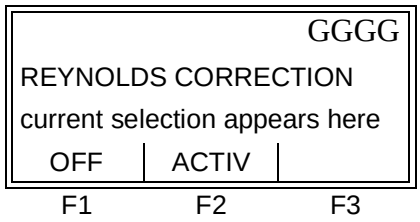
Tracking Windows =			
NO	**Additional Selections**	**YES**	**Additional Selections**
WATER	Select NORML or SEA and press [ENT]. If NORML is selected, enter Water Temperature and press [ENT].	W100	No additional selections required.
OIL	Select LUBE or CRUDE and press [ENT].	W260	No additional selections required.
METH	No additional selections required.	OIL	No additional selections required.
ETH	Enter the Fluid Sound-speed and press [ENT].	OTHER	Enter the Minimum Soundspeed and press [ENT]. Then enter the Maximum Soundspeed and press [ENT].
LN2	No additional selections required.		
FREON	No additional selections required.		
OTHER	Enter the fluid sound-speed and press [ENT].		

Fluid Type (cont.)

Table 1-10: Fluid Types for ENERGY ON

Tracking Windows =			
NO	**Additional Selections**	**YES**	**Additional Selections**
WATER	Enter the Water Temperature and press [ENT].	W260	No additional selections required.
MIXED	Enter the Fluid Sound-speed and press [ENT]. Then enter the Percentage of Water and press [ENT].	MIXED	Enter the Percentage of Water and press [ENT].
OTHER	Enter the Fluid Sound-speed and press [ENT].	OTHER	Enter the Minimum Soundspeed and press [ENT]. Then enter the Maximum Sound-speed and press [ENT].

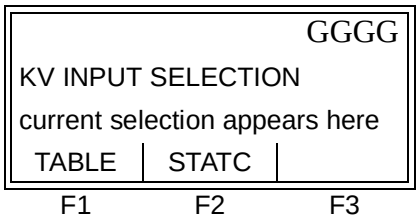
Reynolds Correction



Press [F1] or [F2] to select the Reynolds Correction status.

- If OFF is selected, enter the Calibration Factor and press [ENT]. Then, proceed to one of the following sections:
  - For Clamp-on Transducers -
    - using Transit-time mode - proceed to NUMBER OF TRAVERSES on the next page.
    - using TransFlection mode - proceed to DEPTH OF REFLECTOR on page 1-30.
  - For Wetted Transducers - the display now takes you back to the top menu, ACTIV, SYSTM, PIPE, I/O, SETUP. At this point, you can proceed programming in this sub-menu as desired. To leave the Channel PROGRAM sub-menu, press the [EXIT] key on the RCCU keypad. To complete setting up the meter, you must enter data in the GLOBL-SYSTM sub-menu as described on page 1-52.
- If ACTIV is selected, proceed to KV INPUT SELECTION on the next page.

KV Input Selection



Press [F1] or [F2] to select TABLE or STATC.

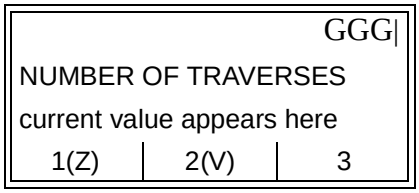
If TABLE is selected, enter the Calibration Factor and press [ENT].

If STATC is selected, enter the Kinematic Viscosity and press [ENT]. Then enter the Calibration Factor and press [ENT].

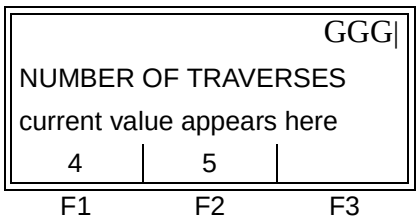
Proceed to one of the following sections:

- For Clamp-on Transducers -
  - using Transit-time mode - proceed to the NUMBER OF TRAVERSES prompt below.
  - using TransFlection mode - proceed to DEPTH OF REFLECTOR prompt on the next page.
- For Wetted Transducers - the display now takes you back to the top menu, ACTIV, SYSTM, PIPE, I/O, SETUP. At this point, you can proceed programming in this sub-menu as desired. To leave the Channel PROGRAM sub-menu, press the [EXIT] key on the RCCU keypad. To complete setting up the meter, you must enter data in the GLOBL-SYSTM sub-menu as described on page 1-52.

Number of Traverses

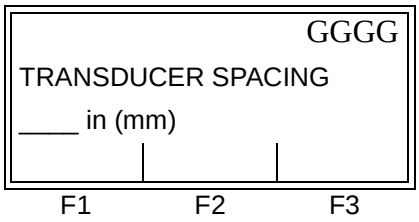


Press [F1]-[F3] to select the appropriate number of traverses.



Use the [◁] and [▷] keys to access the additional choice shown.

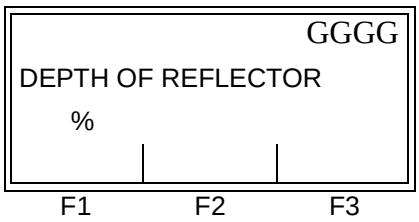
Transducer Spacing



Enter the value for the transducer spacing and press [ENT].

The display now takes you back to the top menu, ACTIV, SYSTM, PIPE, I/O, SETUP. At this point, you can proceed programming in this sub-menu as desired. To leave the Channel PROGRAM sub-menu, press the [EXIT] key on the RCCU keypad. To complete setting up the meter, you must enter data in the GLOBL-SYSTM sub-menu as described on page 1-52.

Depth of Reflector



Enter the value for the Depth of Reflector and press [ENT].

The Depth of Reflector specifies where in the pipe the flowmeter will look for the reflected transducer signal. The default value is 50%, which places the measurement location at the center of the pipe. This setting is optimal for most applications; however, you may want to decrease this value for larger pipes to improve signal strength. When you decrease this setting, the measurement location moves closer to the wall of the pipe, decreasing the path length and reducing signal attenuation.

Note: *GE Panametrics recommends activating the Reynolds Correction Factor when the Depth of Reflector is set to 50%. The Reynolds Correction Factor should be deactivated when the Depth of Reflector is set to any other value.*

The display now takes you back to the top menu, ACTIV, SYSTM, PIPE, I/O, SETUP. At this point, you can proceed programming in this sub-menu as desired. To leave the Channel PROGRAM sub-menu, press the [EXIT] key on the RCCU keypad. To complete setting up the meter, you must enter data in the GLOBL-SYSTM sub-menu as described on page 1-55.

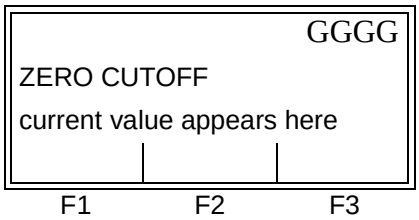
The I/O Sub-Menu

Enter the zero cutoff value and set up the temperature, pressure and quality inputs via the I/O sub-menu. While programming these parameters, refer to Figure A-3 on page A-3 of Appendix A, *Menu Maps*. Enter the I/O sub-menu by pressing [▷] + [F1] at the Channel PROGRAM prompt shown on page 1-11.

IMPORTANT: *If an option card in* Slot 1 *fails to appear in this menu, it may be turned* OFF. *See the* GLOBL-I/O-OPTN *section on page 1-55 for setup instructions.*

Zero Cutoff Value

Near a zero flow rate, the Model XMT868'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 in the following steps:



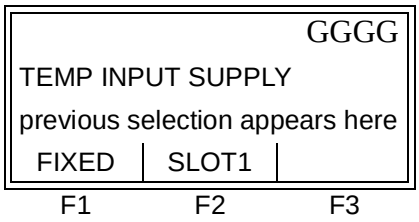
Enter a value from 0 to 1 ft/sec (0 to 0.30 m/sec) for the zero cutoff and press [ENT]. The recommended setting is 0.1 ft/sec (0.03 m/sec).

Proceed with one of the following:

- If the ENERGY OPTION is ON, refer to TEMP INPUT on the following page.
- If the ENERGY OPTION is OFF, the display now takes you back to the top menu, ACTIV, SYSTM, PIPE, I/O, SETUP. At this point, press the [EXIT] key on the RCCU keypad to leave the Channel PROGRAM sub-menu, and proceed with programming as desired.

Temperature Input

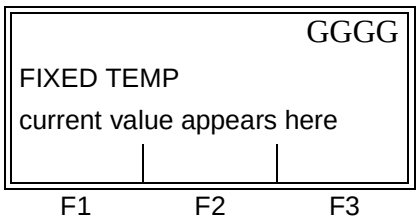
The Model XMT868 can use either a fixed temperature value or a live temperature input to calculate energy. Complete the following steps to configure this input:



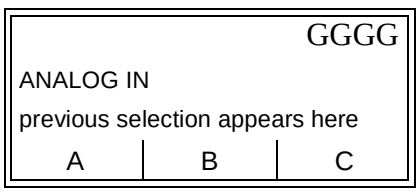
Press [F1] to enter a constant temperature value or press [F2] to select the output in Slot 1 that will provide the live temperature input for the supply.

Note: *If Slot 1 contains an activated option card with an analog input assigned to* TEMP *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.*

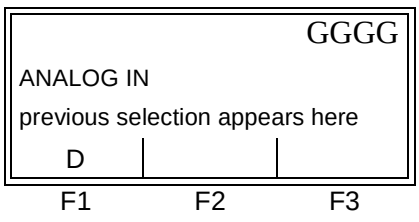
One of the following two prompts will appear, depending on the selection made at the previous prompt.



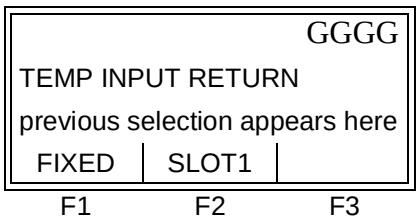
[IF FIXED WAS CHOSEN]
Enter the known fixed process temperature and press [ENT]. The meter will only accept values from –328° to 1832°F (-200° to 1000°C).



[IF SLOT 1 WAS CHOSEN]
Press [F1] -[F3] to select the desired temperature input.



Use the [◁] and [▷] keys to access the additional choice shown.

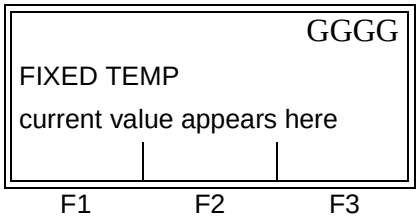


Press [F1] to enter a constant temperature value or press [F2] to select the output in Slot 1 that will provide the live temperature input for the return.

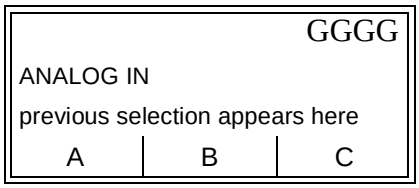
Temperature Input (cont.)

Note: *If Slot 1 contains an activated option card with an analog input assigned to* TEMP *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.*

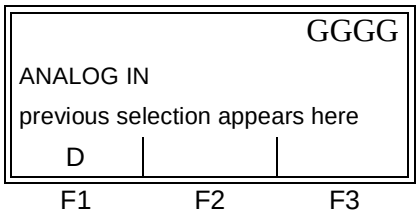
One of the following two prompts will appear, depending on the selection made at the previous prompt.



[IF FIXED WAS CHOSEN]
Enter the known fixed process temperature and press [ENT]. The meter will only accept values from –328° to 1832°F (-200° to 1000°C).



[IF SLOT 1 WAS CHOSEN]
Press [F1] -[F3] to select the desired temperature input.



Use the [◁] and [▷] keys to access the additional choice shown.

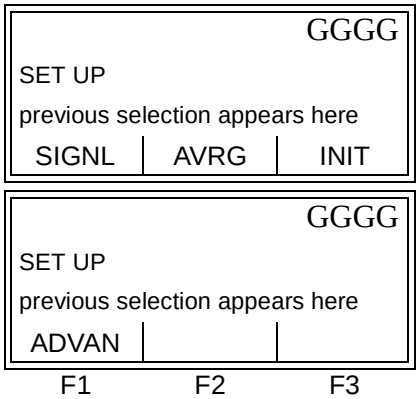
The display now takes you back to the top menu, ACTIV, SYSTM, PIPE, I/O, SETUP. At this point, you can proceed programming in this sub-menu as desired. To leave the Channel PROGRAM sub-menu, press the [EXIT] key on the RCCU keypad. To complete setting up the meter, you must enter data in the GLOBL-SYSTM sub-menu as described on page 1-52.

The Setup Sub-Menu

The signal limits and response times for the Model XMT868 are specified via the SETUP sub-menu. While following the programming instructions, refer to Figure A-3 on page A-3 of Appendix A, *Menu Maps*. The following three sub-menus are included in this section:

- SIGNL - set the parameters related to the transducer signal
- AVRG - specify the response of the meter to step changes
- INIT - initialize all parameters to default values
- ADVAN - enable mass flow, edit kinematic viscosity vs. sound speed table, activate K factors, and select transmit code length.

Enter the SETUP sub-menu by pressing [▷] + [F2] at the Channel PROGRAM prompt on page 1-11 and complete the following steps:



Press [F1]-[F3] to select the desired SETUP option.

Use the [◁] and [▷] keys to access the additional choice shown.

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

The SIGNL Option

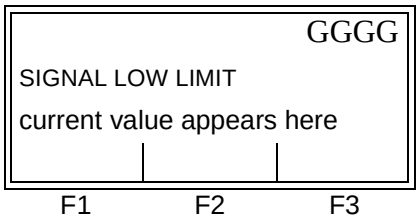
Use this option to set the limits for the incoming signal and other parameters affecting the transducer signal. For example, the programmed signal strength low limit may be used to determine the trigger point for an alarm.

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

The signal options are different depending on the measurement mode being used. Proceed to one of the following sections:

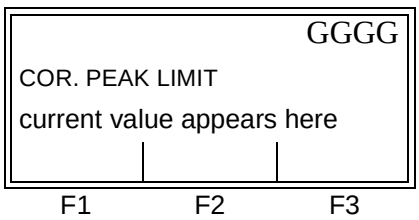
- For Transit-time Mode - refer to *Transit-Time SIGNL Options* below.
- For TransFlection Mode - refer to *TransFlection SIGNL Options* on page 1-41.

Transit-Time SIGNL Options



Press [ENT] to accept the current SIGNAL LOW LIMIT value or enter a new value and press [ENT].

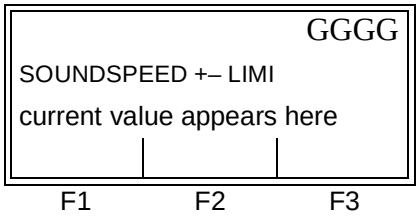
The default value for the above parameter is 20, and values from –20 to 100 are acceptable. The E1: LOW SIGNAL error message appears when the signal strength falls below the programmed SIGNAL LOW LIMIT value. See Chapter 2, *Error Codes,* in the *Service Manual* for a discussion of error codes.



Press [ENT] to accept the current COR. PEAK LIMIT value or enter a new value and press [ENT].

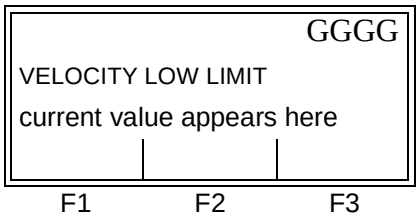
The default value for the above parameter is 100, and values from 0 to 500 are acceptable. The E4: SIGNAL QUALITY error message appears when the signal quality falls below the programmed COR. PEAK LIMIT value. See Chapter 2, *Error Codes,* in the *Service Manual* for a discussion of error codes.

Transit-Time SIGNL Options (cont.)



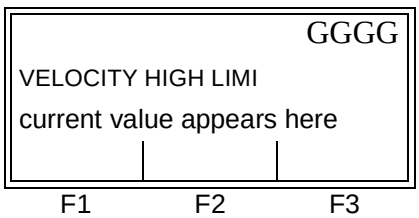
Press [ENT] to accept the current SOUNDSPEED +– LIMIT value or enter a new value and press [ENT].

The default value for the above parameter is 20%, and values from 1% to 50% are acceptable. The E2: SOUNDSPEED error message appears when the calculated fluid soundspeed differs from the fluid soundspeed entered in the CHx-SYSTM menu by more than the programmed SOUNDSPEED +– LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.



Press [ENT] to accept the current VELOCITY LOW LIMIT value or enter a new value and press [ENT].

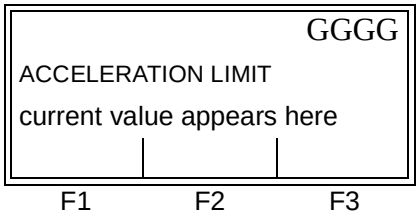
The default value for the above parameter is –150.0 ft/sec. (–46 m/sec.) and values from –500 to 500 ft/sec. (–150 to 150 m/sec.) are acceptable. The E3: VELOCITY RANGE error message appears when the calculated fluid velocity is less than the programmed VELOCITY LOW LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.



Press [ENT] to accept the current VELOCITY HIGH LIMIT value or enter a new value and press [ENT].

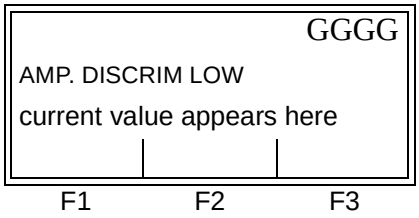
The default value for the above parameter is 150.0 ft/sec (46 m/sec) and –500 to 500 ft/sec (–150 to 150 m/sec) are acceptable values. The E3: VELOCITY RANGE error message appears when the calculated fluid velocity exceeds the programmed VELOCITY HIGH LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.

Transit-Time SIGNL Options (cont.)



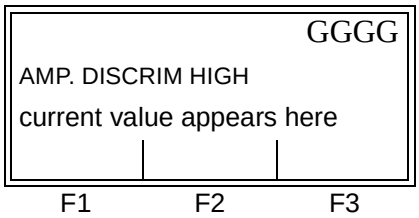
Press [ENT] to accept the current ACCELERATION value or enter a new value and press [ENT].

The default value for the above parameter is 15.0 ft/sec^2 (4.6 m/sec^2) and values from 0 to 100 ft/sec^2 (0 to 30 m/sec^2) are acceptable. 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.



Press [ENT] to accept the current AMP. DISCRIM LOW value or enter a new value and press [ENT].

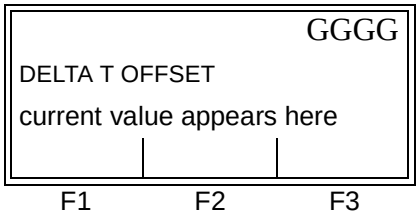
The amplitude discriminator measures the transducer signal received by the Model XMT868. The default value for the above parameter is 14, and values from 0 to 100 are acceptable. The E5: AMPLITUDE error message appears when the amplitude discriminator falls below the programmed AMP. DISCRIM LOW value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.



Press [ENT] to accept the current AMP. DISCRIM HIGH value or enter a new value and press [ENT].

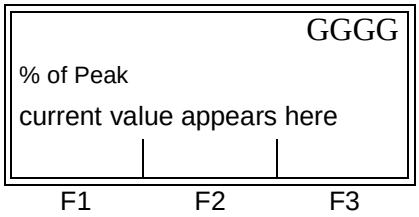
The amplitude discriminator measures the transducer signal received by the Model XMT868. The default value for the above parameter is 34, and values from 0 to 100 are acceptable. The E5: AMPLITUDE error message appears when the amplitude discriminator exceeds the programmed AMP. DISCRIM HIGH value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.

Transit-Time SIGNL Options (cont.)



Press [ENT] to accept the current DELTA T OFFSET value or enter a new value and press [ENT].

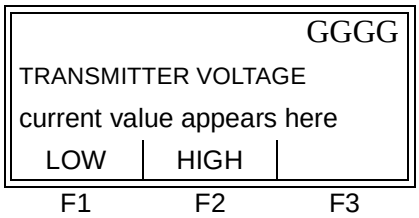
An offset between the upstream and downstream transit times is specified at this prompt. The default value for the above parameter is 0 µsec, and values from –1000 to 1000 µsec are acceptable.



Press [ENT] to accept the current % of Peak value or enter a new value and press [ENT].

The percentage of peak used to calculate the transit times and Delta T is specified at this prompt. The default value for the above parameter is 50%, and values from -100 to 100% are acceptable.

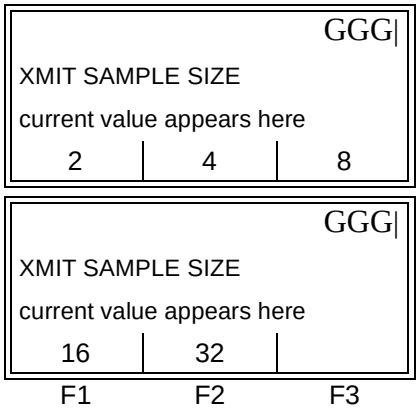
Note: *This setting is a starting point for detecting the signal. The meter will automatically adjust this value if the calculated transit time is unacceptable. You can set the limits for this value using the MIN. PEAK% and MAX. PEAK% discussed on page 1-40.*



Press [F1] to select LOW (default) or [F2] to select HIGH.

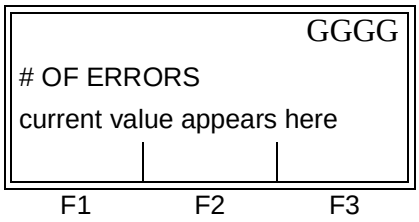
The transmitter voltage can be set to low or high to reduce power consumption. LOW (default setting) is typically selected for smaller pipes with a single-phase fluid. The LOW setting is normally sufficient. HIGH is usually selected for large pipes or pipes with one or more phases.

Transit-Time SIGNL Options (cont.)



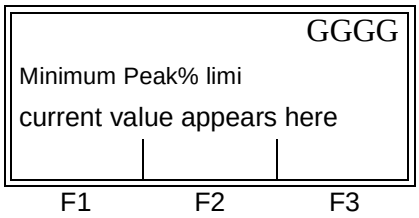
Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired value to select it.

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. The default value for the above parameter is 8 and values of 2, 4, 8, 16 and 32 are acceptable.



Press [ENT] to accept the current # OF ERRORS value or enter a new value (0 to 16) and press [ENT].

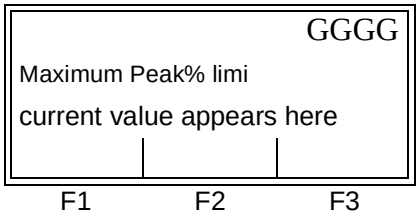
Use this prompt to enter the number of errors the XMT868 can record before it displays an error message. The default value is 8.



Press [ENT] to accept the current minimum percent of peak value or enter a new value and press [ENT].

Use this prompt to enter the minimum percent of peak that the XMT868 can use to measure transit time. The XMT868 accepts values from -100 to 100.

Transit-Time SIGNL Options (cont.)

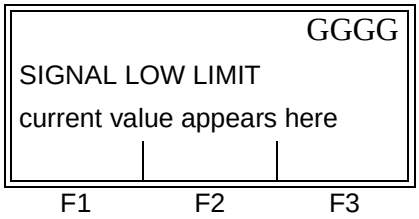


Press [ENT] to accept the current maximum percent of peak value or enter a new value and press [ENT].

Use this prompt to enter the maximum percent of peak that the XMT868 can use to measure transit time. The XMT868 accepts values from -100 to 100.

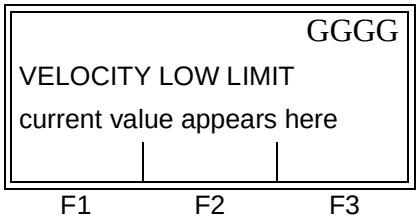
After responding to the above prompt, the meter returns to the SETUP prompt shown on page 1-34. To leave the User Program, press the [EXIT] key twice.

TransFlection SIGNL Options



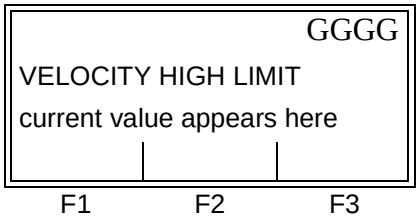
Press [ENT] to accept the current SIGNAL LOW LIMIT value or enter a new value and press [ENT].

The default value for the above parameter is 20, and values from –20 to 100 are acceptable. 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.



Press [ENT] to accept the current VELOCITY LOW LIMIT value or enter a new value and press [ENT].

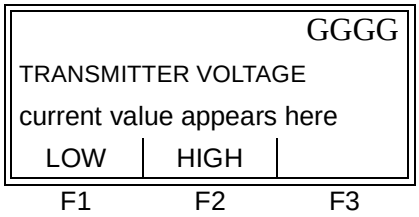
The default value for the above parameter is –150.0 ft/sec (–46 m/sec) and values from –500 to 500 ft/sec (–150 to 150 m/sec) are acceptable. The E3: VELOCITY RANGE error message appears when the calculated fluid velocity is less than the programmed VELOCITY LOW LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.



Press [ENT] to accept the current VELOCITY HIGH LIMIT value or enter a new value and press [ENT].

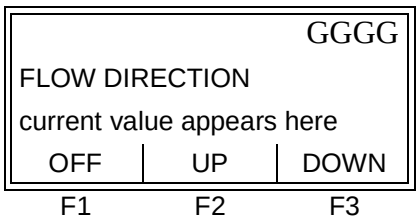
The default value for the above parameter is 150.0 ft/sec (46 m/sec) and –500 to 500 ft/sec (–150 to 150 m/sec) are acceptable values. The E3: VELOCITY RANGE error message appears when the calculated fluid velocity exceeds the programmed VELOCITY HIGH LIMIT value. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of error codes.

TransFlection SIGNL Options (cont.)



Press [F1] to select LOW (default) or [F2] to select HIGH.

The transmitter voltage can be set to low or high to conserve battery life. LOW (default setting) is typically selected for smaller pipes with a single-phase fluid. The LOW setting prolongs the life of the battery. HIGH is usually selected for large pipes or pipes with one or more phases.

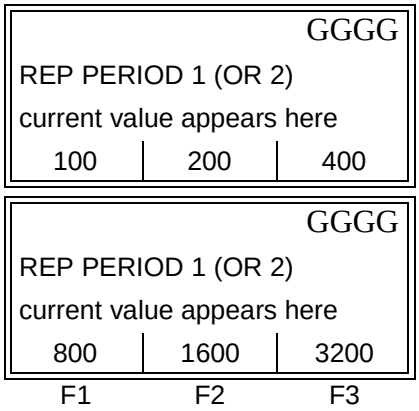


Press [F1], to select absolute flow velocity, press [F2], if the transducers face against the flow, or press [F3], if the transducers face with the flow.

FLOW DIRECTION specifies the direction the fluid is flowing. The XMT868 normally measures the absolute value of flow velocity; however, this prompts lets you to select which direction the transducers face.

Note: *If you select UP or DOWN, the TransFlection measurement range is cut in half from 1 to 30 ft/s (0.3 to 9 m/s) to -15 to 15 ft/s (-4.6 to 4.6 m/s).*

TransFlection SIGNL Options (cont.)

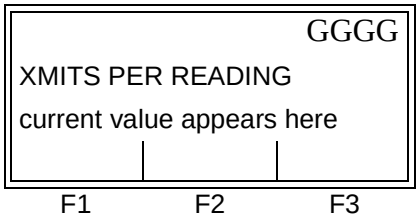


Press [F1]-[F3] to select the appropriate REP PERIOD and press [ENT].

Use the [◁] and [▷] keys to access the additional choice shown.

The repetition period sets the time interval between transmissions. Increasing the repetition period reduces the amount of background noise in the signal at the expense of reducing the maximum measurable flow rate. Since XMT868 adjusts this parameter to optimize the flow measurement (taking flow rate, transducer frequency, and signal characteristics into consideration), you must enter a range. REP PERIOD 1 specifies the shortest period. REP PERIOD 2 specifies the longest period. The default for REP PERIOD 1 is 200 µsecs and 800 µsecs for REP PERIOD 2.

Note: *Once the XMT868 determines the appropriate repetition period within the defined limits, it alternates between transmits at the determined repetition period and a period that is 20% longer. For example, if the XMT868 selects a repetition period of 200 µsecs, it will first transmit a series of bursts at 200 µsecs, followed by a series at 240 µsecs. The XMT868 then compares the receive signals of the first series of burst to the receive signals of the second series. If the two receive signals are too dissimilar, the XMT868 displays an incoherent signal error.*



Press [ENT] to accept the current XMITS PER READING value or enter a new value (1,024 to 30,000) and press [ENT].

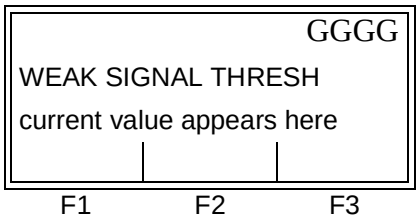
XMITS PER READING specifies the number of transmissions used by the XMT868 to obtain a flow rate measurement. Reducing this number improves the flowmeter's response time, but reduces the flowmeter's sensitivity in poor signal conditions. The default value is 5,000.

TransFlection SIGNL Options (cont.)

Note: *To calculate the response time, divide the XMITS PER READING value by the number of transmissions per second. The number of transmissions per second is calculated by dividing 1 second by the repetition period. For example, if the XMITS PER READING value is 10,000 and the repetition period is 200 μsecs, the number of transmissions per second is 5,000 (1 sec divided by 200 μsec), and the response time is 2 seconds (10,000 xmits/rdg divided by 5,000 xmits/sec). Refer to Table 1-11 for more examples.*

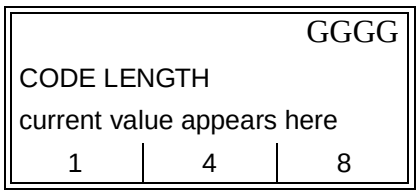
Table 1-11: Examples of Response Time vs. Xmits per Reading and Repetition Rate

Xmits per Reading	Repetition Rates	
	200 μsecs = 5,000 xmits/sec	**800 μsecs = 1,250 xmits/sec**
30,000	6 seconds	24 seconds
5,000	1 second	4 seconds

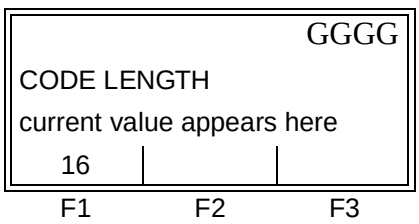


Press [ENT] to accept the current WEAK SIGNAL THRESHOLD value or enter a new value (0 to 100) and press [ENT].

The WEAK SIGNAL THRESHOLD option lets you enter a value for the two-phase threshold. When the two-phase signal falls below the WEAK SIGNAL THRESHOLD value, the E10: WEAK SIGNAL error message appears on the display. The default value is 20.



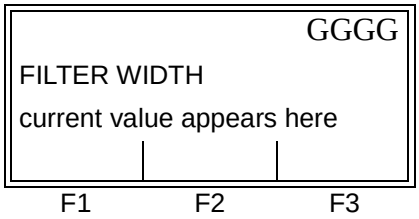
Press [F1]-[F3] to select the appropriate CODE LENGTH and press [ENT].



Use the [◁] and [▷] keys to access the additional choice shown.

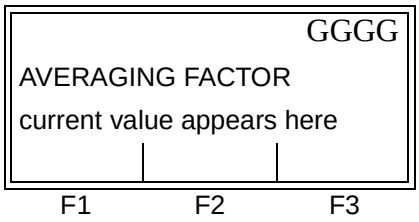
The CODE LENGTH lets you enter a value for the number of pulses per transmission. The default values 8 pulses.

TransFlection SIGNL Options (cont.)



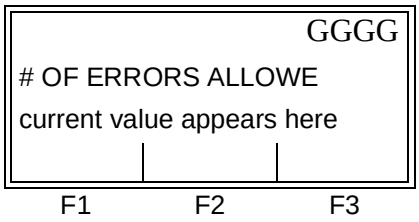
Press [ENT] to accept the current FILTER WIDTH value or enter a new value (8 to 64) and press [ENT].

The FILTER WIDTH lets you enter a number of samples of the digitized receive signal that the XMT868 uses to estimate the arrival of the transducer signal. The default value is 50 (5 cycles).



Press [ENT] to accept the current AVERAGING FACTOR value (0 to 16) or enter a new value and press [ENT].

The AVERAGING FACTOR lets you enter a value for an algorithm that the XMT868 uses to eliminate background noise. The default value is 5.



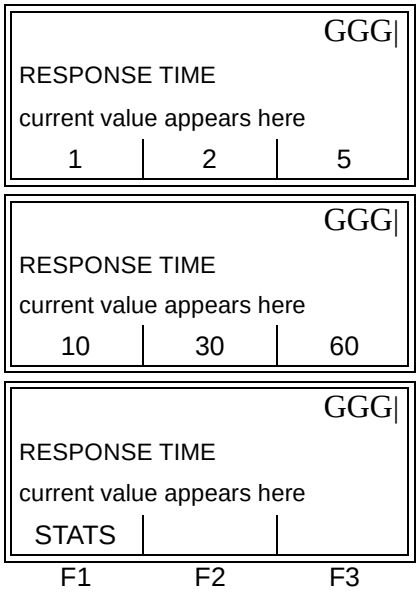
Press [ENT] to accept the current # OF ERRORS value or enter a new value (1 to 16) and press [ENT].

Use this prompt to enter the number of errors the XMT868 can record before it displays an error message. The default value is 8.

After responding to the above prompt, the meter returns to the SETUP prompt shown onpage 1-34. To leave the User Program, press the [EXIT] key twice.

The AVRG Option

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:



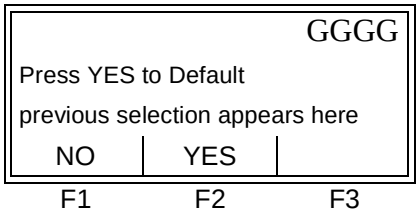
Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired value to select it.

For best results, select the STATS (statistics) option, as this increases the response time under steady flow conditions while still allowing a rapid response to changes in flow rate.

After responding to the above prompt, the meter returns to the SET UP prompt shown on page 1-34. To leave the *User Program*, press the [EXIT] key twice.

The INIT Option

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



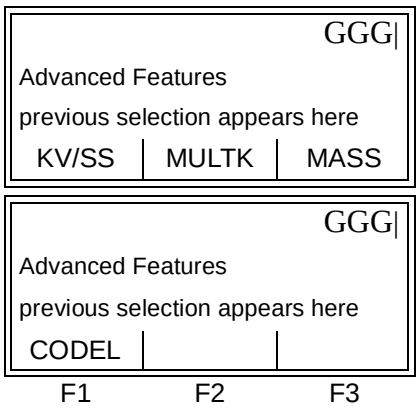
Press [F1] to keep the current values or press [F2] to reset all values to their default settings.

After responding to the above prompt, the meter returns to the SET UP prompt shown on page 1-34. To leave the *User Program*, press the [EXIT] key three times.

The ADVAN Option

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

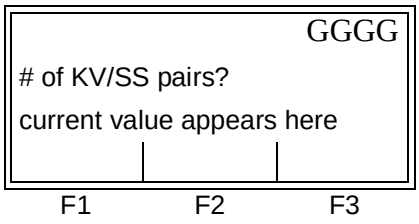
- calculate the kinematic viscosity (KV) based on signal strength (SS)
- enter a table of K-factors (based on velocity or reynolds number) that compensates for non-linear flow rates
- enable mass flow (calculated for static fluid density)
- select the size of the transducer transmission signal.



Use the [◁] and [▷] keys to access the options shown. Press the [Fx] key under the desired value to select it and proceed to one of the following sections.

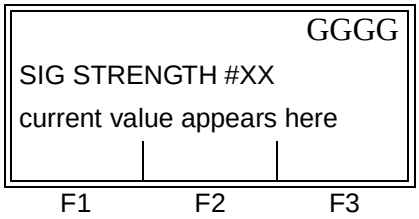
The KV/SS Option

Use this option to calculate the kinematic viscosity (KV) based on signal strength (SS). To use this option, you must enter the KV vs. SS pairs in descending order of KV and ascending order of SS. For example, if pair 1 is KV = 10 centistrokes and SS = 62, then pair 2 must be KV ≤ 10 centistrokes and SS ≥ 62. The XMT868 accepts 2 to 20 pairs. Complete the following steps to enter KV and SS values:

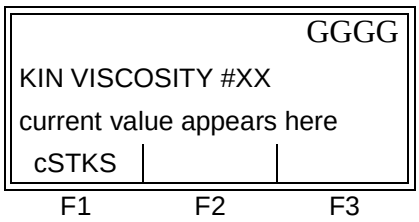


Press [ENT] to accept the current value or enter a new value (2 to 20) and press [ENT].

The KV/SS Option (cont.)



Press [ENT] to accept the current SIG STRENGTH value or enter a new value (50.0 to 85.0) and press [ENT]. Enter the signal strength values in ascending order.

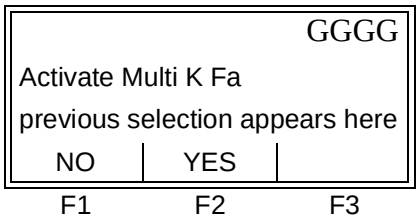


Press [ENT] to accept the current KINEMATIC VISCOSITY value or enter a new value (0.050 to 500) and press [ENT]. Enter the kinematic viscosity values in descending order.

The SIG STRENGTH and KIN VISCOSITY prompts repeat for each pair. After entering all the pairs, the meter returns to the ADVANCED FEATURES prompt shown on page 1-47. To leave the *User Program*, press the [EXIT] key four times.

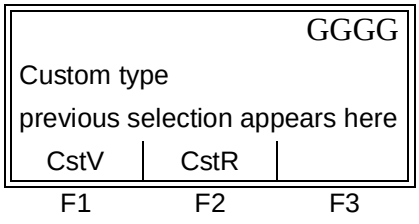
The MULTK Option

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 or reynolds number) 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 or reynolds values:



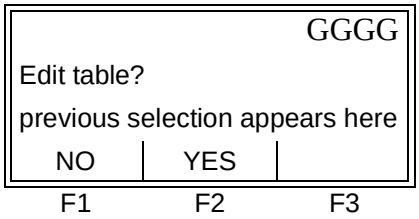
Press [F1] to disable this option or [F2] to enable multiple K factors.

If NO was selected, the meter returns to the ADVANCED FEATURES prompt shown on page 1-47. To leave the *User Program*, press the [EXIT] key four times. If YES was selected. proceed to the next prompt.



Press [F1] to customize velocity values or [F2] to customize reynolds values.

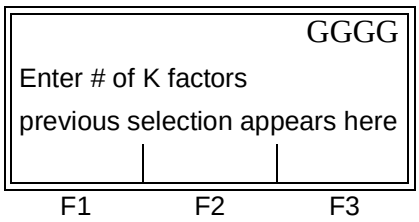
The MULTK Option (cont.)



Press [F1] to retain the current K-factor table or [F2] to edit the K-factor table.

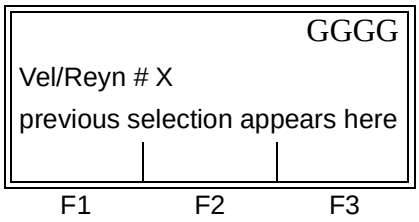
Note: *If the necessary velocity/reynolds vs. K-factor data was not provided with the Model XMT868's documentation, the K-factor table cannot be edited.*

If NO was selected, the meter returns to the ADVANCED FEATURES prompt shown on page 1-47. To leave the *User Program*, press the [EXIT] key four times. If YES was selected. proceed to the next prompt.

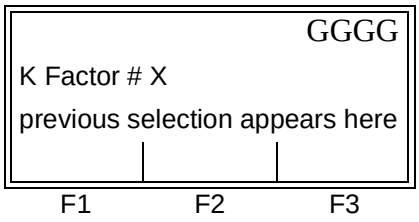


Enter the number of K-factors to be entered into the table and press [ENT]. This number must be between 2 and 20.

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



Enter the velocity/reynolds value for K-factor number "X" and press [ENT].

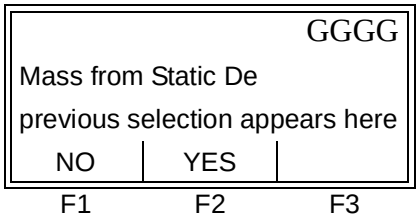


Enter the K-factor corresponding to velocity/reynolds number "X" (0.333 to 3.0) and press [ENT].

The VELOCITY # and K FACTOR # prompts repeat for each pair. After entering all the pairs, the meter returns to the ADVANCED FEATURES prompt shown on page 1-47. To leave the *User Program*, press the [EXIT] key four times.

The MASS Option

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



Press [F1] to disable this option or [F2] to enable mass flow. If you enable mass flow, enter the FLUID DENSITY (0.062 to 624.220) and press [ENT].

After responding to the above prompt, the meter returns to the ADVANCED FEATURES prompt shown on page 1-47. To leave the *User Program*, press the [EXIT] key four times.

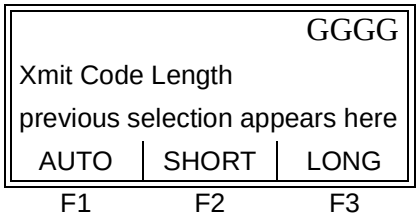
The CODEL Option

Use this option to select the size of the transducer transmission signal. This option is helpful when measuring flow on small pipes. You can choose from the following selections:

- AUTO - the meter will determine the code length (short or long) automatically based on pipe size and transducer type.
- SHORT - is only a few pulses with no code pattern built in. In some cases, the diameter of the pipe is too small which does not give each transducer the necessary time to send a series of signals before receiving a series of signals. Short is also a good selection for pipes made of materials which tend to blur the signal pattern, such as Teflon®.
- LONG - is a series of approximately a dozen pulses that have a distinctive binary pattern which is easily recognizable during auto correlation.

Complete the following steps to select the code length:

The CODEL Option (cont.)



Press [F1]-[F3] to select the desired code length. AUTO is the default.

After responding to the above prompt, the meter returns to the ADVANCED FEATURES prompt shown on page 1-47. To leave the *User Program*, press the [EXIT] key four times.

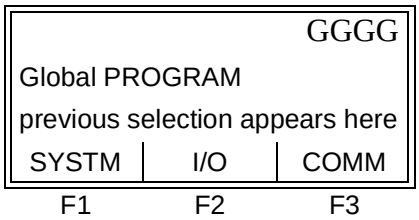
The GLOBL Menu

The GLOBL menu is used to enter information that is not specific to any of the individual channels. Information programmed via this menu is used to enter several general system parameters (e.g., English or metric units). For meters with 2 channels, this menu is also used to compute parameters such as the sum, difference or average of the channel 1 and channel 2 signals. When calculating the SUM, DIF or AVE readouts, data from the GLOBL-SYSTM sub-menu is used. Any conflicting data entered in the CHx-SYSTM sub-menu is overridden.

The following sub-menus are included in the GLOBL menu:

- SYSTM - use to specify the units of measure used in calculations
- I/O - used to set up error handling and to configure analog inputs and outputs
- COMM - used to set up the serial communications port and MODBUS parameters

If GLOBL was selected at the PROGRAM prompt shown on page 1-10, the following screen appears:

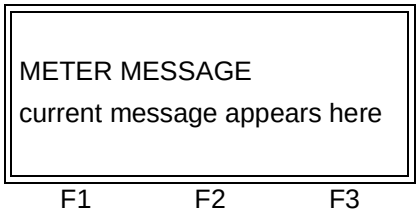


Press [F1]-[F3] to select and program the desired sub-menu.

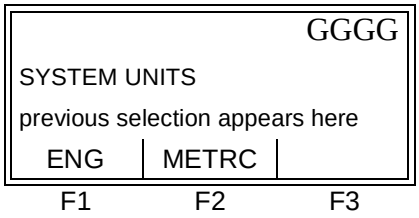
Based on the selection made above, proceed to the appropriate section of this chapter for instructions. Refer to Figures A-4 and A-5 on pages A-4 and A-5 in Appendix A, *Menu Maps*, and remember to record all programming data in Appendix B, *Data Records*.

The GLOBL-SYSTM Sub-Menu

While completing these instructions, refer to the menu map in Figure A-4 on page A-4 in Appendix A, *Menu Maps*. To enter this sub-menu, press [F1] at the Global PROGRAM prompt shown on the previous page.



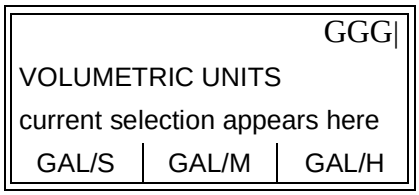
Key in the desired METER MESSAGE (up to 21 characters) and press [ENT].



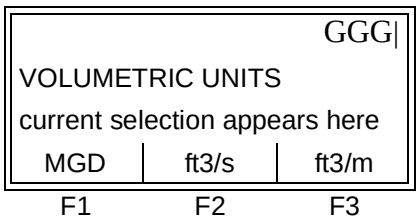
Press [F1] to display parameters and measurements in English units or press [F2] to display parameters and measurements in metric units.

For single-channel units, the meter exits the SYSTM sub-menu and returns to the Global PROGRAM prompt shown on the previous page. To leave the *User Program*, press the [EXIT] key twice.

For 2-channel units, proceed to the following prompt.



Press [F1]-[F3] to select the desired volumetric units for the flow rate display.



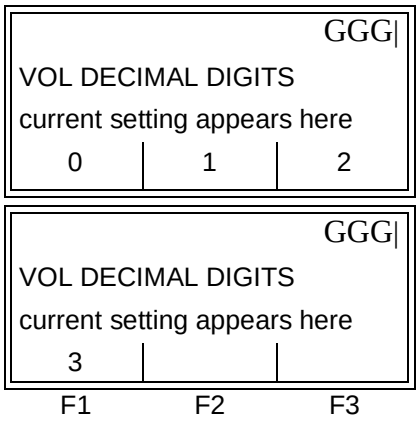
Use the [◁] and [▷] keys to access the additional choices shown.

The abbreviations and definitions of all the available volumetric and totalizer units are shown in Table 1-12 on page 1-53.

The GLOBL-SYSTM Sub-Menu (cont.)

Table 1-12: Available Volumetric Units

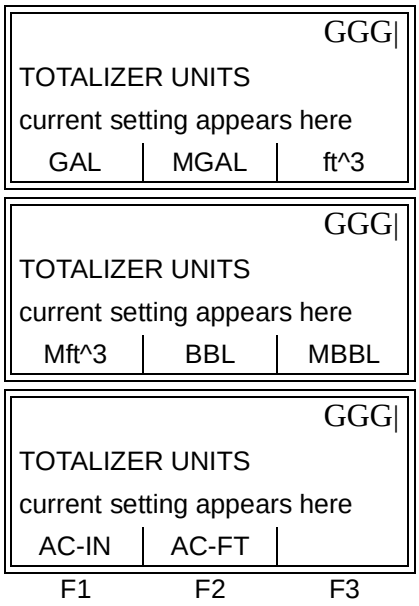
English	Metric
GAL/S = gallons/second	L/S = liters/second
GAL/M = gallons/minute	L/M = liters/minute
GAL/H = gallons/hour	ML/D = million liters/day
MGD = million gallons/day	m^3/s = cubic meters/second
ft3/s = cubic feet/second	m^3/m = cubic meters/minute
ft3/m = cubic feet/minute	m^3/h = cubic meters/hour
ft3/h = cubic feet/hour	m^3/d = cubic meters/day
Mf3/d = millions cubic feet/day	Mm^3/d = million cubic meters/day
BBL/S = barrels/second	BBL/S = barrels/second
BBL/M = barrels/minute	BBL/M = barrels/minute
BBL/D = barrels/day	BBL/H = barrels/hour
MBL/D = millions barrels/day	MBL/D = million barrels/day
A-I/S = acre-inches/second	
A-I/M = acre-inches/minute	
A-I/H = acre-inches/hour	
A-I/D = acre-inches/day	
A-F/S = acre-feet/second	
A-F/M = acre-feet/minute	
A-F/H = acre-feet/hour	
A-F/D = acre-feet/day	



Press [F1]-[F3] to select the desired number of digits to the right of the decimal point in the volumetric flow rate display.

Use the [◁] and [▷] keys to access the additional choice shown.

The GLOBL-SYSTM Sub-Menu (cont.)



Press [F1]-[F3] to select the desired units for the totalized flow rate display.

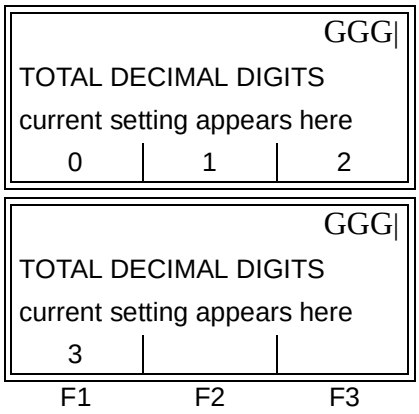
Use the [◁] and [▷] keys to access the additional choices shown.

The abbreviations and definitions of all the available volumetric and totalizer units are shown in Table 1-13 below.

Table 1-13: Totalizer Units

English	Metric
GAL = gallons	L = liters
MGAL = million gallons	ML = megaliters
ft^3 = cubic feet	m^3 = cubic meters
Mft^3 = million cubic feet	Mm^3 = million cubic meters
BBL = barrels	BBL = barrels
BBL = million barrels	MBBL = million barrels
AC-IN = acre-inches	
AC-FT = acre-feet	

The GLOBL-SYSTM Sub-Menu (cont.)



Press [F1]-[F3] to select the desired number of digits to the right of the decimal point in the totalized flow rate display.

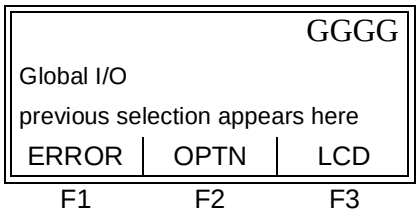
Use the [◁] and [▷] keys to access the additional choice shown.

The I/O Sub-Menu

Set up the XMT868's inputs and outputs via the I/O sub-menu. While following the programming instructions, refer to Figures A-4 and A-5 on pages A-4 and A-5 in Appendix A, *Menu Maps*. The I/O sub-menu consists of the following:

- ERROR - program the meter's response during an error condition
- OPTN - set up any option cards and the Slot 0 analog outputs
- LCD - set up the optional LCD display (refer to Chapter 2, *Displaying Data*)

To enter the I/O sub-menu, press [F2] at the Global PROGRAM prompt shown on the previous page.



Press the [Fx] key under the desired option to select it.

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

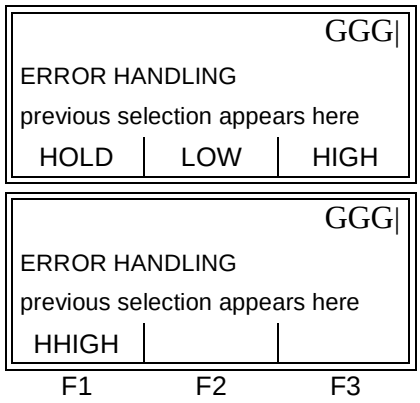
Proceed to the appropriate section to program the option selection made at the above prompt. Remember to record all programmed data in Appendix B, *Data Records*.

The ERROR Option

This menu option lets you set how the XMT868 will handle the outputs for measurements and average (two-path) measurements during an error condition. See Chapter 2, *Error Codes*, in the *Service Manual* for a discussion of the built-in error codes.

To access this sub-menu, press [F1] at the Global I/O prompt shown on the previous page.

Error Handling for Measurements - VEL, VOL..., SUM, DIF



Use the [◁] and [▷] keys to access the options shown. Press the [Fx] key under the desired error response option.

See Table 1-14 below and Table 1-15 on the following page for a description of the error handling options available and how the totalizers and display responds to them for a single and two-channel meter.

Table 1-14: Error Options and Responses for a Single-Channel Meter

Option	Output Response	Totalizer Response
HOLD	Holds the last "good" reading	Holds the last "good" reading and continues to totalize, based on that reading
LOW	Forces the outputs to the low set point	Stops totalizing
HIGH	Forces the outputs to the high set point	Stops totalizing
HHIGH	Forces the outputs ≈10% above the high set point	Stops totalizing

Error Handling for Measurements - VEL, VOL..., SUM, DIF (cont.)

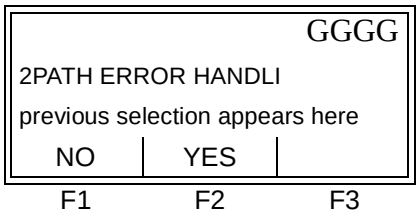
Table 1-15: Error Options and Responses for a 2-Channel Meter

When Measuring	Display Response	Totalizer Response When Error Handling is	
		HOLD	LOW, HIGH, HHIGH
CH1 or CH2 (vel, vol, etc.)	Holds last "good" reading.	Holds last "good" reading and continues to totalize based on that "good" reading.	Stops totalizing.
SUM	Adds two channels using the last "good" reading.	Holds last "good" reading and continues to totalize based on two channels.	Stops totalizing if either or both channels go into error.
DIF	Subtracts two channels using the last "good" reading.	Holds last "good" reading and continues to totalize based on two channels.	Stops totalizing if either or both channels go into error.
AVE	See *Error Handling for Average Measurements* below.		

For a one-channel meter, after responding to the above prompt, the meter returns to the Global I/O prompt shown on the previous page. To leave the *User Program*, press the [EXIT] key twice. For a two-channel meter, complete the rest of this section.

Error Handling for Average Measurements - AVE

The 2PATH 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 XMT868 performs error handling only if both channels are in error. If this function is disabled, error handling occurs when either channel goes into error.



Press [F1] to disable two-path error handling, or press [F2] to enable two-path error handling.

Specific responses of the display and the totalizer to the two-path error handling option available at the above prompt are listed in Table 1-16 on the following page.

Error Handling for Average Measurements - AVE (cont.)

Table 1-16: 2-Path Error Response Options

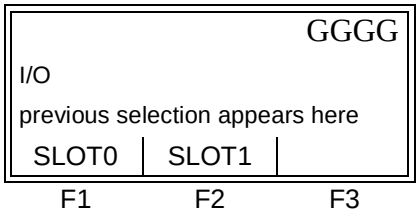
Option	Display Response	Totalizer Response
NO	Displays the average of CH1 and CH2, regardless of the error state of either channel.	Outputs the average of CH1 and CH2 totals, regardless of the error state of either channel.
YES	1. If one channel is in error, the other channel's value is displayed as 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.

After responding to the above prompt, the meter returns to the GLOBL- I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

The OPTN Option

The Model XMT868 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 access this sub-menu, press [F2] at the GLOBL-I/O prompt shown on page 1-55. This menu option is used to set up and/or scale the inputs and outputs. To accomplish this, complete the following steps:



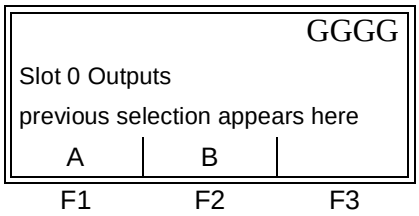
Press the [Fx] key under the desired slot to program the I/O functions in that slot.

Note: *If an option card is not installed in Slot 1, the* Slot1 *option does not appear at the above prompt.*

Proceed to the appropriate section for programming instructions specific to the type of input or output selected above.

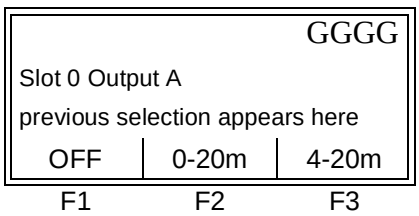
Slot 0 Analog Outputs

Complete the following steps to set up the Slot 0 analog outputs (refer to Figure A-4 on page A-4):



Press [F1] to set up output A or press [F2] to set up output B.

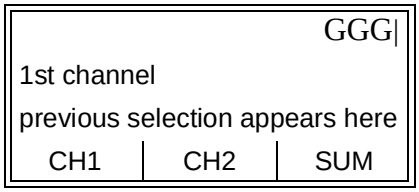
Note: *The set up of output A is used here as an example. Identical procedures would be used to set up output B.*



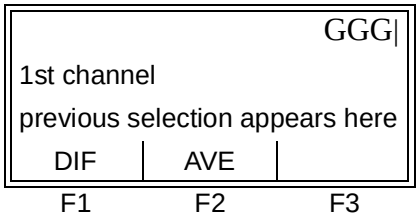
Press [F1] to disable output A and return to the I/O prompt, or press [F2]-[F3] to specify the desired range for output A.

Slot 0 Analog Outputs (cont.)

For a 1-Channel meter, skip over the following prompt.



Press the [Fx] key under the desired channel option to select it.

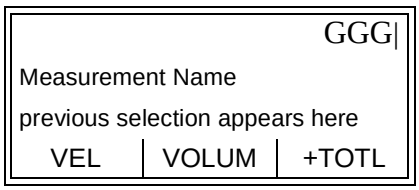


(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

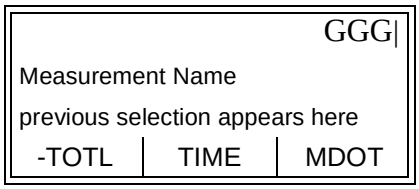
See Table 1-17 below for a description of the channel options available at the above prompt.

Table 1-17: Channel Options

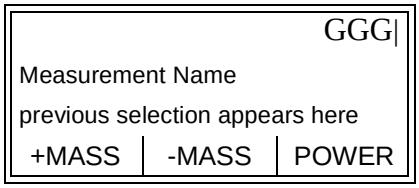
Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2



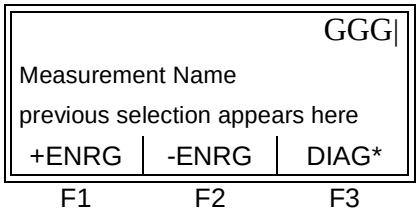
Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired parameter to select it.



(See Table 1-18 on page 1-61 for a description of the available options.)



Note: All the options shown to the left will only appear if the Mass Flow and Energy Options are activated.



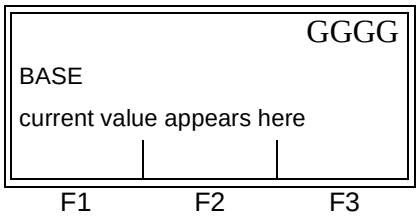
Slot 0 Analog Outputs (cont.)

Table 1-18: Output Measurement Options

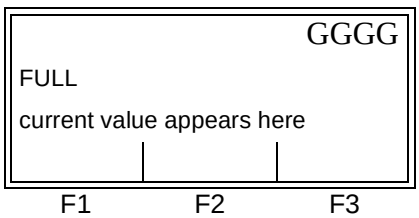
Option Bar Choice	Description
[F1] = VEL	Flow Velocity
[F2] = VOLUM	Volumetric Flow
[F3] = +TOTL	Forward Totalized Volume Flow
[▷] + [F1] = -TOTL	Reverse Totalized Volume Flow
[▷] + [F2] = TIME	Total Flow Measurement Time
[▷] + [F3] = MDOT	Mass Flow
[▷] + [▷] + [F1] = +MASS	Forward Totalized Mass Flow
[▷] + [▷] + [F2] = -MASS	Reverse Totalized Mass Flow
[▷] + [▷] + [F3] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

The DIAG* option listed in Table 1-18 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* GLOBL-SYSTM *menu earlier in this section.*



Enter a flow rate value for the low end of the analog output range and press [ENT].

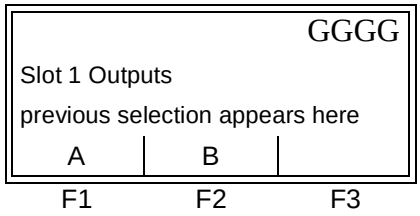


Enter a flow rate value for the high end of the analog output range and press [ENT].

After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

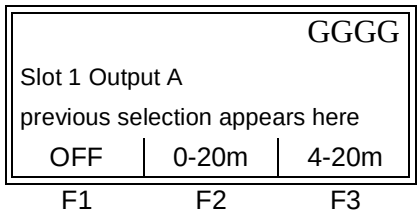
Option Card Analog Outputs

Complete the following steps to set up the analog outputs of an option card installed in Slot 1 (refer to Figure A-5 on page A-5):



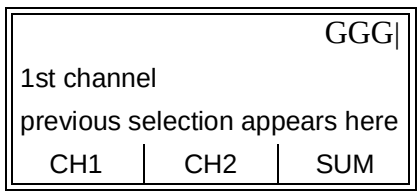
Press [F1] to set up output A or press [F2] to set up output B.

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

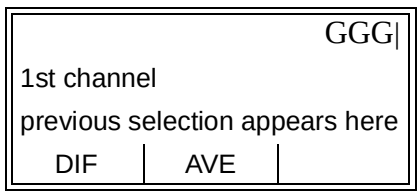


Press [F1] to disable output A and return to the I/O prompt, or press [F2]-[F3] to specify the desired range for output A.

For a 1-Channel meter, skip over the following prompt.



Press the [Fx] key under the desired channel option to select it.



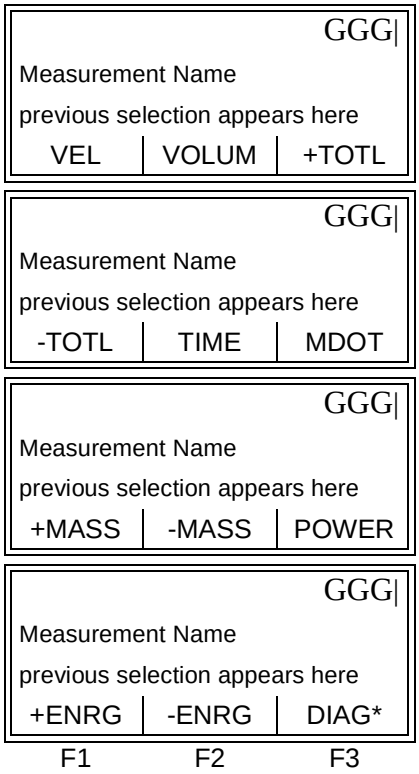
(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

See Table 1-19 on the following page for a description of the channel options available at the above prompt.

Table 1-19: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2

Option Card Analog Outputs (cont.)



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired parameter to select it.

(See Table 1-20 for a description of the available options.)

Note: All the options shown to the left will only appear if the Mass Flow and Energy Options are activated.

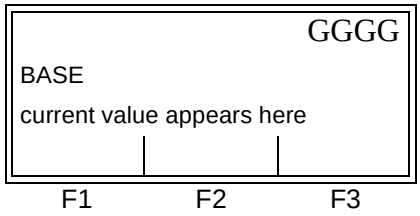
Table 1-20: Output Measurement Options

Option Bar 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] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

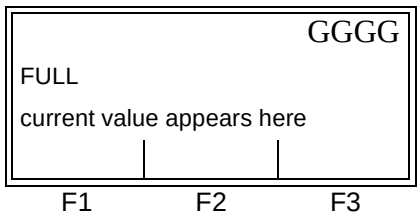
The DIAG* option listed in Table 1-20 above represents all of the individual diagnostic parameters that appear at the previous prompt. See Chapter 3, *Diagnostics*, of the *Service Manual* for a complete description of these options.

Option Card Analog Outputs (cont.)

Note: *The measurement units that appear in these prompts are those selected in the* GLOBL-SYSTM *menu earlier in this section.*



Enter a flow rate value for the low end of the analog output range and press [ENT].

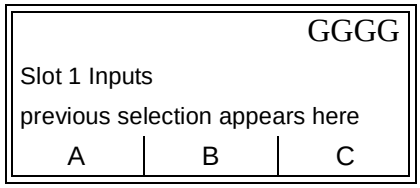


Enter a flow rate value for the high end of the analog output range and press [ENT].

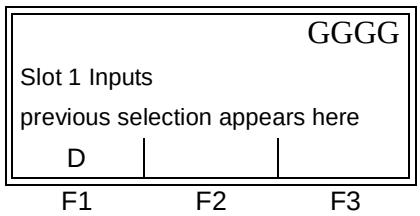
After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program,* press the [EXIT] key three times.

Option Card Analog Inputs

Complete the following steps to set up the analog inputs of an option card installed in Slot 1 (refer to Figure A-5 on page A-5):

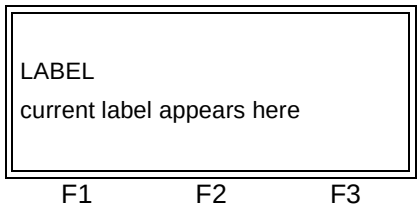


Press the [Fx] key to select the desired input.



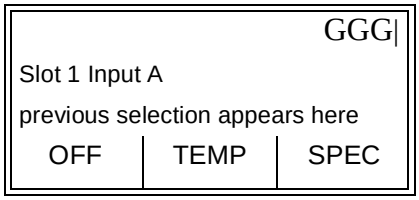
Use the [◁] and [▷] keys to access the options shown.

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



Enter a label of up to eight characters for input A and press [ENT].

Option Card Analog Inputs (cont.)



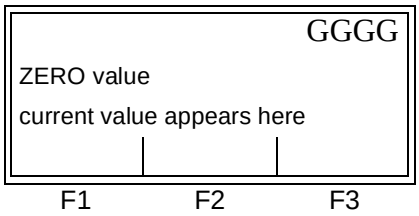
Press the desired [Fx] key to disable input A, or to designate it as a temperature or special input. Proceed directly to the appropriate section.

- **OFF**

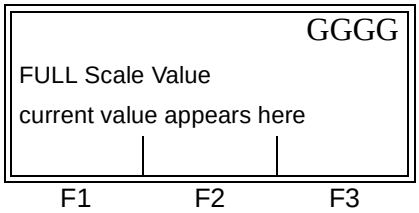
If OFF was selected to disable input A, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

- **TEMP**

If TEMP was selected to set up input A as a live temperature input, complete the following steps:



Enter a value for the low end of the analog input range and press [ENT].



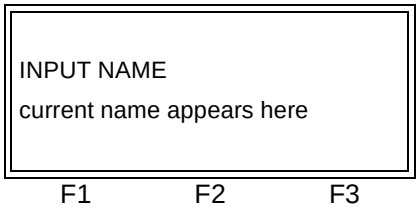
Enter a value for the high end of the analog input range and press [ENT].

Option Card Analog Inputs (cont.)

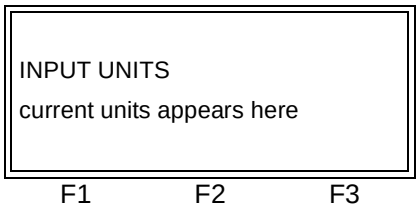
After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

- **SPEC**

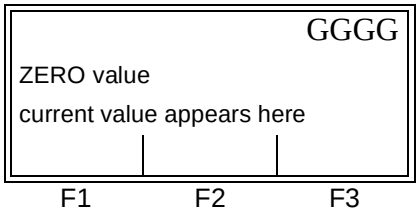
If SPEC was selected to set up input A as a live special input, complete the following steps:



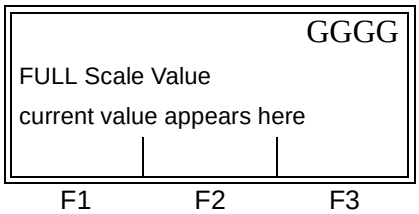
Enter a name for input A and press [ENT].



Enter a unit of measurement for input A and press [ENT].



Enter a temperature value for the low end of the analog input range and press [ENT].

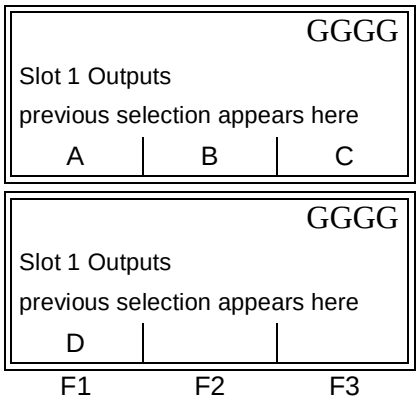


Enter a temperature value for the high end of the analog input range and press [ENT].

After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

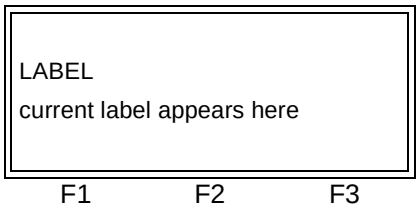
Option Card RTD Inputs

Option cards with RTD inputs have a temperature range of -148^{o} to 660^{o}F (–100 °C to 350 °C). Complete the following steps to set up the RTD inputs of an option card installed in Slot 1 (refer to Figure A-5 on page A-5):

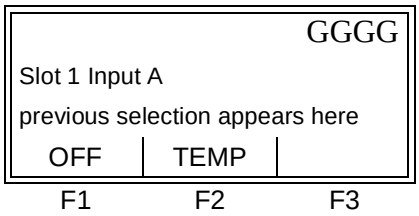


Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key to select the desired RTD input.

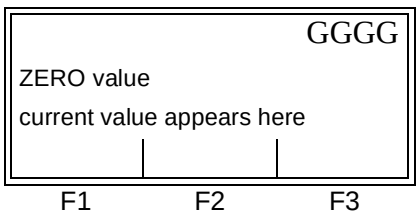
Note: *The setup of RTD input A is used here as an example. Identical procedures would be used to set up the remaining RTD inputs.*



Enter a label of up to eight characters for RTD input A and press [ENT].

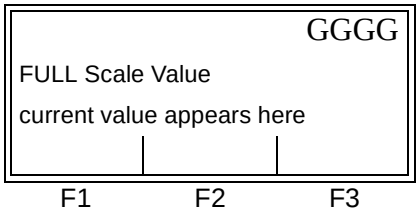


Press [F1] to disable input A and return to the GLOBL-I/O prompt on page 1-55, or press [F2] to enable input A as a live temperature input.



Enter a temperature value for the low end of the analog input range and press [ENT].

Option Card RTD Inputs (cont.)

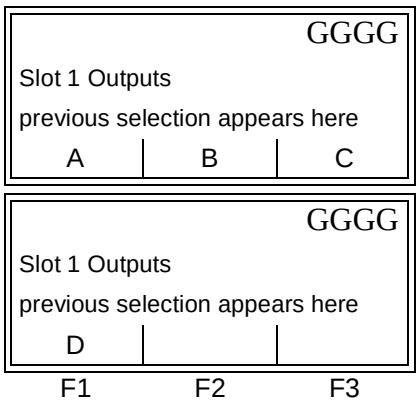


Enter a temperature value for the high end of the analog input range and press [ENT].

After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

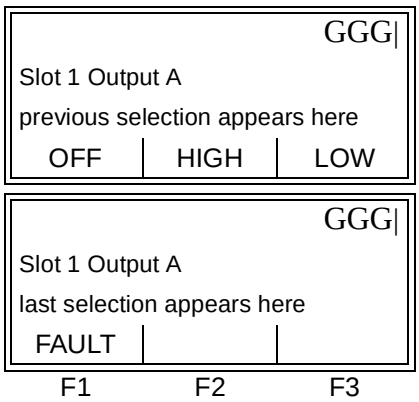
Option Card Alarm Relays

Complete the following steps to set up the alarm relays of an option card installed in Slot 1 (refer to Figure A-5 on page A-5):



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key to select the desired alarm.

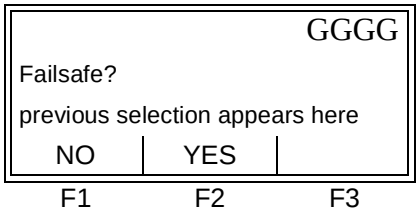
Note: *The set up of alarm A is used here as an example. Identical procedures would be used to set up the additional alarms.*



Use the [◁] and [▷] keys to access the options shown. Press the [Fx] key under the desired alarm type.

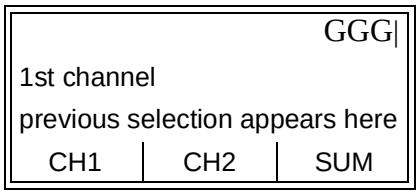
If OFF was selected above, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

Option Card Alarm Relays (cont.)

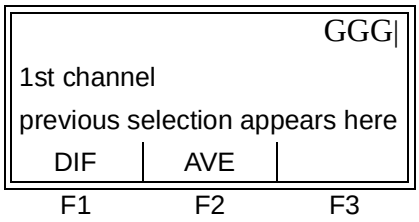


Press [F1] for standard operation or [F2] for fail-safe operation. See Chapter 1, *Installation*, of the *Startup Guide* for wiring instructions.

For a 1-Channel meter, skip over the following prompt.



Press the [Fx] key under the desired channel option to select it.



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

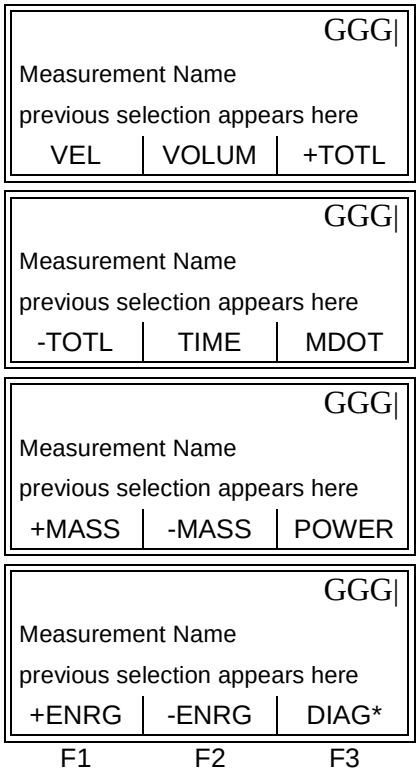
See Table 1-21 below for a description of the channel options available at the above prompt.

Table 1-21: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2

Note: *If* FAULT *was selected as the alarm type, the next two prompts do not appear. Skip over them to the end of this section.*

Option Card Alarm Relays (cont.)



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired parameter to select it.

(See Table 1-22 for a description of the available options.)

Note: All the options shown to the left will only appear if the Mass Flow and Energy Options are activated.

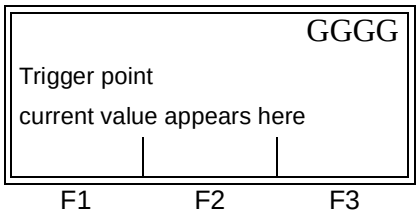
Table 1-22: Output Measurement Options

Option Bar 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] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

The DIAG* option listed in Table 1-22 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.

Option Card Alarm Relays (cont.)

Note: *The measurement units that appear in these prompts are those selected in the* GLOBL-SYSTM *menu earlier in this section.*

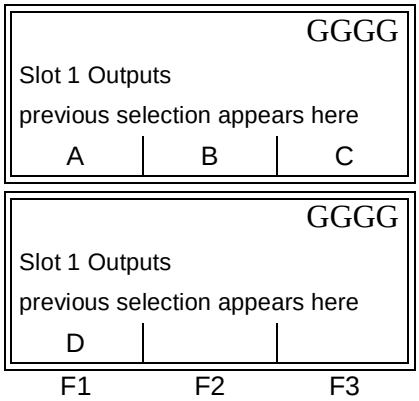


Enter a value for the trigger point of the alarm and press [ENT].

After responding to the above prompt, or if FAULT was selected as the alarm type, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

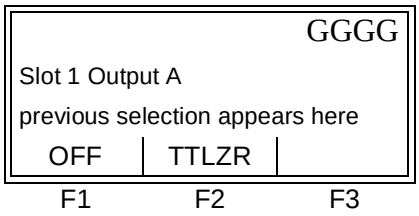
Option Card Totalizer Outputs

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



Use the [◁] and [▷] keys to access the options shown. Press the [Fx] key under the desired totalizer.

Note: *The set up of output A is used as an example. Identical procedures would be used to set up the other outputs.*

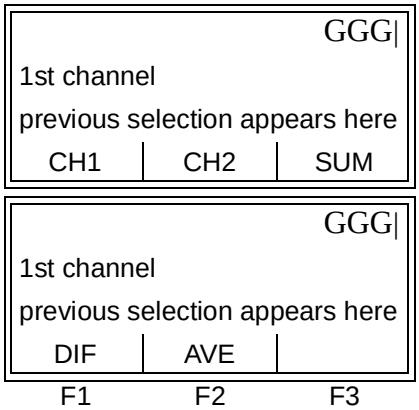


Press [F1] to disable output A, or press [F2] to set up output A as a totalizer output.

If OFF was selected above, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

Option Card Totalizer Outputs (cont.)

For a 1-Channel meter, skip over the following prompt.



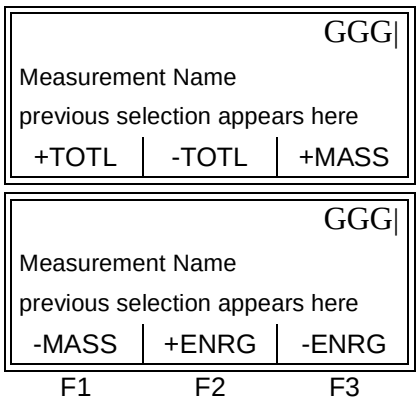
Press the [Fx] key under the desired channel option to select it.

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

See Table 1-23 on the following page for a description of the channel options available at the above prompt.

Table 1-23: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired parameter to select it.

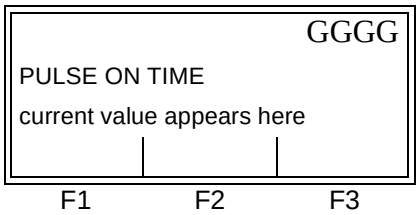
(See Table 1-24 on the next page for a description of the available options.)

Option Card Totalizer Outputs (cont.)

Table 1-24: Output Measurement Options

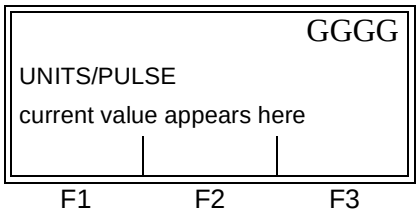
Option Bar Choice	Description
[F1] = +TOTL	Forward Totalized Volume Flow
[F2] = -TOTL	Reverse Totalized Volume Flow
[F3] = +MASS	Forward Totalized Mass Flow
[▷] + [F1] = -MASS	Reverse Totalized Mass Flow
[▷] + [F2] = +ENRG	Forward Energy
[▷] + [F3] = -ENRG	Reverse Energy

Note: *The measurement units that appear in these prompts are those selected in the* GLOBL-SYSTM *menu earlier in this section.*



Enter a value between 50 µsec and 500,000 µsec for the frequency of the totalizer pulses and press [ENT].

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

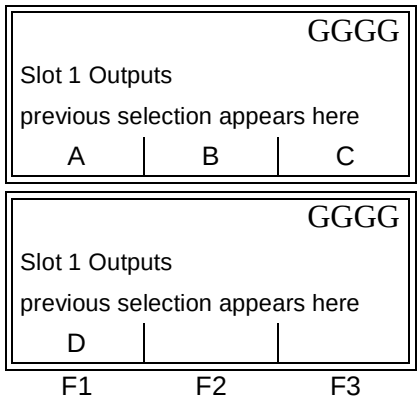


Enter a value for the number of measurement units represented by each pulse, and press [ENT].

After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

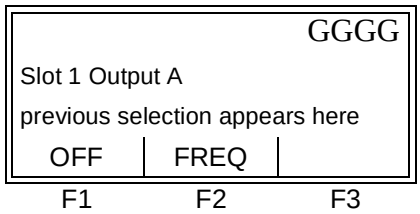
Option Card Frequency Outputs

This type of output produces a frequency pulse that is proportional to the output measurement. Complete the following steps to set up the frequency outputs of an option card installed in Slot 1 (refer to Figure A-5 on page A-5):



Use the [◁] and [▷] keys to access the options shown. Press the [Fx] key under the desired frequency output.

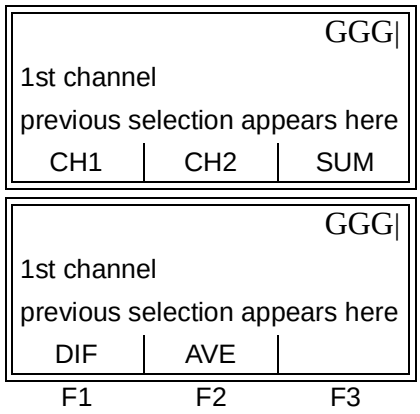
Note: *The set up of output A is used as an example. Identical procedures would be used to set up the other outputs.*



Press [F1] to disable output A, or press [F2] to set up output A as a frequency output.

If OFF was selected above, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

For a 1-Channel meter, skip over the following prompt.



Press the [Fx] key under the desired channel option to select it.

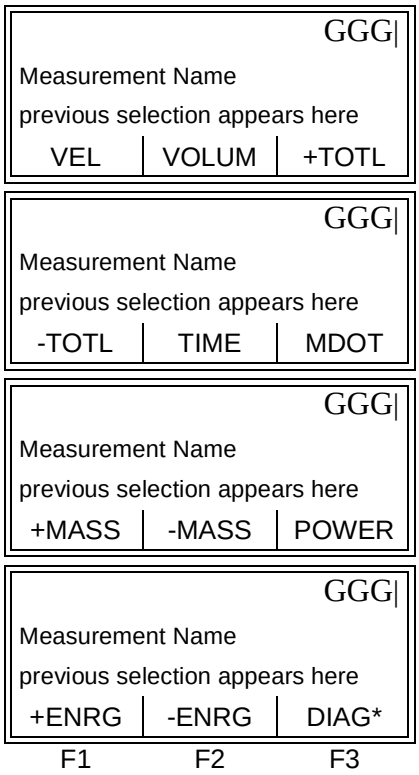
(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

Option Card Frequency Outputs (cont.)

See Table 1-25 below for a description of the channel options available at the above prompt.

Table 1-25: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired parameter to select it.

(See Table 1-26 for a description of the available options.)

Note: All the options shown to the left will only appear if the Mass Flow and Energy Options are activated.

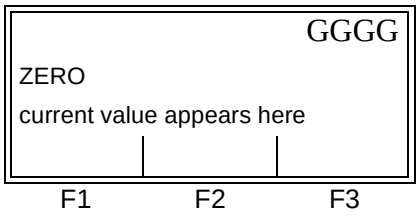
Option Card Frequency Outputs (cont.)

Table 1-26: Output Measurement Options

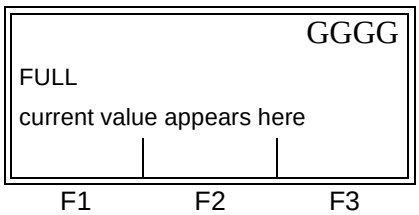
Option Bar Choice	Description
[F1] = VEL	Flow Velocity
[F2] = VOLUM	Volumetric Flow
[F3] = +TOTL	Forward Totalized Volume Flow
[▷] + [F1] = -TOTL	Reverse Totalized Volume Flow
[▷] + [F2] = TIME	Total Flow Measurement Time
[▷] + [F3] = MDOT	Mass Flow
[▷] + [▷] + [F1] = +MASS	Forward Totalized Mass Flow
[▷] + [▷] + [F2] = -MASS	Reverse Totalized Mass Flow
[▷] + [▷] + [F3] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

The DIAG* option listed in Table 1-26 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* GLOBL-SYSTM *menu earlier in this section.*

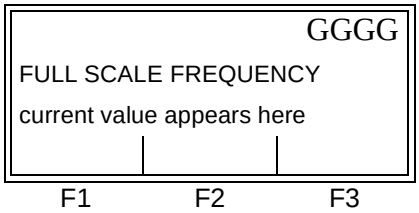


Enter a flow rate value for the low end of the frequency output range and press [ENT].



Enter a flow rate value for the high end of the frequency output range and press [ENT].

Option Card Frequency Outputs (cont.)



Enter a value between 1 and 10,000 for the frequency at full scale and press [ENT].

After responding to the above prompt, the meter returns to the GLOBL-I/O prompt shown on page 1-55. To leave the *User Program*, press the [EXIT] key three times.

The COMM Sub-Menu

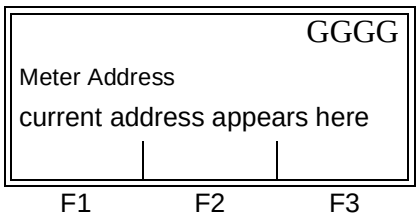
The Model XMT868 flowmeter is equipped with an RS232 or an RS485 serial interface. An RS485 option is also available with MODBUS capability. When the MODBUS option is present, the XMT868 may also have the standard RS232 serial interface.

The serial port is used to transmit stored data and displayed readings to a personal computer by connecting the meter's serial interface to the serial port of the PC. In addition, the Model XMT868 can receive and execute remote commands, using the *Instrument Data Manager* software (see Appendix C), via this link.

Use the COMM sub-menu to set the communications port and MODBUS parameters. While following the programming instructions, refer to Figure A-4 on page A-4 of Appendix A, *Menu Maps*.

Setting Up the Serial Port

To enter this sub-menu, press [F3] at the Global PROGRAM prompt shown on page 1-51.

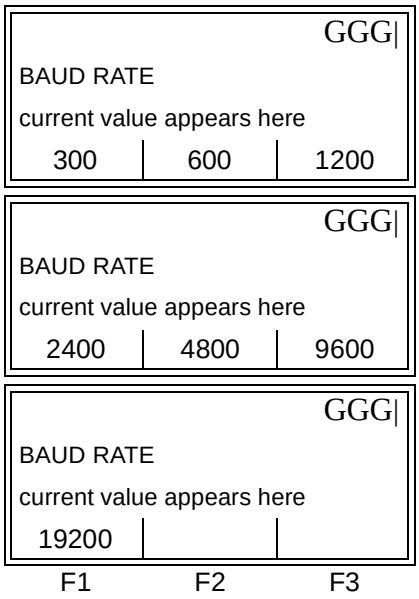


Enter a meter address number between 1 and 254 and press [ENT]. The default number is 1.

A meter address is only necessary for communication with the GE Panametrics *Instrument Data Manager* software. See the *IDM User's Manual* 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 address number.*

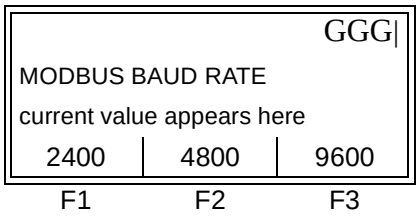
Setting Up the Serial Port (cont.)



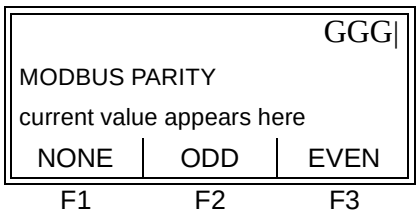
Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired baud rate to select it.

If you have the RS485 MODBUS option, proceed to the prompts below. If you have the standard RS232 serial interface, the meter exits the COMM sub-menu and returns to the Global PROGRAM prompt. To leave the *User Program*, press the [EXIT] key twice.

Note: *The XMT868 MODBUS communication settings chosen in the next four steps must match those of the MODBUS control system.*

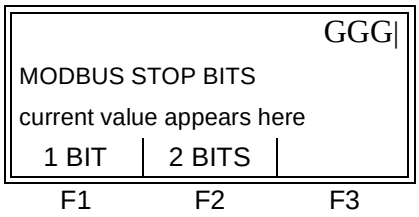


Press the [Fx] key under the desired MODBUS baud rate to select it.

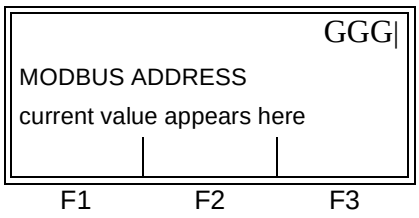


Press the [Fx] key under the desired MODBUS parity to select it.

Setting Up the Serial Port (cont.)



Press the [Fx] key under the desired MODBUS stop bits to select it.



Press the [Fx] key under the desired MODBUS address to select it.

The meter exits the COMM sub-menu and returns to the Global PROGRAM prompt. To leave the *User Program*, press the [EXIT] key twice.

IMPORTANT: *You must reboot the XMT868 to load the new settings.*

Refer to the section *Requesting Parameters Using MODBUS* on the following page to retrieve data from the XMT868 using MODBUS.

Requesting Parameters Using MODBUS

To request specific parameters from the XMT868 via the MODBUS, the control system must access the appropriate register number, as shown in Table 1-27 below. Only registers 1–84 are available with the XMT868 for MODBUS communications. Registers 508–512 are used by the XMT868 to store the MODBUS parameters.

Table 1-27: MODBUS Registers

MODBUS Reg #	DPR Hex Addr	Description	Units	Scaling (decimal places)	Size in Bytes
1		[1]Clear Totalizers	none	--	2 (16 bit signed)
2		CH1 Velocity	ft/s or m/s	2	4 (32 bit integer)
4		CH1 Volumetric	VOL_U	--	4 (IEEE 32 bit)
6		CH1 +Totals	TOT_U	Register 10	4 (32 bit integer)
8		CH1 -Totals	TOT_U	Register 10	4 (32 bit integer)
10		CH1 #T Digits	none	0	2 (16 bit integer)
11		CH1 Totalizer Time	sec	2	4 (32 bit integer)
13		[2]CH1 Error Value	none	0	2 (16 bit integer)
14		CH 1 SSUP	none	1	4 (32 bit integer)
16		CH 1 SSDN	none	1	4 (32 bit integer)
18		CH 1 SNDSP	ft/s or m/s	0	4 (32 bit integer)
20		CH 2 Velocity	ft/s or m/s	2	4 (32 bit integer)
22		CH 2 Volumetric	VOL_U	--	4 (IEEE 32 bit)
24		CH 2 +Totals	TOT_U	Register 28	4 (32 bit integer)
26		CH 2 -Totals	TOT_U	Register 28	4 (32 bit integer)
28		CH2 # T Digits	none	0	2 (16 bit integer)
29		CH2 Totalizer Time	sec	2	4 (32 bit integer)
31		[2]CH2 Error Value	none	0	2 (16 bit integer)
32		CH 2 SSUP	none	1	4 (32 bit integer)
34		CH 2 SSDN	none	1	4 (32 bit integer)
36		CH 2 SNDSP	ft/s or m/s	0	4 (32 bit integer)
38		[3]AVG Velocity	ft/s or m/s	2	4 (32 bit integer)
40		[3]AVG Volumetric	VOL_U	--	4 (IEEE 32 bit)
42		[3]AVG+Totals	TOT_U	Register 46	4 (32 bit integer)

Table 1-27: MODBUS Registers (Continued)

MODBUS Reg #	DPR Hex Addr	Description	Units	Scaling (decimal places)	Size in Bytes
44		[3]AVG-Totals	TOT_U	Register 46	4 (32 bit integer)
46		AVG #T Digits	none	0	2 (16 bit integer)
47		[3]AVG Totalizer Time	sec	2	4 (32 bit integer)
49		[4]AVG Error Value	none	0	2 (16 bit integer)
50		[3]AVG SSUP	none	1	4 (32 bit integer)
52		[3]AVG SSDN	none	1	4 (32 bit integer)
54		[3]AVG SNDSP	ft/s or m/s	0	4 (32 bit integer)
56		CH 1 Power	Power_u	--	4 (IEEE 32 bit)
58		CH 1 +Energy	Energy_u	Register 62	4 (32 bit integer)
60		CH 1 -Energy	Energy_u	Register 62	4 (32 bit integer)
62		CH 1 # Energy Digits	none	0	2 (16 bit integer)
63		CH 1 TempS	°F or °C	2	4 (32 bit integer)
65		CH 1 TempR	°F or °C	2	4 (32 bit integer)
67		CH 1 TS-TR	°F or °C	2	4 (32 bit integer)
69		CH 1 DELTH	Btu/lb or J/gm	2	4 (32 bit integer)
71		CH 2 Power	Power_u	--	4 (IEEE 32 bit)
73		CH 2 +Energy	Energy_u	Register 77	4 (32 bit integer)
75		CH 2 -Energy	Energy_u	Register 77	4 (32 bit integer)
77		CH 2 # Energy Digits	none	0	2 (16 bit integer)
78		CH 2 TempS	°F or °C	2	4 (32 bit integer)
80		CH 2 TempR	°F or °C	2	4 (32 bit integer)
82		CH 2 TS-TR	°F or °C	2	4 (32 bit integer)
84		CH 2 DELTH	Btu/lb or J/gm	2	4 (32 bit integer)
508	3F6	[5]MODBUS baud rate	none	0	2 (16 bit integer)
509	3F8	[6]MODBUS parity	none	0	2 (16 bit integer)
510	3FA	[7]MODBUS stop bits	none	0	2 (16 bit integer)
511	3FC	MODBUS meter addr	none	0	2 (16 bit integer)
512	3FE	RESERVED	none	---	---

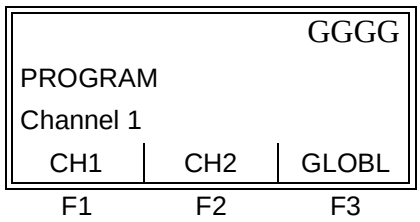
Requesting Parameters Using MODBUS (cont.)

Notes:

1. **Clear Totalizers:** flag from the 8051 to clear totalizers in the 68332 memory.
2. **Error Value:** see table in XMT868 manual for error codes
3. **Average:**
   average of channel 1 and channel 2 if both channels out of error,
   channel 1 value if channel 2 is in error,
   channel 2 value if channel 1 is in error,
   zero if both channels in error.
4. **Average Error Status:**
   0 = both in error
   1 = chan 2 in error,
   2 = chan 1 in error,
   3 = both ok
5. **MODBUS baud rate:**
   5 = 2400, 6 = 4800, 7 = 9600
6. **MODBUS parity:**
   0 = none, 1 = odd, 2 = even
7. **MODBUS stop bits:**
   1 = 1 stop bit, 2 = 2 stop bits
8. General:
   Registers are written if corresponding functions are actuated by the user. Registers for unactuated functions are initialized to zero at startup.

Exiting the User Program

After leaving the GLOBL sub-menu, the meter returns to the following prompt:



Press the [EXIT] key to leave the *User Program*.

Proceed to Chapter 3, *Operation*, of the *Startup Guide* for instructions on taking measurements, or refer to the appropriate chapters of this manual for detailed instructions on using the other features of the XMT868 flow transmitter.

Chapter 2

Displaying Data

Introduction

This chapter explains how to display measurement data using each of the three available methods:

- LCD Display - show data on an optional built-in display
- RCCU - display data on the optional Remote Control Communications Unit (RCCU)
- IDM - display data on a computer terminal using the optional Instrument Data Manager (IDM) software

Displaying Data with the LCD

If the Model XMT868 flow transmitter is equipped with the optional Liquid Crystal Display (LCD), it may be programmed to display up to four variables in sequence. In addition, both the brightness and the contrast of the LCD may be adjusted for optimum viewing. Proceed to the appropriate section for instructions.

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 4-3 on page 4-15 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 XMT868 in a hazardous environment, while the line power is on.

1. Make sure the XMT868 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 XMT868 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.

Adjusting LCD Contrast and Brightness (cont.)

4. Readjust the BKLT control, as desired.

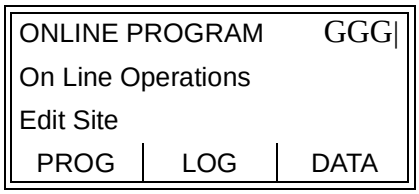
5. Replace the front cover on the XMT868, and secure it in place with the set screw.

The meter may now be placed back into service.

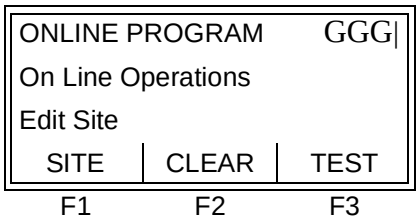
Programming the LCD

Use the Remote Control Communications Unit (RCCU) to establish communications with the XMT868 and enter the ONLINE menu. Then, complete the following instructions to display the desired data on the LCD (refer to Figure A-4 on page A-4 in Appendix A, *Menu Maps*):

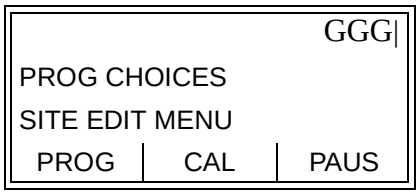
Note: *To perform this task from a PC with the optional* IDM *software, refer to Appendix C,* Instrument Data Manager*, and/or the Instrument Data Manager* User's Manual.



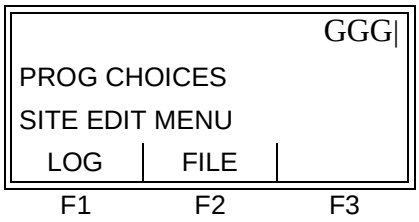
The XMT868 is now ready to be programmed. To begin programming, press [F1] to select PROG.



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



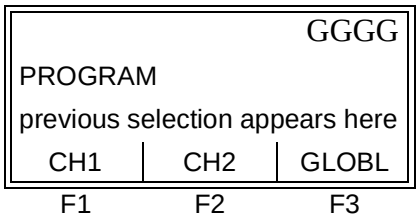
Press [F1] to select PROG.



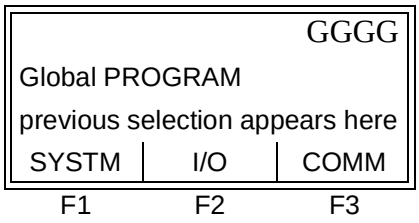
(These additional options only appear if a data logging option card is installed in Slot 2. To access, press the [◁] or [▷] keys.)

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 procedures presented for Channel 1.*

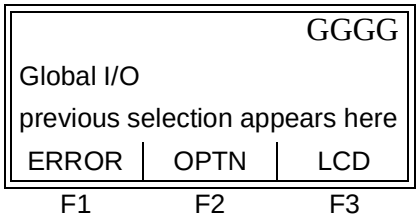
Programming the LCD (cont.)



Press the [Fx] under GLOBL to select it. (Note that the CH2 option does not appear for a one-channel meter.)

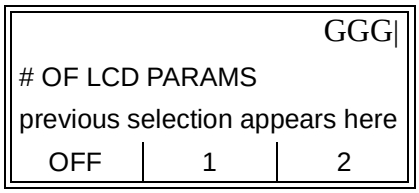


Press [F2] to select I/O.

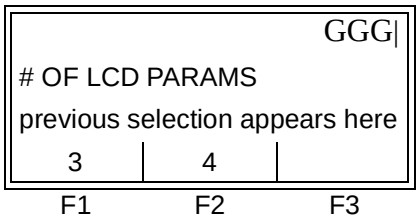


Press [F3] to select LCD.

At this point, a series of additional prompts permits the LCD to be configured as desired:



Press the [Fx] key under the desired number of parameters to be sequentially displayed.

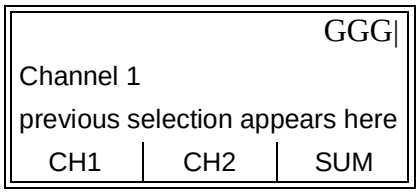


(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

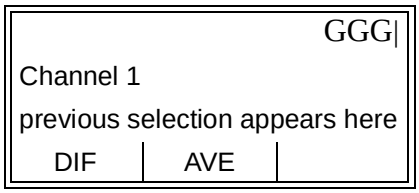
Note: *The XMT868 refers to the parameters specified above as* 1st channel, 2nd channel, 3rd channel *and* 4th channel.

For a 1-Channel XMT868, the data for Channel 1 is displayed automatically. However, for a 2-Channel meter, the channel data to be displayed must be specified at the following prompt.

Programming the LCD (cont.)



Press the [Fx] key under the desired channel option to select it.



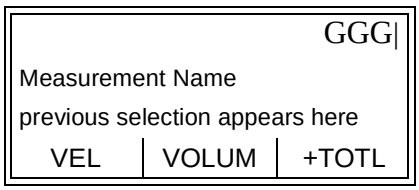
(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

See Table 2-1 below for a description of the channel options available at the above prompt.

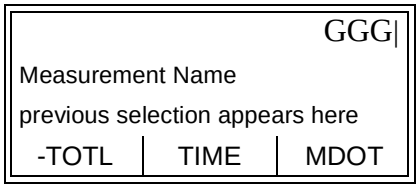
Table 2-1: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2

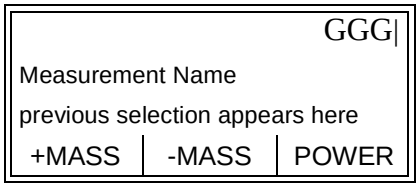
The flow parameter to be displayed may now be selected as follows:



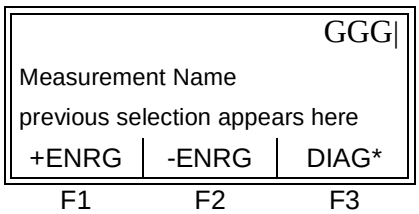
Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired parameter to select it.



(See Table 2-2 for a description of the available options.)



Note: All the options shown to the left will only appear if the Mass Flow and Energy Options are activated.



Programming the LCD (cont.)

Table 2-2 below describes the display parameters that are available at the previous prompt

Table 2-2: 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] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

The DIAG* option listed in Table 2-2 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* GLOBL-SYSTM *menu earlier in this section.*

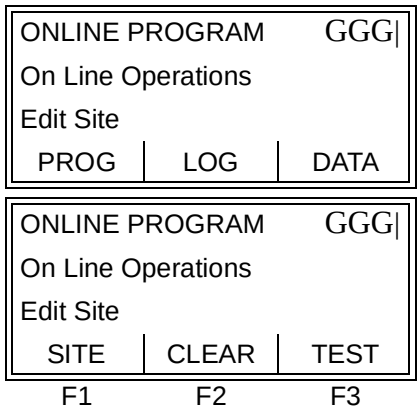
The previous two prompts repeat until all of the specified # OF LCD PARAMS have been set up. When all of the display parameters have been set up, the meter returns to the Global I/O prompt. To leave the *User Program*, press the [EXIT] key three times.

After leaving the *User Program*, the XMT868 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.

Displaying Data with the RCCU

Using the optional Remote Control Communications Unit (RCCU), flow rate data and diagnostic parameters may be displayed. To access and program this display, complete the following steps:

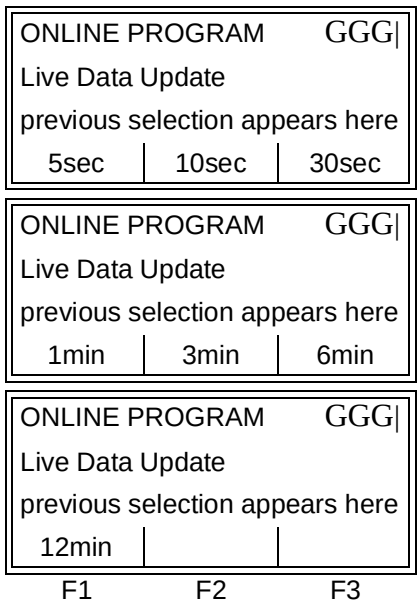
Establish a link between the Remote Control Communications Unit (RCCU) and the XMT868, and enter the ONLINE menu. Then, complete the following instructions to display the desired data:



The XMT868 is now ready to be programmed. To begin programming, press [F3] to select DATA.

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

At the following prompt, specify the time span between successive flow rate readings. This is the rate at which the data display will be updated.

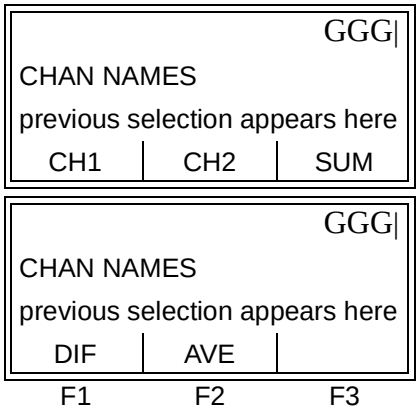


Use the [◁] and [▷] keys to find the desired flow data update rate, and press the [Fx] key under it to select it.

Displaying Data with the RCCU (cont.)

After specifying the flow data update rate, the channel to be displayed must be selected.

Note: *The options available at the next prompt depend on how many channels of the XMT868 are currently active. For a one-channel meter, only the* CH1 *option appears.*



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired channel for display.

(See Table 2-3 below for a description of the channel options.)

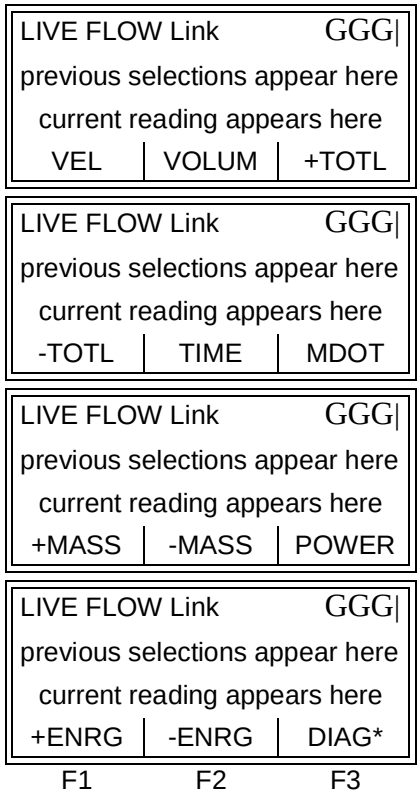
Table 2-3: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2

IMPORTANT: *Keep the RCCU pointed directly at the XMT868 throughout this programming sequence.*

Displaying Data with the RCCU (cont.)

After the previous response has been communicated to the XMT868, the RCCU is connected to the meter by a *Live Flow Link* and displays the channel information specified. At this time, the flow parameter to be displayed may be selected as follows:



Use the [◁] and [▷] keys to find the desired flow parameter, and press the [Fx] key under it to select it.

(See Table 2-4 below for a description of the measurement parameters available.)

Table 2-4: Measurement 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] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

Displaying Data with the RCCU (cont.)

The DIAG* option listed in Table 2-4 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.

The display parameter may be changed from the *LIVE FLOW Link* prompt at any time, but changing the channel option requires that the DATA menu be reprogrammed. To accomplish this, press the [EXIT] key and repeat the instructions at the beginning of this section.

Displaying Data on a Computer Terminal

The flow rate data collected by the XMT868 may be displayed in various formats 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 Appendix C, *Instrument Data Manager*, and/or the *User's Manual* provided with that software for complete instructions.

IMPORTANT: *The RCCU has priority in communicating with the XMT868. Therefore, IDM communications with the XMT868 will be unreliable at best, as long as an RCCU is actively linked to the meter.*

Chapter 3

Logging Data

Introduction

If the Model XMT868 flowmeter is equipped with an optional *data logging card* in Slot 2, flow rate data can be recorded and stored in this memory in the form of a *log file*. After the specified data has been logged, the log file may be uploaded to the *Remote Control Communications Unit* (RCCU) via an infrared transmission.

This chapter explains how to use the Model XMT868's data logging capability with an optional RCCU. It also describes the procedures for uploading and reading the resulting log files with the RCCU.

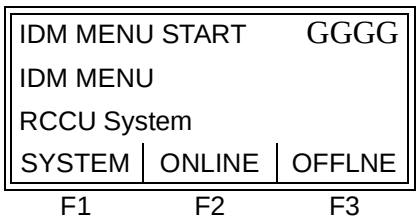
Note: *To perform logging with the IDM software, see Appendix C,* Instrument Data Manager*, and/or the* IDM User's Manual*.*

The Data Logging Option Card

In order to log data, the Model XMT868 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.

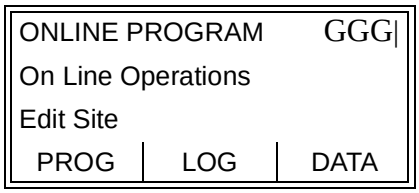
Accessing the XMT868 LOG Menu

A standard log is used to record up to six flow rate measurement parameters in a *log file* stored in the XMT868's memory. To set up such a log, power up the RCCU and complete the following steps:

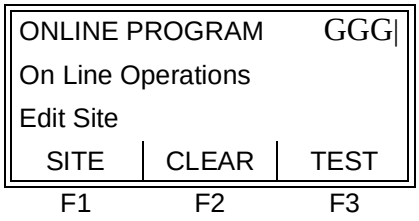


Press the [F2] key to select ONLINE.

After communication between the RCCU and the XMT868 has been established (see Chapter 3, *Operation*, of the *Startup Guide*), refer to Figure A-6 on page A-6 and continue as follows:

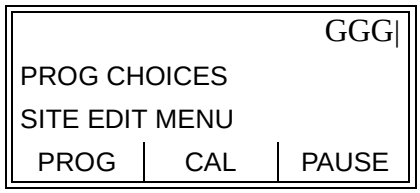


Press the [F1] key to select PROG. (**DO NOT** select LOG at this prompt.)

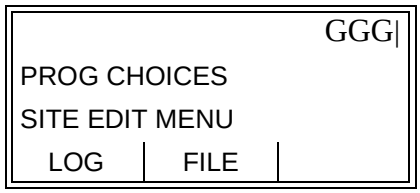


(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

Accessing the XMT868 LOG Menu (cont.)

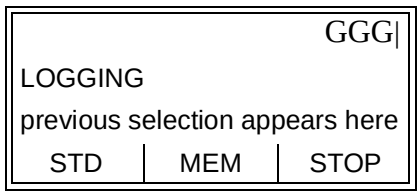


Press the [F1] key under LOG to select it.

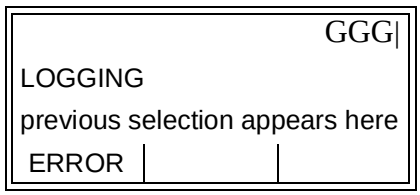


(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

Note: *The* LOG *and* FILE *options appear at the above prompt only if a data logging option card is installed in the* Slot 2.



Press the [Fx] key under the desired option to select it.

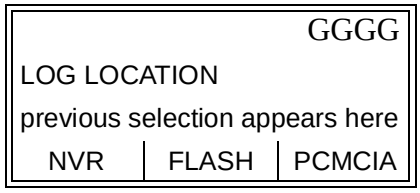


(These additional options are accessed by pressing the [◁] and/or [▷] keys.)

Based on the selection made at the above prompt, proceed to the appropriate section for further instructions.

Setting Up a Standard Log

If [F1] was pressed to select STD at the LOGGING prompt shown above, complete the following steps to set up a standard log:



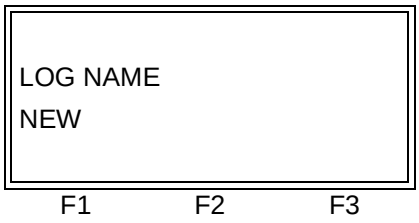
Press the [Fx] key under the desired option to select it. (**Note:** the PCMCIA option only appears if such a card has been installed.)

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

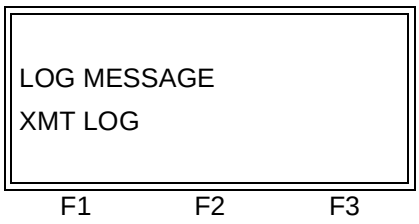
Setting Up a Standard Log (cont.)

The log file can be stored either in non-volatile RAM (NVR), Flash memory or the PCMCIA card (if available). The memory location chosen at the above prompt must have sufficient room for the expected size of the log file being created.

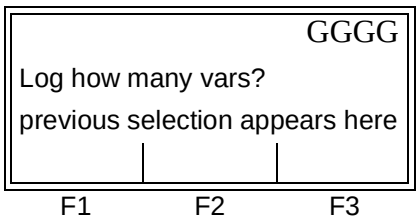
After the memory location for the log file has been specified, the RCCU displays the amount of that type of memory available, and then the programming sequence continues as follows:



Use the RCCU keypad to enter a log name of up to five characters, and then press [ENT].



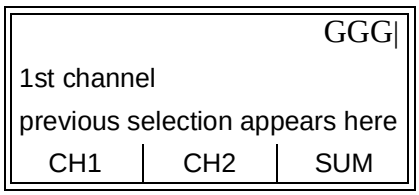
Use the RCCU keypad to enter a log message of up to nineteen characters, and then press [ENT].



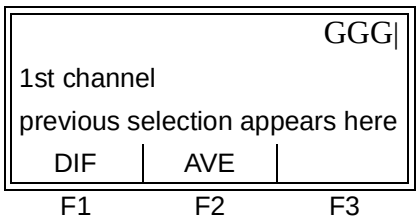
Use the RCCU keypad to enter the number of parameters to be logged (1-6), and then press [ENT].

Programming the Log Channels

Each of the parameters to be logged is assigned to a *Log Channel*. The following sequence of programming steps repeats until all of these Log Channels (up to six) have been set up. For a 1-Channel XMT868, the data for Channel 1 is logged automatically. However, for a 2-Channel meter, the channel data to be logged must be specified at the following prompt:



Press the [Fx] key under the desired channel option to select it.



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

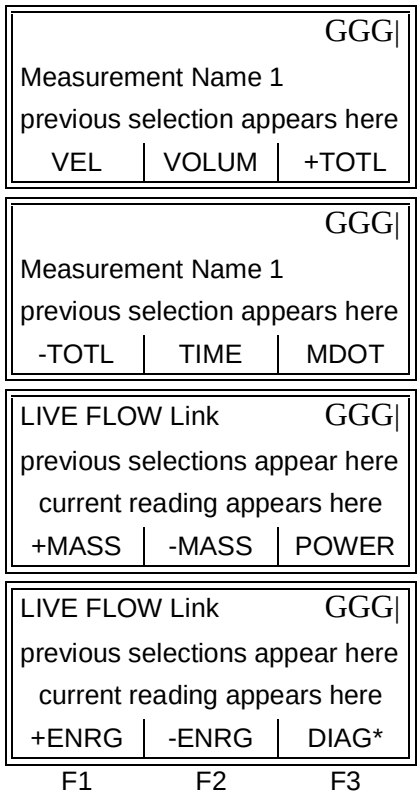
Programming the Log Channels (cont.)

See Table 3-1 below for a description of the channel options available at the previous prompt.

Table 3-1: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2

The flow parameter to be logged may now be selected as follows:



Use the [◁] and [▷] keys to find the desired flow parameter, and press the [Fx] key under it to select it.

(See Table 3-2 on page 3-5 for a description of the available measurement parameters.)

Note: *The* DIAG* *option listed in the above prompt and in Table 3-2 on page 3-5 represents all of the individual diagnostic parameters that appear. See Chapter 3,* Diagnostics, *of the* Service Manual *for a complete description of these options.*

Programming the Log Channels (cont.)

Table 3-2: Measurement 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] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

The previous two prompts repeat until all of the *log channels* have been set up.

Setting Up a Standard Log (cont.)

When all of the log parameters have been set up, continue with the log setup procedure as follows:

```
                                GGGG
Set LOG Totals to 0?
previous selection appears here
  NO      |   YES   |
  F1          F2        F3
```

Press [F2] to clear the current log totals or press [F1] to keep the current log totals. (**Note**: this prompt appears only if a totalized parameter was chosen for logging.)

Note: *Responding* YES *at the above prompt clears only the log totals; it does not clear the meter totalizers. See Chapter 5,* Clearing Data*, for details.*

```
                                GGGG
Is LOG circular?
previous selection appears here
  NO      |   YES   |
  F1          F2        F3
```

Press [F2] to create a circular log or press [F1] to create a linear log.

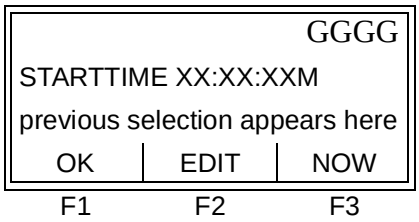
Note: *If* FLASH *was chosen as the memory location for the log file, the above prompt does not appear.*

Setting Up a Standard Log (cont.)

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 the specified DURATION has expired or until a manual STOP command is issued. At the end of each log cycle (one reading of each Log Channel), previously recorded data is overwritten by the new data.

IMPORTANT: *If data from a single circular log cycle exceeds the meter's memory capacity, the earliest logged data will be lost.*

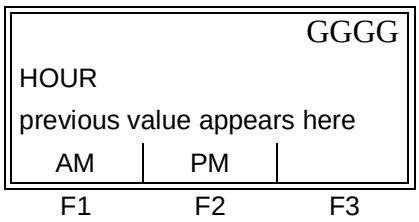
STARTTIME Prompt



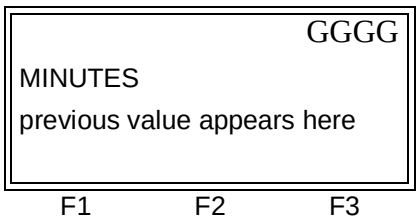
Press [F1] to accept the displayed start time or press [F2] to enter a different start time. To start logging immediately, press [F3].

If you selected:

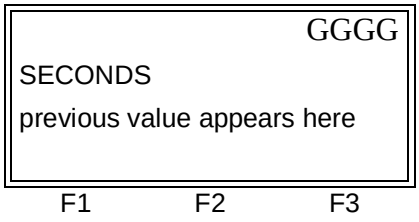
- OK - proceed to the START DATE prompt on page 3-7.
- NOW - do one of the following:
  - Non-circular log - proceed to the END TIME prompt on page 3-8.
  - Circular log - proceed to the DURATION prompt on page 3-10.
- EDIT - continue with the next prompt that follows.



Press [F1]-[F2] to select AM or PM. Then, enter the desired hour (1-12) and press [ENT]. (Entry of a start time earlier than the current time will generate an error message.)

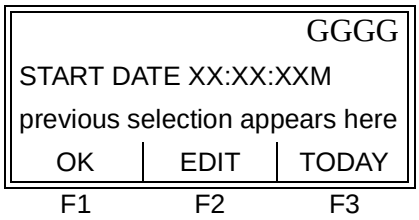


Enter the desired minutes and press [ENT]. The acceptable range is 0 to 59.



Enter the desired seconds and press [ENT]. The acceptable range is 0 to 59.

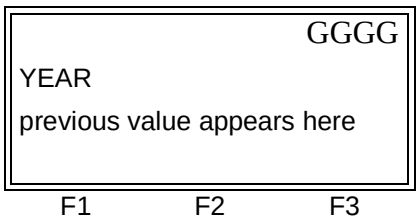
START DATE Prompt



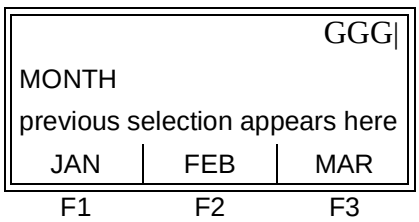
Press [F1] to accept the displayed start date or press [F2] to enter a different start date. To start logging today, press [F3].

If you selected:

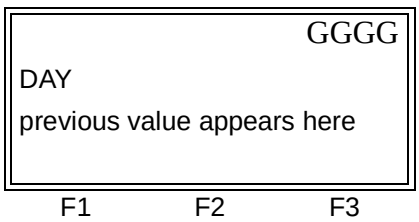
- OK or TODAY - do one of the following:
  - Non-circular log - proceed to the END TIME prompt on page 3-8.
  - Circular log - proceed to the DURATION prompt on page 3-10.
- EDIT - continue with the next prompt that follows.



Enter the desired year and press [ENT]. The acceptable range is 0 to 99.

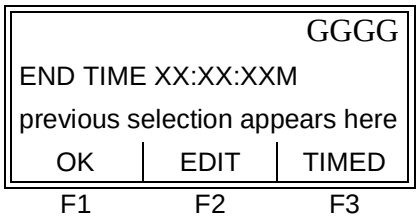


Use the [◁] and [▷] keys to find the desired month, and press the [Fx] key under it to select it.



Enter the desired day and press [ENT]. The acceptable range is 1 to the number of days in the selected month (28, 29, 30 or 31).

END TIME Prompt

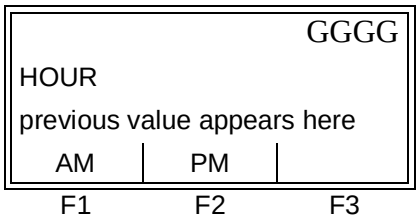


Press [F1] to accept the displayed end time or press [F2] to enter a different end time. To select a specific time period for the log to run, press [F3].

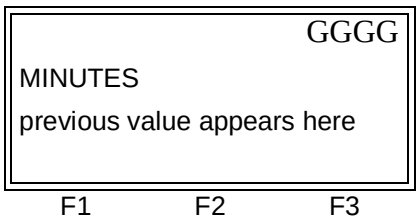
If you selected:

- OK - proceed to the END DATE prompt on page 3-9.
- TIMED - proceed to the LOG TIME prompt on page 3-10.
- EDIT - continue with the next prompt that follows.

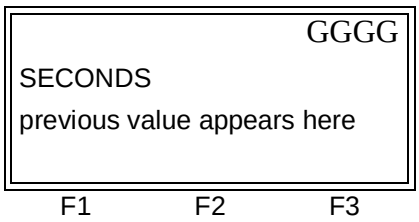
Note: *The log* END TIME *must exceed the log* START TIME *by at least five minutes. Failure to observe this restriction will result in an error message.*



Press [F1]-[F2] to select AM or PM. Then, enter the desired hour (1-12) and press [ENT].

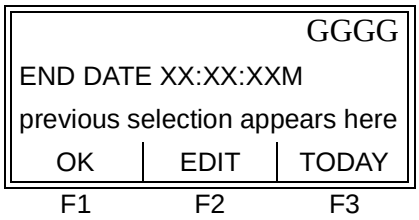


Enter the desired minutes and press [ENT]. The acceptable range is 0 to 59.



Enter the desired seconds and press [ENT]. The acceptable range is 0 to 59.

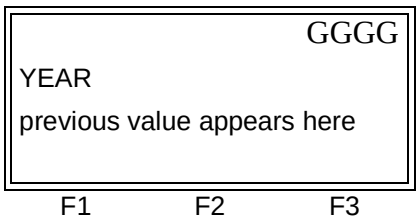
END DATE Prompt



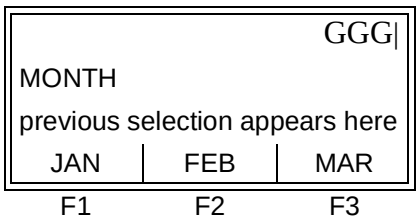
Press [F1] to accept the displayed end date or press [F2] to enter a different en date. To end logging today, press [F3].

If you selected:

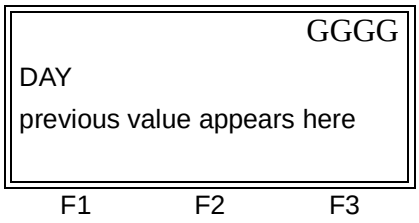
- OK or TODAY - proceed to the TIME INCREMENT prompt on page 3-11.
- EDIT- continue with the next prompt that follows.



Enter the desired year and press [ENT]. The acceptable range is 0 to 99.



Use the [◁] and [▷] keys to find the desired month, and press the [Fx] key under it to select it.

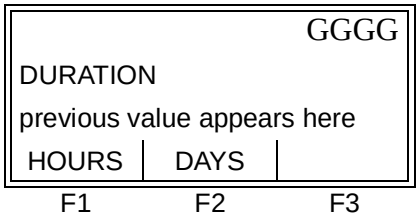


Enter the desired day and press [ENT]. The acceptable range is 1 to the number of days in the selected month (28, 29, 30 or 31).

Proceed directly to the TIME INCREMENT prompt on page 3-11.

DURATION Prompt

If a circular log was specified, the programming sequence continues here after the log start time and/or start date is entered.

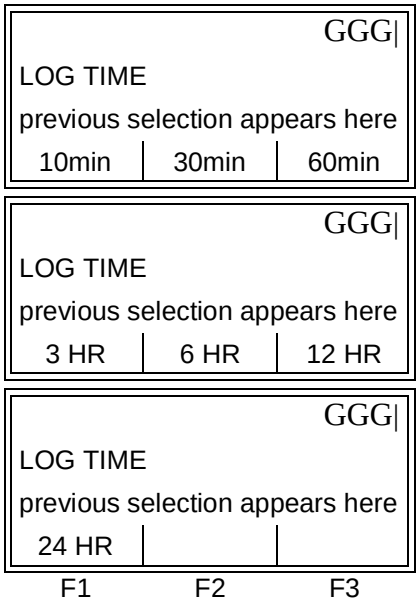


Press the [Fx] key under the desired units of measure. Then, key in the desired number of hours/days and press [ENT]. Proceed directly to the TIME INCREMENT prompt.

Proceed directly to the TIME INCREMENT prompt on page 3-11.

LOG TIME Prompt

If TIMED was selected at the END TIME prompt, the programming sequence continues here.

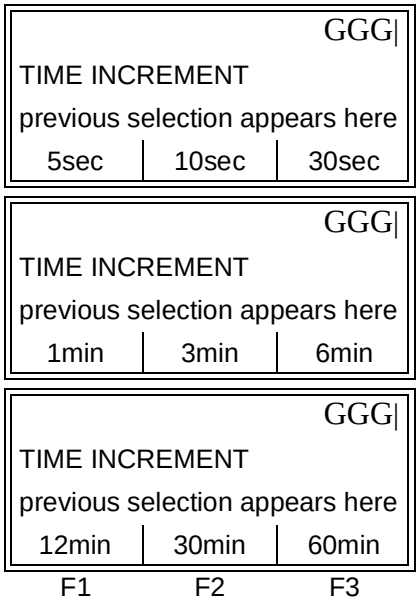


Use the [◁] and [▷] keys to find the desired logging duration, and press the [Fx] key under it to select it.

Proceed directly to the TIME INCREMENT prompt on page 3-11.

TIME INCREMENT Prompt

Regardless of which of the various options were selected during the previous programming steps, all of the paths converge at this point.

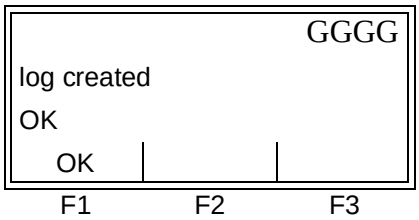


Use the [◁] and [▷] keys to find the desired time increment, and press the [Fx] key under it to select it.

The time increment is the frequency at which the Model XMT868 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.

Setting Up a Standard Log (cont.)

Now that the standard log setup has been completed, the following confirmation screen appears:



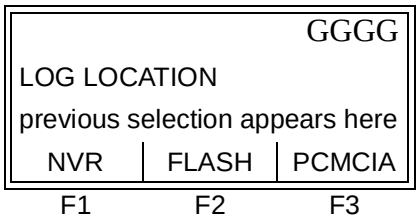
Press [F1] or [ENT] to acknowledge the message and press [EXIT] to return to the main RCCU menu and begin logging.

Note: *Although each log is restricted to six logged parameters, it is still possible to log more than six parameters. Simply re-enter the* STD *sub-menu 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.

If [▷] + [F1] was pressed to select ERROR at the LOGGING prompt shown on page 3-2, follow the instructions in this section:

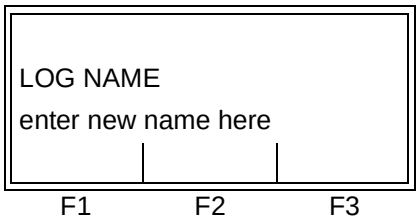


Press the [Fx] key under the desired option to select it. (**Note:** the PCMCIA option only appears if such a card has been installed.)

The log file can be stored either in non-volatile RAM (NVR), Flash memory or the PCMCIA card (if available). The memory location chosen at the above prompt must have sufficient room for the expected size of the log file being created.

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

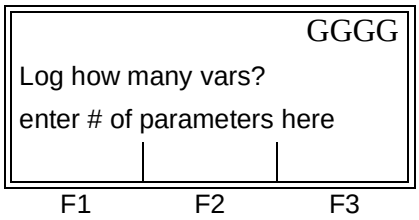
After the memory location for the log file has been specified, the RCCU displays the amount of that type of memory available, and then the programming sequence continues as follows:



Use the RCCU keypad to enter a log name of up to five characters, and then press [ENT].

Use the RCCU keypad to enter a log message of up to nineteen characters, and then press [ENT].

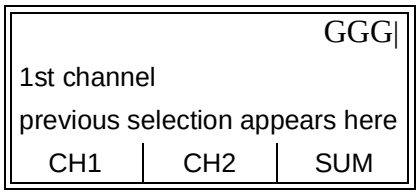
Programming the Log Channels



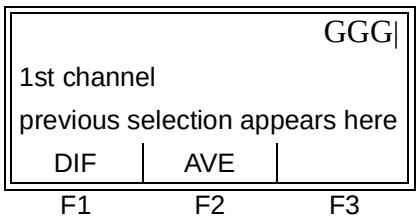
Use the RCCU keypad to enter the number of parameters to be logged (1-6), and then press [ENT].

Each of the parameters to be logged is assigned to a *Log Channel*. The following sequence of programming steps repeats until all of these Log Channels (up to six) have been set up.

For a 1-Channel XMT868, the data for Channel 1 is logged automatically. However, for a 2-Channel meter, the channel data to be logged must be specified at the following prompt:



Press the [Fx] key under the desired channel option to select it.



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

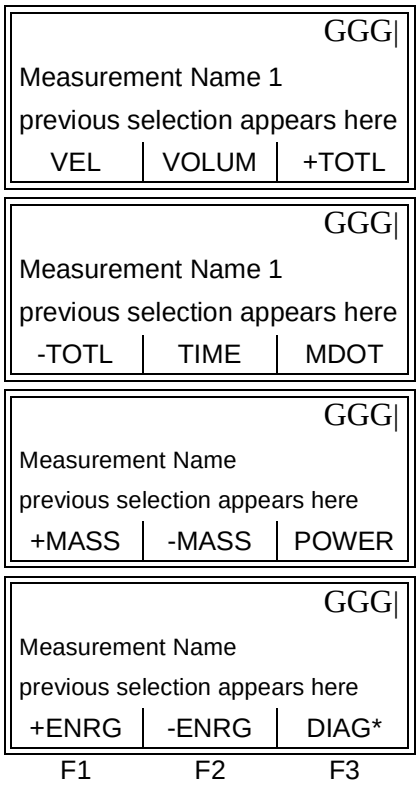
See Table 3-3 below for a description of the channel options available at the above prompt.

Table 3-3: Channel Options

Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2

Programming the Log Channels (cont.)

The flow parameter to be logged may now be selected as follows:



Use the [◁] and [▷] keys to find the desired flow parameter, and press the [Fx] key under it to select it.

(See Table 3-4 below for a description of the available measurement parameters.)

Note: All the options shown to the left will only appear if the Mass Flow and Energy Options are activated.

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

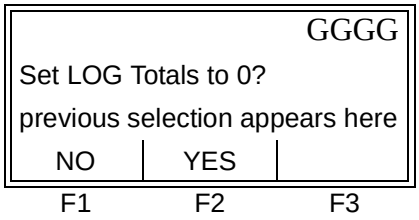
Table 3-4: Measurement Parameter Options

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] = POWER	Energy Flow Power
[▷] + [▷] + [▷] + [F1] = +ENRG	Forward Energy Flow
[▷] + [▷] + [▷] + [F2] = -ENRG	Reverse Energy Flow
[▷] + [▷] + [▷] + [F3] = DIAG*	Diagnostic Parameters

The previous two prompts repeat until all of the Log Channels have been set up.

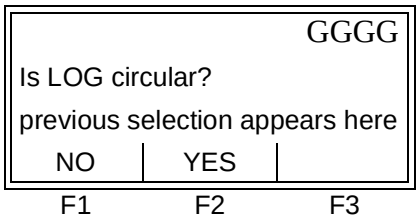
Setting Up an Error Log (cont.)

When all of the log parameters have been set up, continue with the log setup procedure as follows:



Press [F2] to clear the current log totals or press [F1] to keep the current log totals. (**Note:** this prompt appears only if a totalized parameter was chosen for logging.)

Note: *Responding* YES *at the above prompt clears only the log totals; it does not clear the meter totalizers. See Chapter 5,* Clearing Data, *for details.*



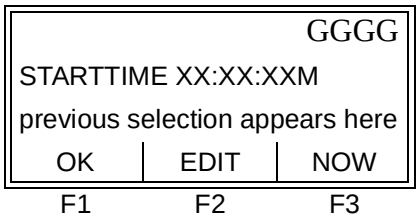
Press [F2] to create a circular log or press [F1] to create a linear log.

Note: *If* FLASH *was chosen as the memory location for the log file, the above prompt does not appear.*

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 (one reading of each Log Channel), previously recorded data is overwritten by the new data.

IMPORTANT: *If data from a single circular log cycle exceeds the meter's memory capacity, the earliest logged data will be lost.*

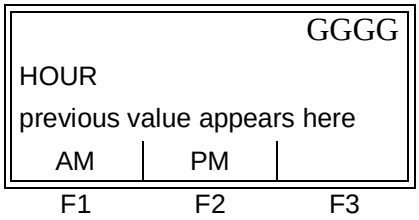
STARTTIME Prompt



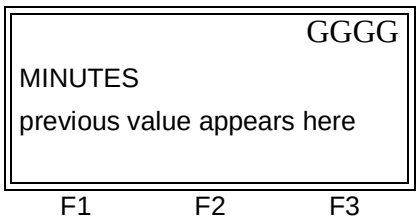
Press [F1] to accept the displayed start time or press [F2] to enter a different start time. To start logging immediately, press [F3].

If you selected:

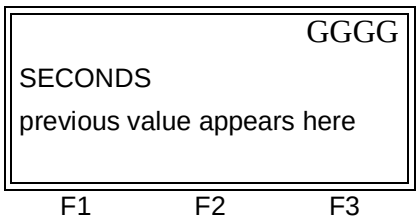
- OK - proceed to the START DATE prompt on page 3-17.
- NOW - proceed to LOG CREATED prompt on page 3-18.
- EDIT - continue with the next prompt that follows.



Press [F1]-[F2] to select AM or PM. Then, enter the desired hour (1-12) and press [ENT]. (Entry of a start time earlier than the current time will generate an error message.)

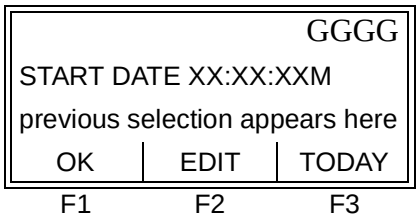


Enter the desired minutes and press [ENT]. The acceptable range is 0 to 59.



Enter the desired seconds and press [ENT]. The acceptable range is 0 to 59.

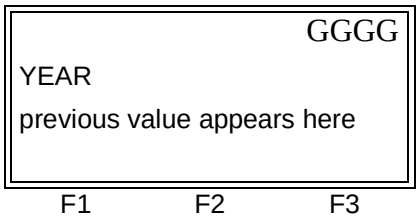
START DATE Prompt



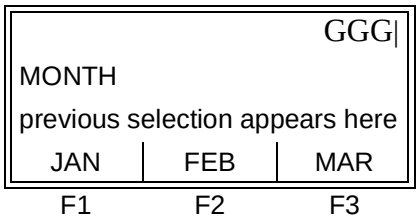
Press [F1] to accept the displayed start date or press [F2] to enter a different start date. To start logging today, press [F3].

If you selected:

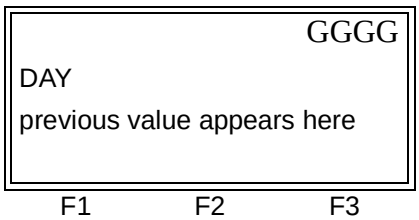
- OK or TODAY - proceed to the LOG CREATED prompt on page 3-18.
- EDIT - continue with the next prompt that follows.



Enter the desired year and press [ENT]. The acceptable range is 0 to 99.



Use the [◁] and [▷] keys to find the desired month, and press the [Fx] key under it to select it.

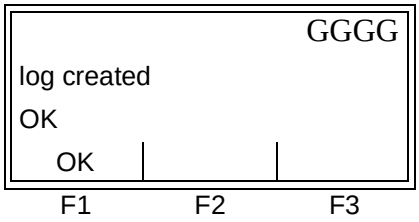


Enter the desired day and press [ENT]. The acceptable range is 1 to the number of days in the selected month (28, 29, 30 or 31).

Setting Up an Error Log (cont.)

The error log will continue to run until it is manually stopped, the meter runs out of memory (for a non-circular log), or the entire 120 records (2 pages x 60 records/page) have been logged.

Now that the error log setup has been completed, the following confirmation screen appears:

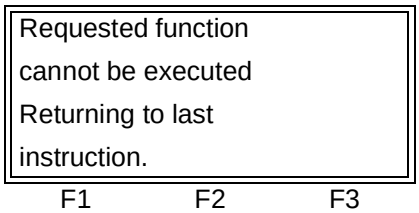


Press [F1] or [ENT] to acknowledge the message and return to the main RCCU menu and begin logging.

Checking the XMT868 Memory

Use the MEM sub-menu 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 XMT868 suggests that some old logs be cleared to make room for the new log.

If [F2] was pressed to select MEM at the LOGGING prompt shown on page 3-2, the following message appears:



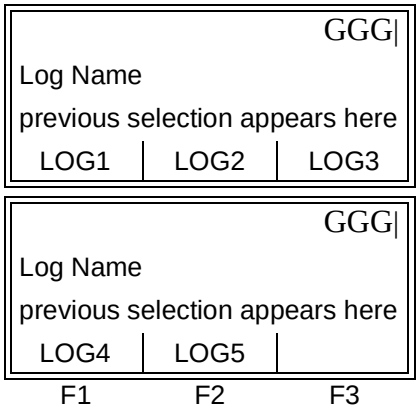
This function has not yet been implemented for the XMT868.

After displaying the above message, the meter returns to the initial LOGGING prompt shown on page 3-2.

Stopping a Log

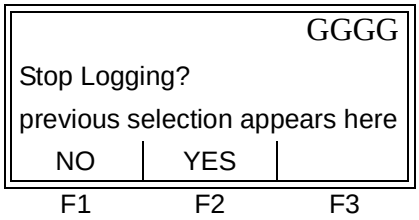
Use the STOP sub-menu to terminate a logging process that is currently active. If [F3] was pressed to select STOP at the LOGGING prompt shown on page 3-2, complete the following steps to stop a log:

Note: *Once a log is stopped it cannot be restarted, but the log remains in memory. To clear the log from memory, refer to Chapter 5,* Clearing Data, *for instructions.*



Use the [◁] and [▷] keys to find the desired log, and press the [Fx] key under it to select it.

(This prompt displays all active and completed log files currently stored in memory.)

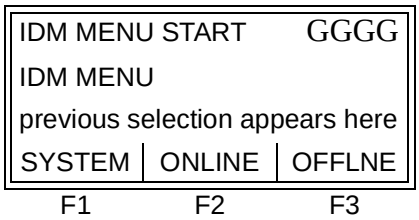


Press [F1] to continue logging or press [F2] to stop logging. The meter returns to the LOGGING prompt shown on page 3-2.

Uploading a Log File to the RCCU

Any completed log files stored in the XMT868's memory may be uploaded into the RCCU's memory. The files may then be displayed and examined on the RCCU display without the need to establish an ONLINE communication link with the XMT868.

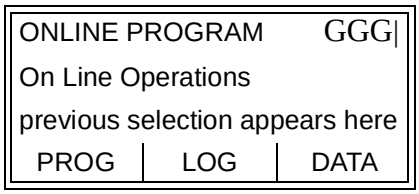
To upload a log file, power up the RCCU and complete the following steps:



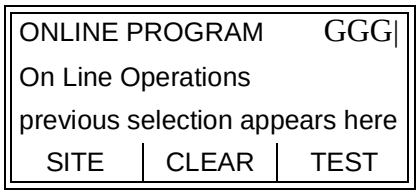
Press the [F2] key to select ONLINE.

Uploading a Log File to the RCCU (cont.)

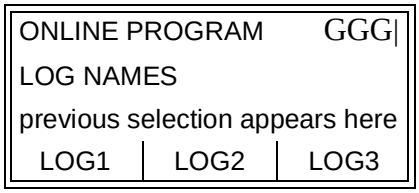
After communication between the RCCU and the XMT868 has been established (see Chapter 3, *Operation*, of the *Startup Guide*), refer to Figure A-7 on page A-7 and continue as follows:



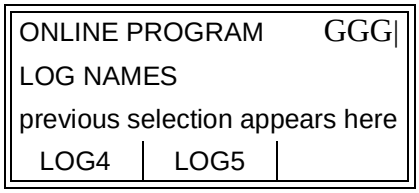
Press the [F2] key to select LOG.



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

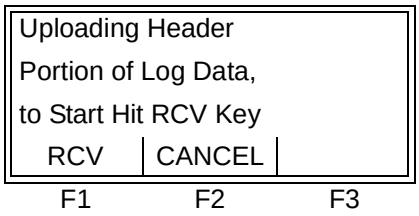


Use the [◁] and [▷] keys to find the desired log file, and press the [Fx] key under it to select it.



(This prompt displays all completed log files currently stored in the XMT868's memory.)

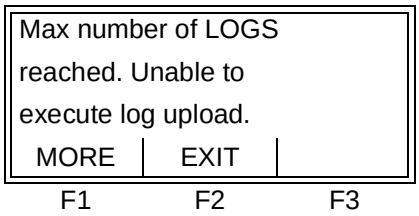
Uploading a Log File to the RCCU (cont.)



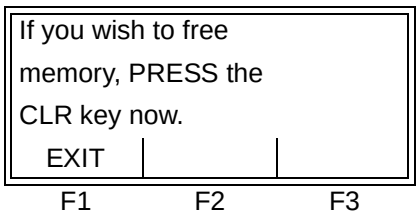
Press [F1] to begin receiving the log header or press [F2] abort the operation and return to the main RCCU menu.

If the RCCU has insufficient memory to upload the chosen log file, the following prompts appear:

If memory is OK



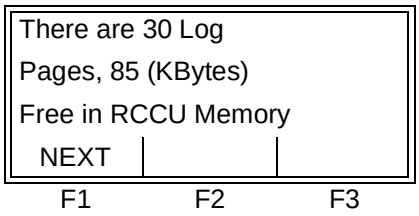
Press [F1] to read more information, or press [F2] abort the upload and return to the main RCCU menu.



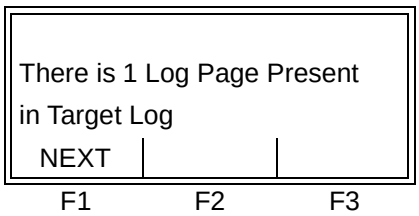
Press [CLR] to clear the RCCU memory or press [F1] abort the operation and return to the main RCCU menu.

If memory is low

If the RCCU does have sufficient memory to upload the chosen log file, prompts like the following appear:



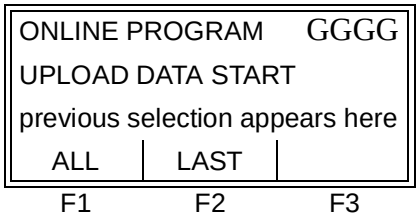
Press [F1] to read the next prompt.



Press [F1] to read the next prompt.

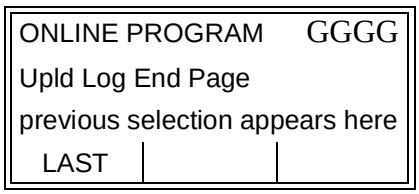
Uploading a Log File to the RCCU (cont.)

At the following prompt, the portion of the target log to be uploaded may be specified.

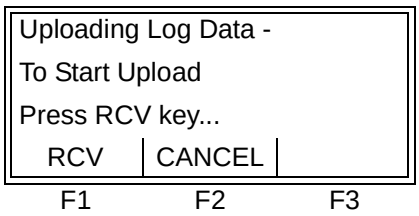


Press [F1] to upload the entire file, [F2] to upload only the last page, or enter a starting page number and press [ENT] to upload only a specific range of pages.

If a starting page number was entered at the above prompt, specify a final page number at the following prompt.



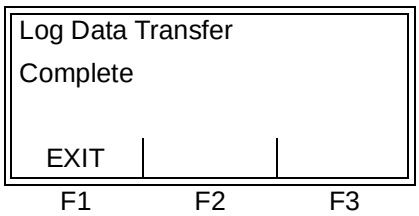
Enter a final page number and press [ENT] or press [F1] to begin receiving the log pages.



Press [F1] to begin the upload, or press [F2] to abort the operation.

Note: *If the RCCU runs out of memory while uploading the log file, instructions to hit the* [CLR] *key to make additional room in memory will appear. Refer to Chapter 5,* Clearing Data*, for instructions on deleting logs from the RCCU.*

The uploading process may take several minutes and may even continue after the display reads *100 Percent Complete.* Be sure to keep the RCCU pointed directly at the XMT868 until the following display appears:



Press [F1] or [EXIT] to return to the main RCCU menu.

To read an uploaded log file, see the next section for instructions.

Reading a Log File with the RCCU

Any log file that has been uploaded into the RCCU's memory may be read on the RCCU's display. However, because the display is too small to show an entire page or record at once, the log must be shown one *screen* at a time.

Log File Structure

To understand how the log is divided into screens, the structure of a log file must first be discussed. A typical XMT868 log file consists of *pages* and *records*, with a maximum of 120 records per page and a maximum number of pages limited by the amount of memory available in the XMT868. Each page is further sub-divided as follows:

Header Record - this is listed as Record #0 and it includes:

- log name
- log start date and start time
- log end date and end time
- information about each of the parameters selected for logging

Data Records - these are listed as Record #1 to Record #x (where, x = number of final record or 120 max.). Each data record includes:

- date and time of the record
- values for all logged parameters at that time
- any error codes generated at that time

Figure 3-1 below shows the screens of a typical 3-parameter log file. Note that the first column shows the date and time of the record and that there is one additional column for each logged parameter. Each row represents one record.

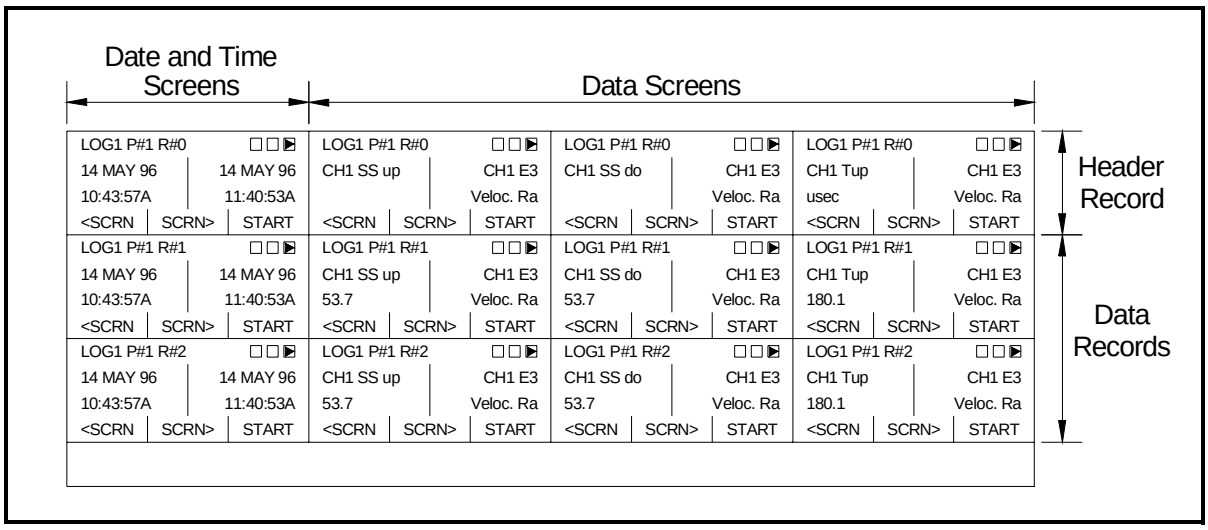


Figure 3-1: A Typical Log File

Log File Structure (cont.)

As shown in Figure 3-1 on page 3-23 there are four different categories of screens in the log file:

- header record - date and time screen (row 1, column 1)
- header record - data screens (row 1, columns 2-4)
- data record - date and time screens (rows 2-end, column 1)
- data record - data screens (rows 2-end, columns 2-4)

See Figure 3-2 below for a complete description of the information contained in each of these screen types.

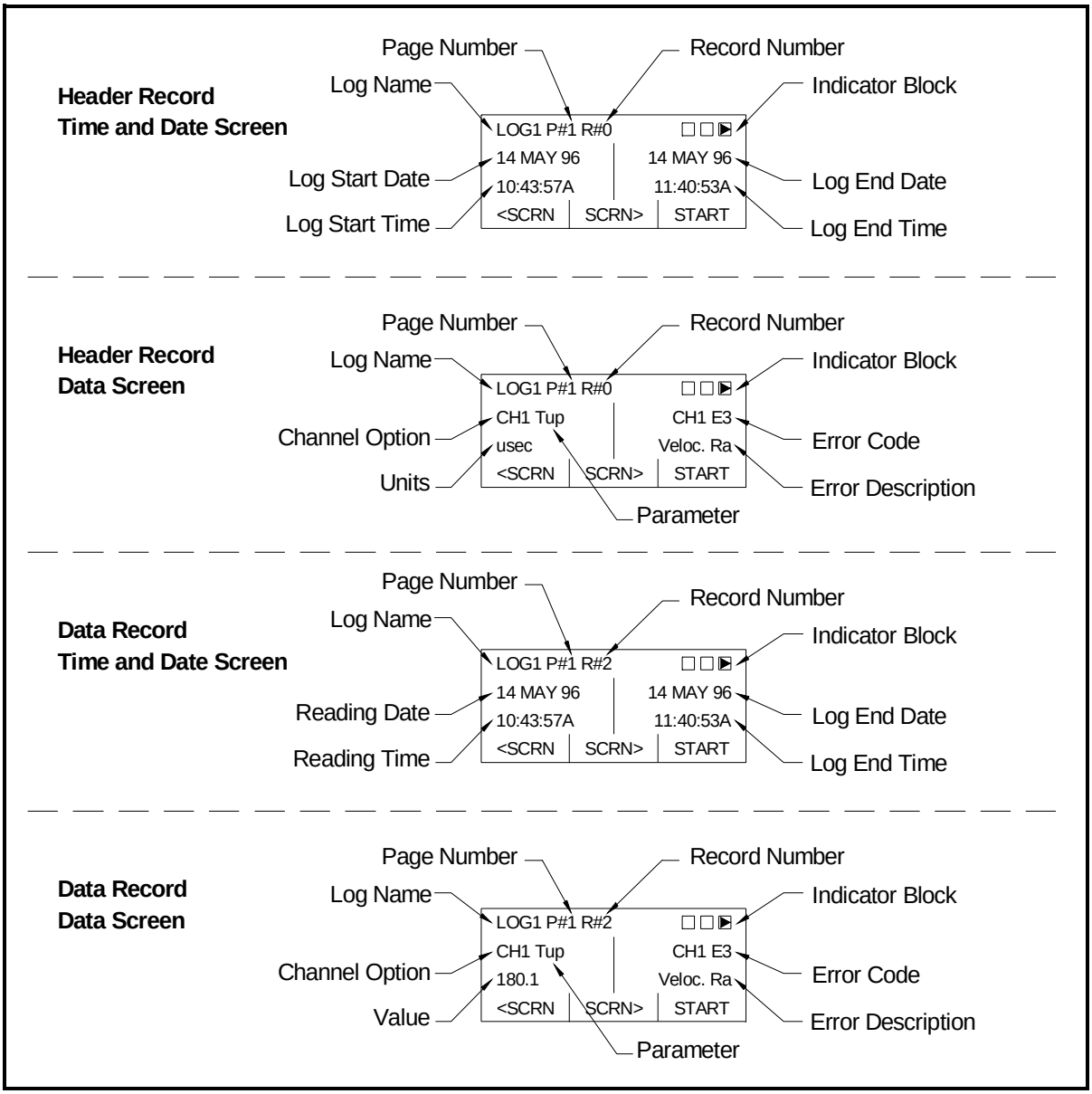
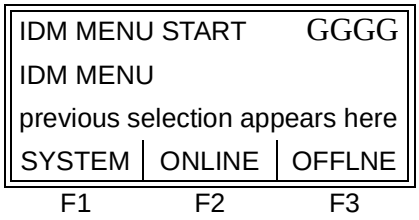


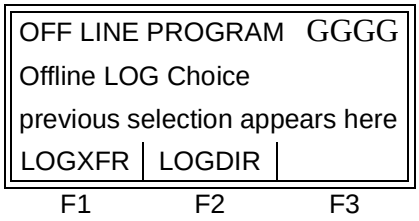
Figure 3-2: RCCU Log Display Screens

Selecting a Log to Read

To read a log that is currently stored in the RCCU's memory, power up the RCCU and complete the following steps:

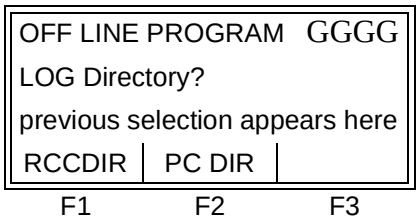


Press the [F3] key to select OFFLINE.

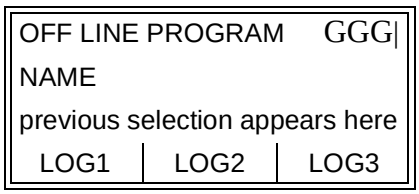


Press [F2] to view the log directories.

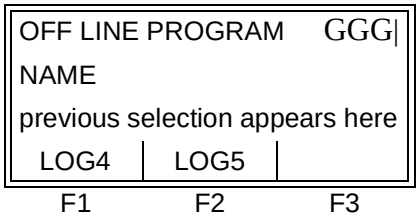
Note: *The* LOGXFR *option is used to transfer logs from the RCCU memory to the memory of a PC connected via the XMT868 serial port.*



Press [F1] to view the logs stored in the RCCU file directory.



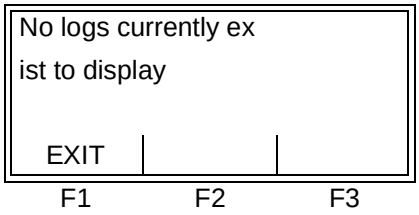
Use the [◁] and [▷] keys to find the desired log file, and press the [Fx] key under it to select it.



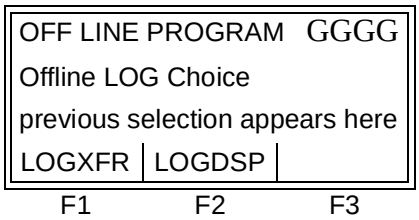
(This prompt displays all log files currently stored in the RCCU's memory.)

Selecting a Log to Read (cont.)

If there are no logs currently stored in the RCCU's memory, the following message appears:



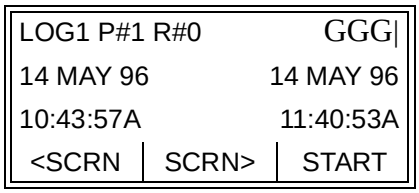
Press [F1] or [EXIT] to return to the main RCCU menu.



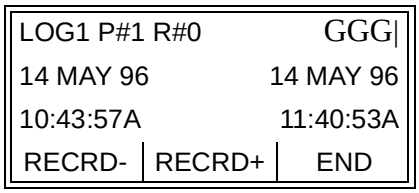
Press [F2] to display the log file selected at the previous prompt.

Navigating Through the Log Screens

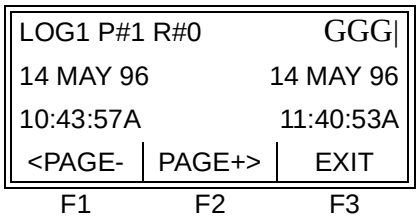
After selecting a log file for display, a *header record date and time screen* similar to the following appears for page 1 of the file:



Use the [◁] and [▷] keys to find the desired navigation option, and press the [Fx] key under it to execute it.



(See Table 3-5 below for a description of the available navigation options.)



The options available at the above prompt via the [Fx] keys are used to navigate through the screens of the chosen log file. These options are described in Table 3-5 on the following page.

Navigating Through the Log Screens (cont.)

Table 3-5: Log Navigation Options

Option Name	Description
<SCRN	display the next screen to the left
SCRN>	display the next screen to the right
START	display the first record on the page
RECRD-	display the next screen above
RECRD+	display the next screen below
END	display the last record on the page
<PAGE-	display the previous page
PAGE+>	display the next page
EXIT	return to the main menu

Note: *The* [↑] *and* [↓] *keys on the RCCU keypad perform the same function as the* RECRD- *and* RECRD+ *options above. Also, the* [EXIT] *key on the keypad is equivalent to the* EXIT *option.*

Chapter 4

Printing Data

Data Types for Printing

The Model XMT868 flowmeter has no ability to print any of its data either directly or through a Remote Control Communications Unit (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 XMT868 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 additional information, refer to* 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 Manual* for the IDM software.

Chapter 5

Clearing Data

Introduction

This chapter explains how to purge totalized measurements, site data and/or log files from both the XMT868's memory and the RCCU's memory. The instructions in this chapter are separated into the following two categories:

- Clearing the RCCU's memory
- Clearing the XMT868's memory

Note: *For detailed information on creating a log file, see Chapter 3,* Logging Data. *For detailed information on programming site data, see Chapter 1,* Programming Site Data.

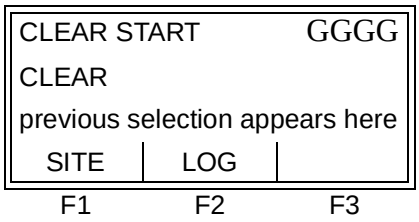
Refer to Figure A-7 on page A-7 in Appendix A, *Menu Maps*, and proceed to the desired section for detailed instructions. Each sub-menu may be followed in the sequence shown or the [↑] and [↓] keys may be used to scroll through the prompts.

IMPORTANT: *None of the clearing procedures described in this chapter can be undone. Be very sure that the exact consequences of a selected option are thoroughly understood before proceeding.*

Clearing the RCCU's Memory

If the RCCU's available memory becomes nearly full, it may be necessary to purge some or all of the existing data from memory, before any additional data can be stored. In order to accomplish this task, press the [CLR] key on the RCCU keypad. Refer to Figure A-7 on page A-7 in Appendix A, *Menu Maps.*

IMPORTANT: *If the RCCU is currently* ONLINE, *the* [CLR] *key will not be functional.*



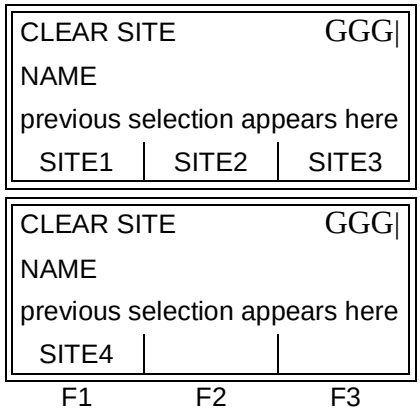
Press [F1] to clear a site file or press [F2] to clear a log file from the RCCU memory.

Based on the selection made at the above prompt, proceed to the appropriate sub-section for step-by-step instructions.

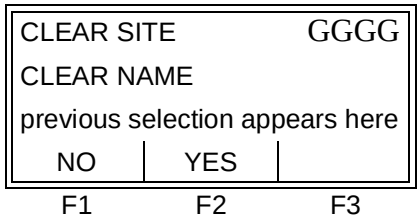
Clearing a Site File

To clear a site file from the RCCU's memory, complete the following steps:

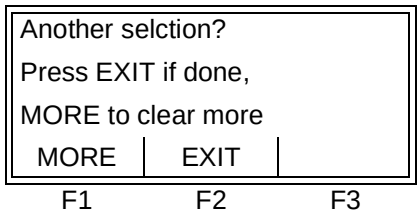
Note: *All site files currently stored in the RCCU's memory appear at the next prompt. If there are no site files currently in memory, skip directly to the final prompt in this section.*



Use the [◁] and [▷] keys to access the files shown, and press the [Fx] key under the desired site file to delete it.

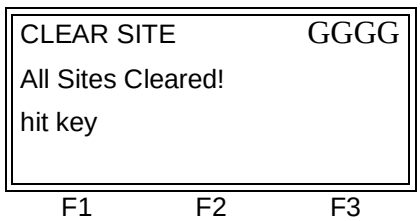


Press [F2] to clear the site file selected at the previous prompt, or press [F1] to abort the operation.



Press [F1] to return to the NAME prompt above and clear additional site files, or press [F2] to return to the main RCCU menu.

Note: *If* [F1] = MORE *is chosen above and there are no additional site files stored in the RCCU's memory, the following prompt appears.*



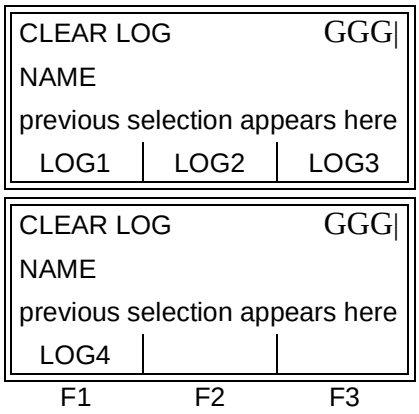
Press any key to return to the main RCCU menu.

To clear additional data, proceed to the appropriate section of this chapter for instructions.

Clearing Log Files

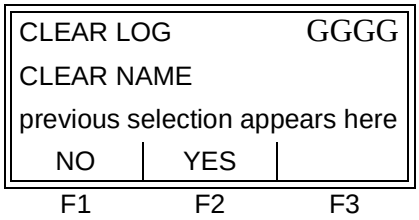
To clear log files from the RCCU's memory, complete the following steps:

Note: *All log files currently stored in the RCCU's memory appear at the next prompt. If there are no log files currently in memory, skip directly to the final prompt in this section.*



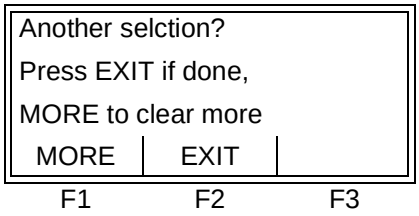
Use the [◁] and [▷] keys to access the files shown, and press the [Fx] key under the desired log file to delete it.

IMPORTANT: *The* CLEAR LOG *prompts for the RCCU and the XMT868 are nearly identical. The only difference is that a "T" for "Target" is included in parentheses at the XMT868 prompt (i.e.* CLEAR LOG (T)*).*



Press [F2] to clear the log file selected at the previous prompt, or press [F1] to abort the operation and return to the NAME prompt above.

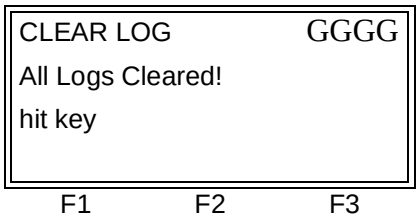
Note: *While the log file is being cleared, messages may appear to indicate that headers and pages are being deleted.*



Press [F1] to return to the NAME prompt above and clear additional log files, or press [F2] to return to the main RCCU menu.

Note: *If* [F1] = MORE *is chosen above and there are no additional log files stored in the RCCU's memory, the following prompt appears.*

Clearing Log Files (cont.)



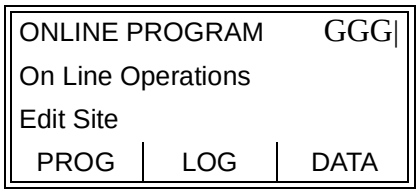
Press any key to return to the main RCCU menu.

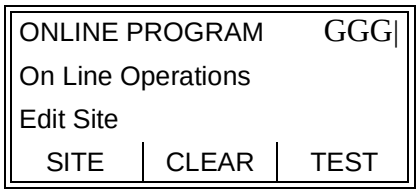
To clear additional data, proceed to the appropriate section of this chapter for instructions.

Clearing the XMT868's Memory

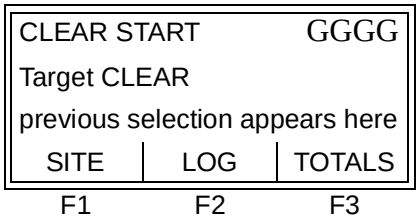
If the XMT868's available memory becomes nearly full, it may be necessary to purge some or all of the existing data from memory, before any additional data can be stored. In order to accomplish this task, enter the Clear Menu as follows (refer to Figure A-7 on page A-7 in Appendix A, *Menu Maps)*:

Note: *Depending on the current configuration of the XMT868, it may be possible to add additional memory by installing an option card in* Slot 2. *See Chapter 4,* Parts Replacement*, of the* Service Manual *for details.*





Use the [◁] and [▷] keys to access the options shown, and press the [F2] key under CLEAR to access that menu.



Press [F1] to clear a site file, press [F2] to clear a log file, or press [F3] to clear the totalizer.

Based on the selection made at the above prompt, proceed to the appropriate section for step-by-step instructions.

Clearing Site Data

This feature has not yet been implemented, because the XMT868 currently has no capability to store site files in its own memory. If [F1] was selected at the Target CLEAR prompt on page 5-4, the following display appears briefly:

```
NO SITES TO CLEAR!
Target has WORKING
SITE only!!!

F1        F2        F3
```

After displaying the above message, the meter returns to the main RCCU menu. To clear additional data, proceed to the appropriate section of this chapter for instructions.

Clearing Log Files

To clear log files from the XMT868's memory, complete the following steps:

Note: *All log files currently stored in the XMT868's memory appear at the next prompt. If there are no log files currently in memory, skip directly to the final prompt in this section.*

```
CLEAR LOG (T)                GGG|
NAME
previous selection appears here
 LOG1   |  LOG2   |  LOG3
```

```
CLEAR LOG (T)                GGG|
NAME
previous selection appears here
 LOG4   |         |
F1        F2        F3
```

Use the [◁] and [▷] keys to access the files shown, and press the [Fx] key under the desired log file to delete it.

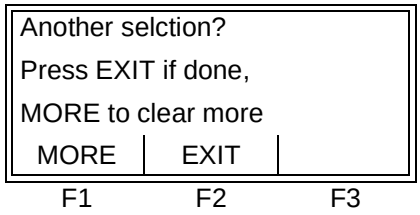
IMPORTANT: *The* CLEAR LOG *prompts for the RCCU and the XMT868 are nearly identical. The only difference is that a "T" for "Target" is included in parentheses at the XMT868 prompt (i.e.* CLEAR LOG (T)*).*

```
CLEAR LOG (T)                GGGG
CLEAR NAME
previous selection appears here
  NO    |  YES    |
F1        F2        F3
```

Press [F2] to clear the log file selected at the previous prompt, or press [F1] to abort the operation and return to the NAME prompt above.

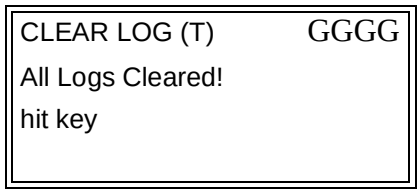
Clearing Log Files (cont.)

Note: *While the log file is being cleared, messages may appear to indicate that headers and pages are being deleted.*



Press [F1] to return to the NAME prompt above and clear additional log files, or press [F2] to return to the main RCCU menu.

Note: *If* [F1] = MORE *is chosen above and there are no additional log files stored in the RCCU's memory, the following prompt appears:*



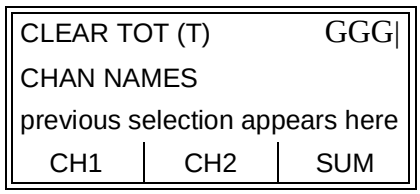
Press any key to return to the main RCCU menu.

To clear additional data, proceed to the appropriate section of this chapter for instructions.

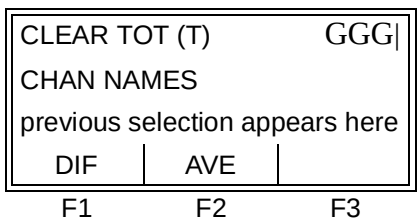
Clearing the Totalizers

To clear the XMT868's totalizer (i.e. reset a specified totalized flow rate to zero), complete the following steps:

Note: *The options available at the next prompt depend on how many channels of the XMT868 are currently active. For a single channel meter, only the* CH1 *option appears.*



Use the [◁] and [▷] keys to access the options shown, and press the [Fx] key under the desired totalizer to be cleared.



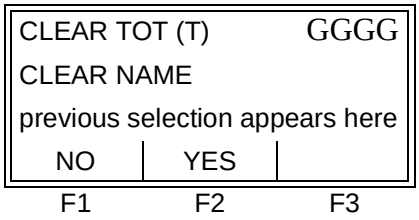
(See Table 5-1 on page 5-7 for a description of the various options.)

IMPORTANT: *If* SUM, DIF *or* AVE *is selected at the above prompt, all totals will be cleared.*

Clearing the Totalizers (cont.)

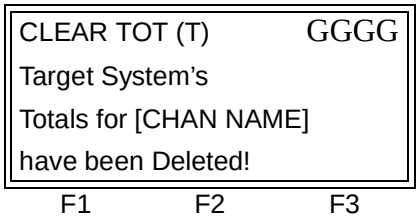
Table 5-1: Channel Options

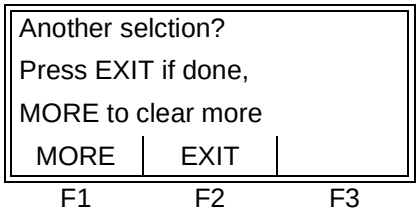
Option	Description
CH1	Channel 1
CH2	Channel 2
SUM	CH1+CH2
DIF	CH1-CH2
AVE	(CH1+CH2)/2



Press [F2] to clear the totalizer selected at the previous prompt, or press [F1] to abort the operation.

After the selected totalizer has been cleared, a confirmation message such as the following is displayed briefly:





Press [F1] to return to the CHAN NAMES prompt on page 5-6 and clear additional totals, or press [F2] to leave the CLEAR menu.

After [EXIT] is selected at the above prompt, the RCCU terminates its link with the XMT868 and returns to its main menu. To clear additional data, proceed to the appropriate section of this chapter for instructions.

Appendix A

Menu Maps

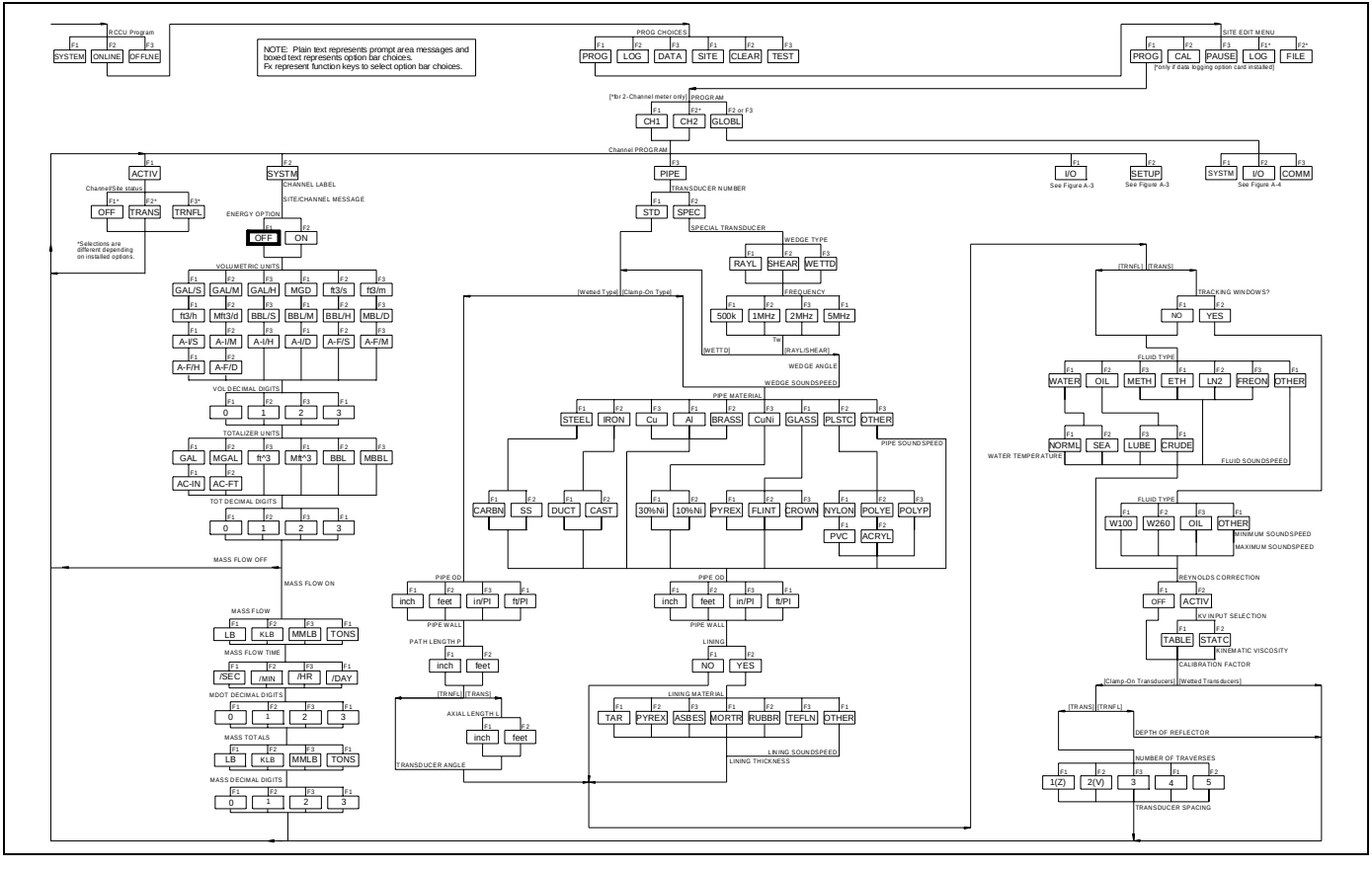


Figure A-1: The CHx-ACTIV, SYSTM and PIPE with Energy OFF Menu Maps

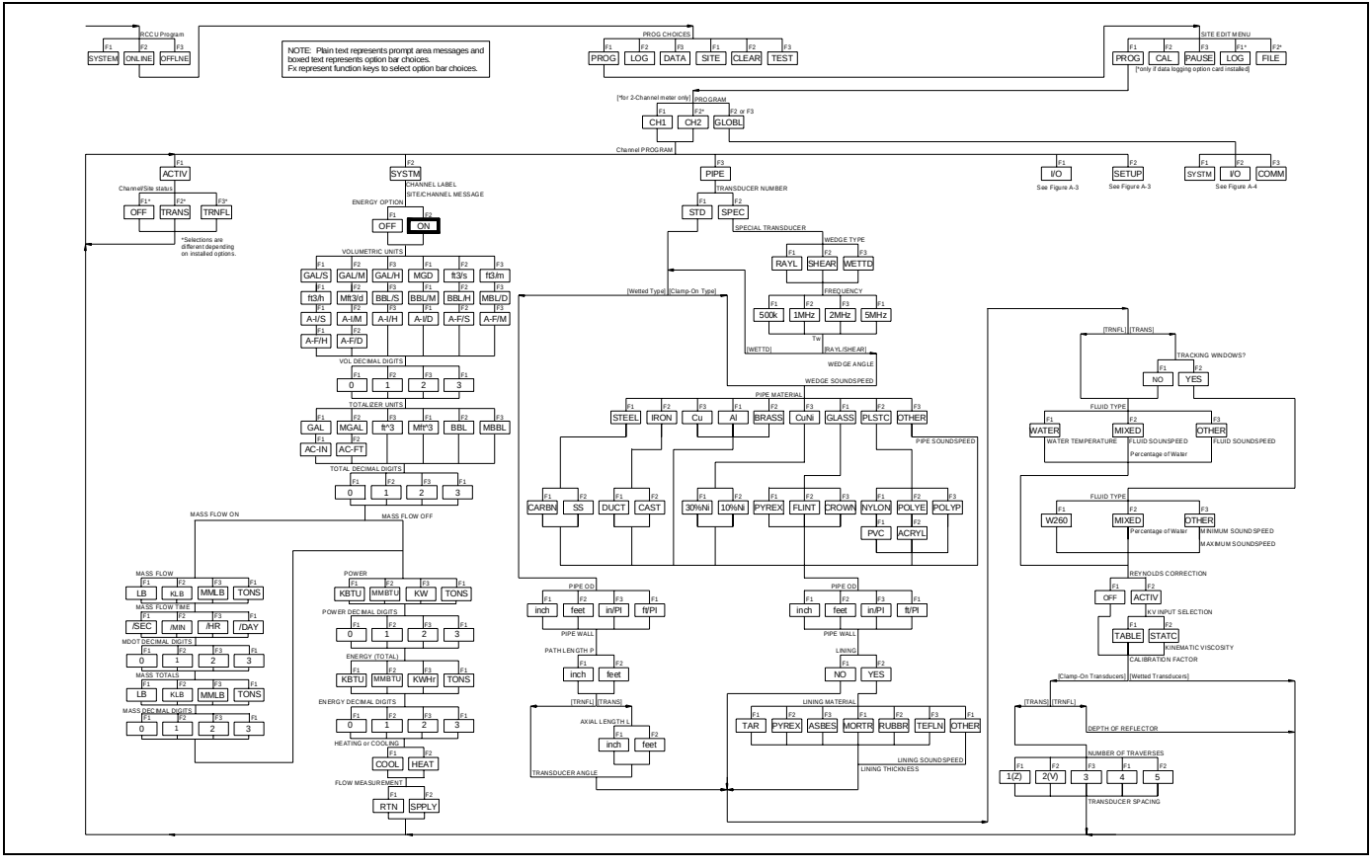


Figure A-2: The CHx-ACTIV, SYSTM and PIPE with Energy ON Menu Maps

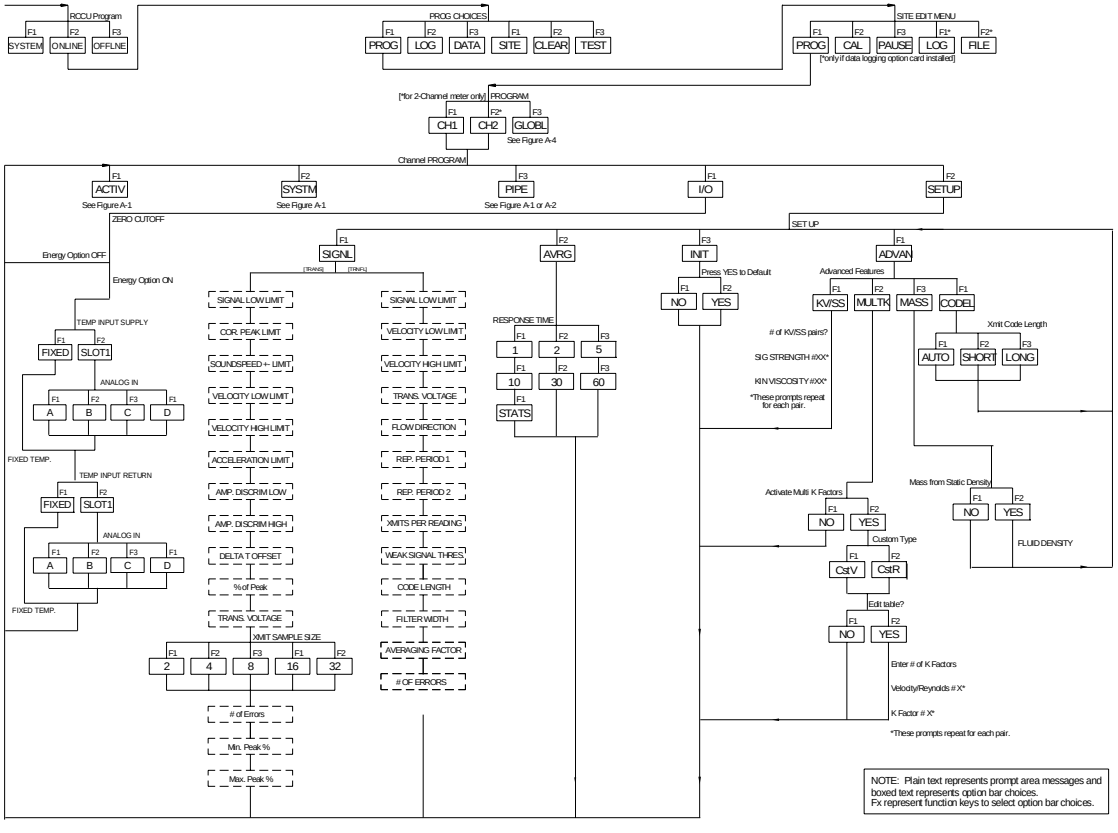


Figure A-3: The CHx-I/O and SETUP Menu Maps

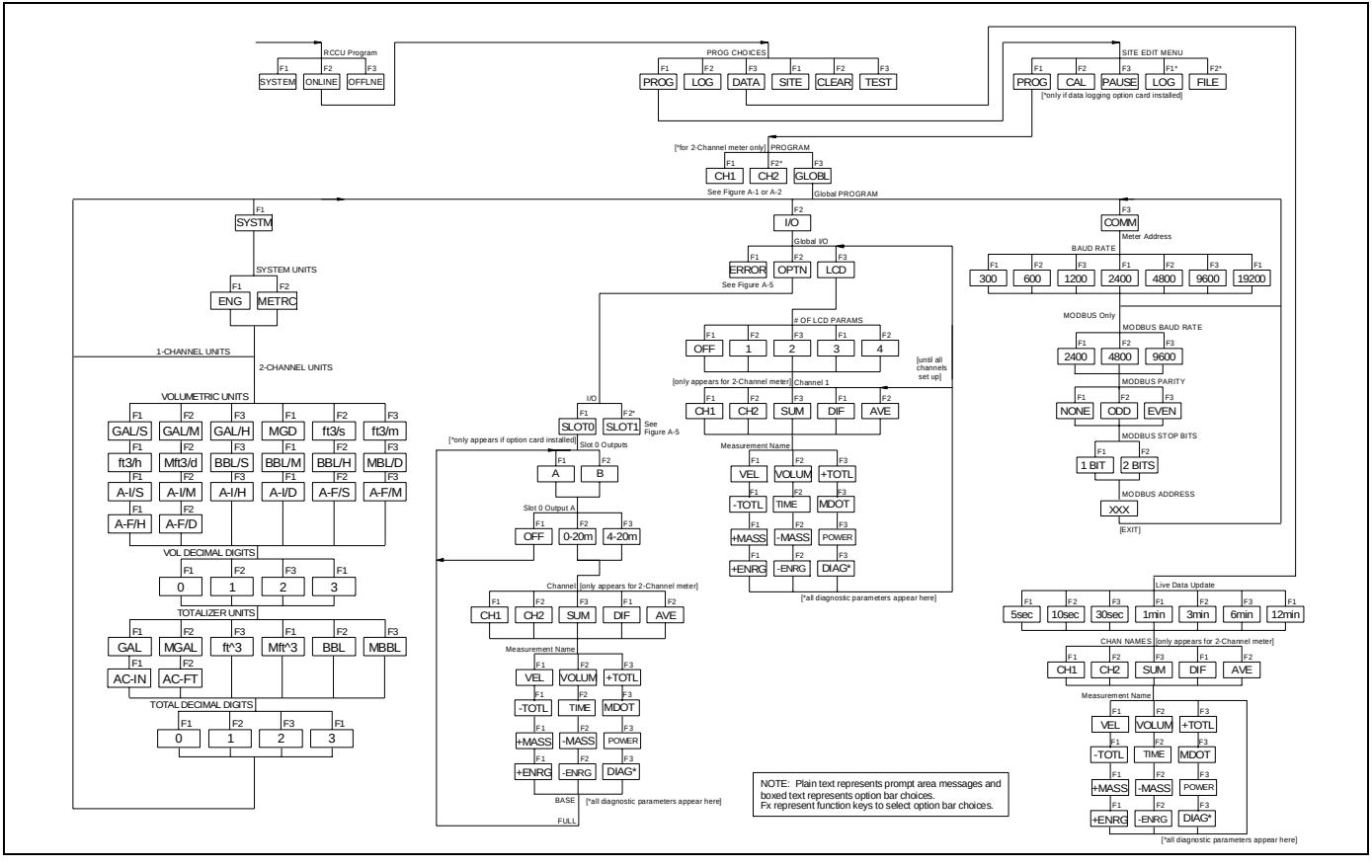


Figure A-4: The Display (DATA), GLOBL-SYSTM, SLOT0 and COMM Menu Maps

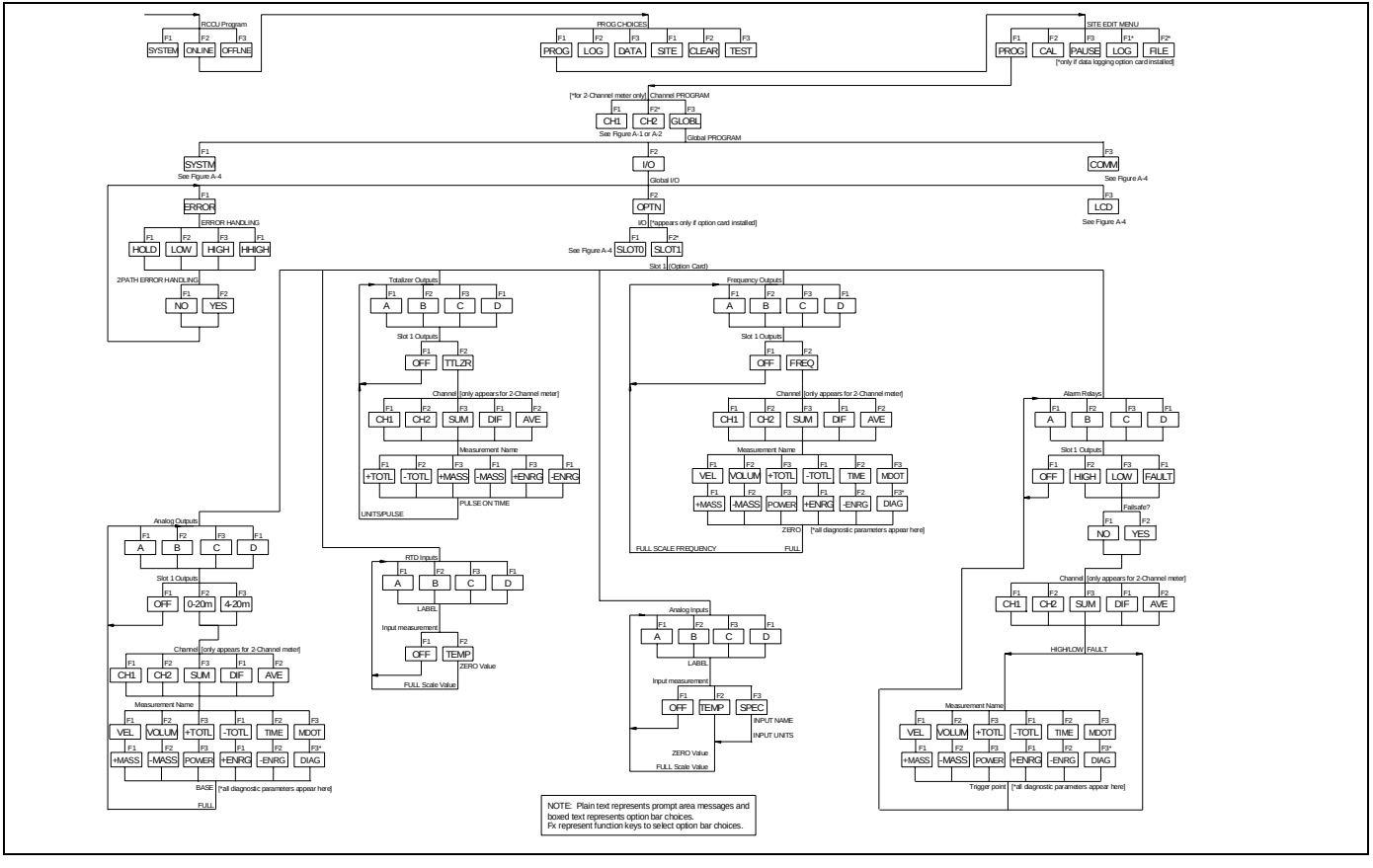


Figure A-5: The GLOBL-I/O-ERROR and OPTN Menu Maps

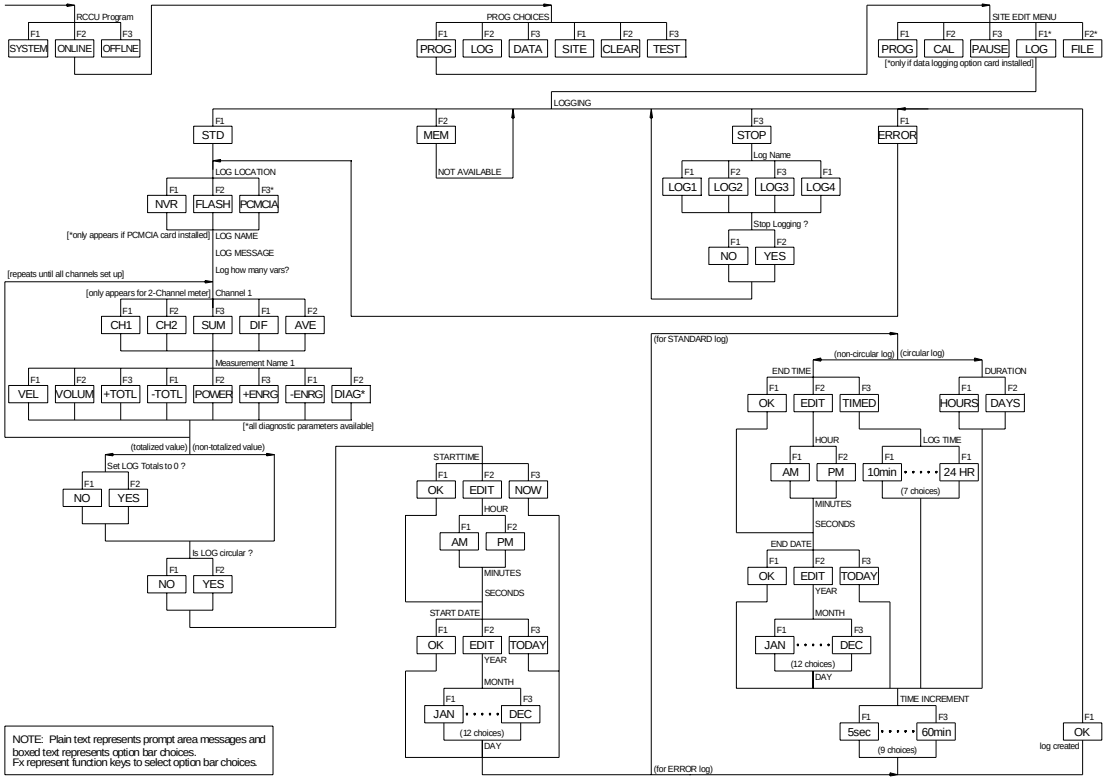


Figure A-6: The PROG-LOG Menu Map

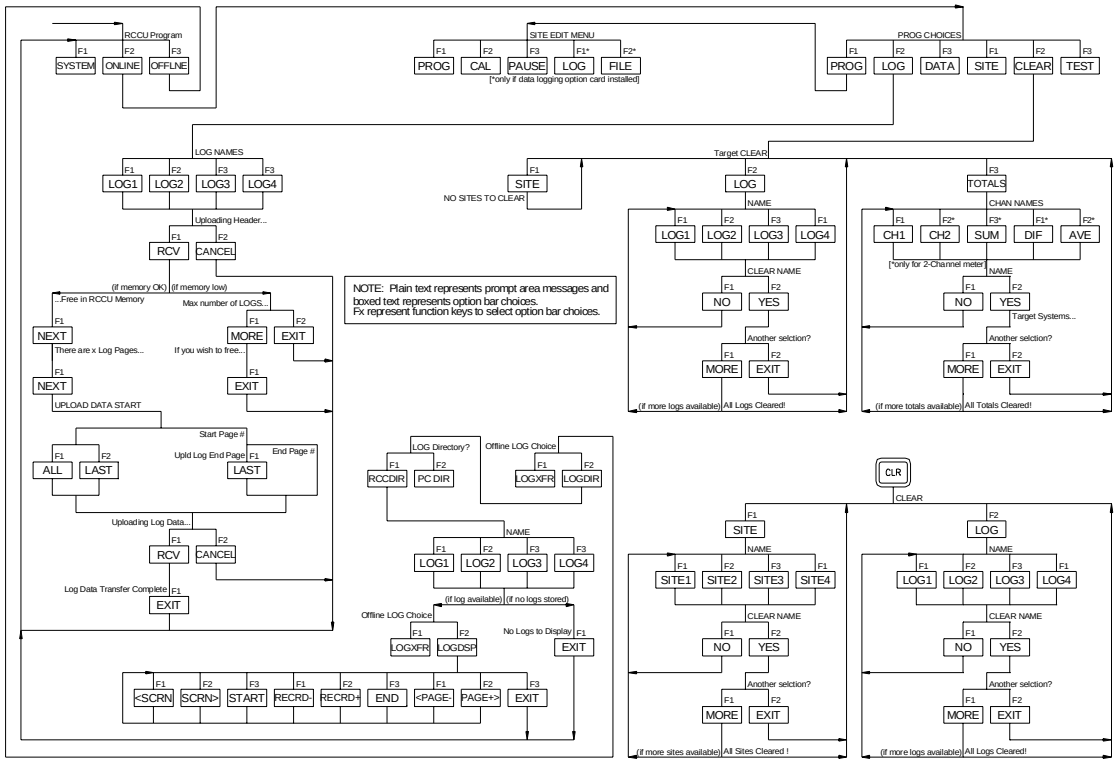


Figure A-7: The LOG and CLEAR Menu Map

Appendix B

Data Records

Available Option Cards

The XMT868 can accommodate 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 #713-	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 Inputs
1223-05		TR - 2 RTD Inputs/2 Totalizer Inputs
1223-06		FI - 2 Current Inputs/2 Frequency Inputs
1223-07		FR - 2 RTD Inputs/2 Frequency Inputs
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 Protocol

Option Cards Installed

Whenever an option card is installed or changed in the XMT868 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		

Site Data

After the Model XMT868 flow transmitter has been installed, specific site data must be entered via the *User Program*, prior to operation. Record that information in Table B-3 below.

Table B-3: Site Data

General Information							
Model #				Serial #			
Software Vers.				Setup Date			
GLOBL-SYSTM							
Meter Message				Vol. Dec. Digits			
System Units	English	Metric		Totalizer Units			
Vol. Units				Tot. Dec. Dig.			
GLOBL-I/O-ERROR							
Error Handling				2-Path Error	No	Yes	
GLOBL-COMM							
Meter Address				MOD. Parity			
Baud Rate				MOD. Stop Bits			
MOD. Baud Rate				MOD. Address			
CHx-ACTIVE							
Channel 1				Channel 2 (if applicable)			
Channel Status	Off[1]	Trans	Tranfl	Channel Status	Off[1]	Trans	Tranfl
CHx-SYSTM							
Channel 1				Channel 2 (if applicable)			
Channel Label				Channel Label			
Chan. Message[2]				Chan. Message[2]			
Energy Option	On	Off		Energy Option	On	Off	
Vol. Units				Vol. Units			
Vol. Dec. Digits				Vol. Dec. Digits			
Totalizer Units				Totalizer Units			
Tot. Dec. Dig.				Tot. Dec. Dig.			
Mass Flow				Mass Flow			
Mass Flow Time				Mass Flow Time			
MDOT Dec. Dig.				MDOT Dec. Dig.			
Mass Totals				Mass Totals			
Mass Dec. Digits				Mass Dec. Digits			
Power				Power			
Power Dec. Dig.				Power Dec. Dig.			
Energy (Total)				Energy (Total)			
Energy Dec. Dig.				Energy Dec. Dig.			
Heat. or Cool.				Heat. or Cool.			
Flow Meas.				Flow Meas.			

[1]not available for 1-Channel meter, [2]"Site Message" for 1-Channel meter

Table B-3: Site Data (cont.)

CHx-I/O								
Zero Cutoff					Temp. Input	Fixed ( )		Live
Pipe/Transducer Parameters - *PIPE*								
Channel 1					Channel 2 (if applicable)			
Trans. Type	STD	SPEC			Trans. Type	STD	SPEC	
Transducer #					Transducer #			
Special Transducers					***Special Transducers***			
Wedge Type	Rayl	Shear	Wettd		Wedge Type	Rayl	Shear	Wettd
Frequency Hz					Frequency Hz			
Trans. Tw					Trans. Tw			
Wedge Angle					Wedge Angle			
Wedge Sndspd					Wedge Sndspd			
Pipe Material					Pipe Material			
All Clamp-On and Wetted Transducers					***All Clamp-On and Wetted Transducers***			
Pipe O.D.					Pipe O.D.			
Pipe Wall					Pipe Wall			
Path Length (P)					Path Length (P)			
Axial Length (L)					Axial Length (L)			
Trans. Angle					Trans. Angle			
Lining	Yes	No			Lining	Yes	No	
Lining Material					Lining Material			
Lining Sndspd					Lining Sndspd			
Lining Thickness					Lining Thickness			
Track. Window.	Yes	No			Track. Window.	Yes	No	
Fluid Type					Fluid Type			
Other/Sndspd					Other/Sndspd			
% of Water					% of Water			
Reynolds Corr.	Off	Active			Reynolds Corr.	Off	Active	
KV Input Sel.	Table	Static			KV Input Sel.	Table	Static	
Kin. Visc.					Kin. Visc.			
Cal. Factor					Cal. Factor			
# of Traverses					# of Traverses			
Trans. Spacing					Trans. Spacing			
Depth of Reflect.					Depth of Reflect.			
CHx-SETUP-AVRG								
Response Time								

Table B-3: Site Data (cont.)

CHx-SETUP-ADVAN-KV/SS

KV/SS Pairs			KV/SS Pairs		
#	Sig. Stren.	Kin. Visc.	#	Sig. Stren.	Kin. Visc.
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
11			11		
12			12		
13			13		
14			14		
15			15		
16			16		
17			17		
18			18		
19			19		
20			20		

CHx-SETUP-ADVAN-MULTIK

Custom Type	CstV	CstR	Custom Type	CstV	CstR
K-Factor Table			**K-Factor Table**		
K-Factor #	Vel./Reyn.	K Factor	K-Factor #	Vel./Reyn.	K Factor
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
11			11		
12			12		
13			13		
14			14		

Table B-3: Site Data (cont.)

CHx-SETUP-ADVAN-MULTIK (cont.)						
K-Factor #	Vel./Reyn.	K Factor		K-Factor #	Vel./Reyn.	K Factor
15				15		
16				16		
17				17		
18				18		
19				19		
20				20		
CHx-SETUP-ADVAN-MASS						
Mass Flow	No	Yes		Mass Flow	No	Yes
Static Density				Static Density		
CHx-SETUP-ADVAN-CODEL						
Code Length	Auto Short Long			Code Length	Auto Short Long	

Appendix C

Instrument Data Manager

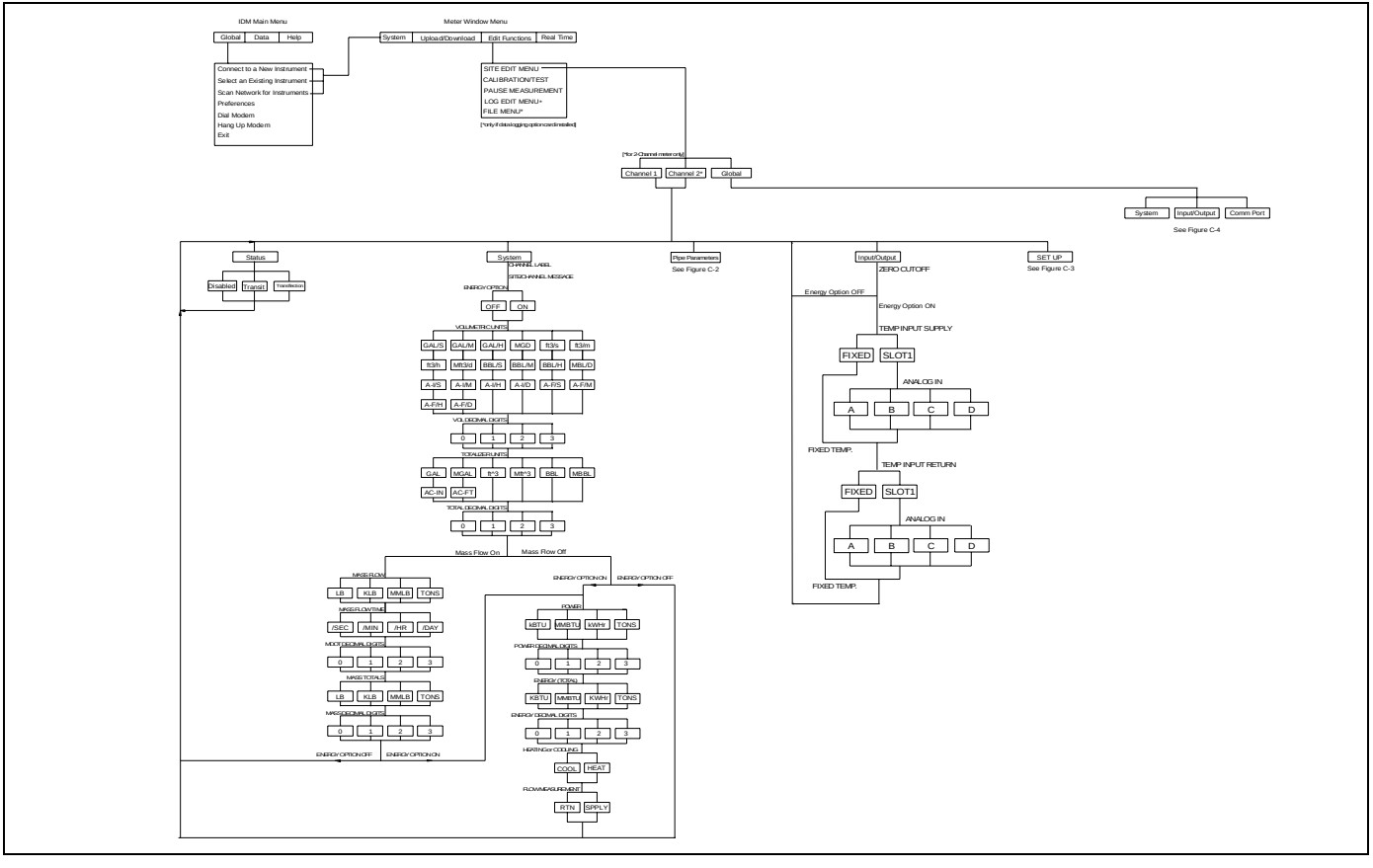


Figure C-1: The CHx-STATUS, SYSTEM and INPUT/OUTPUT Menu Maps

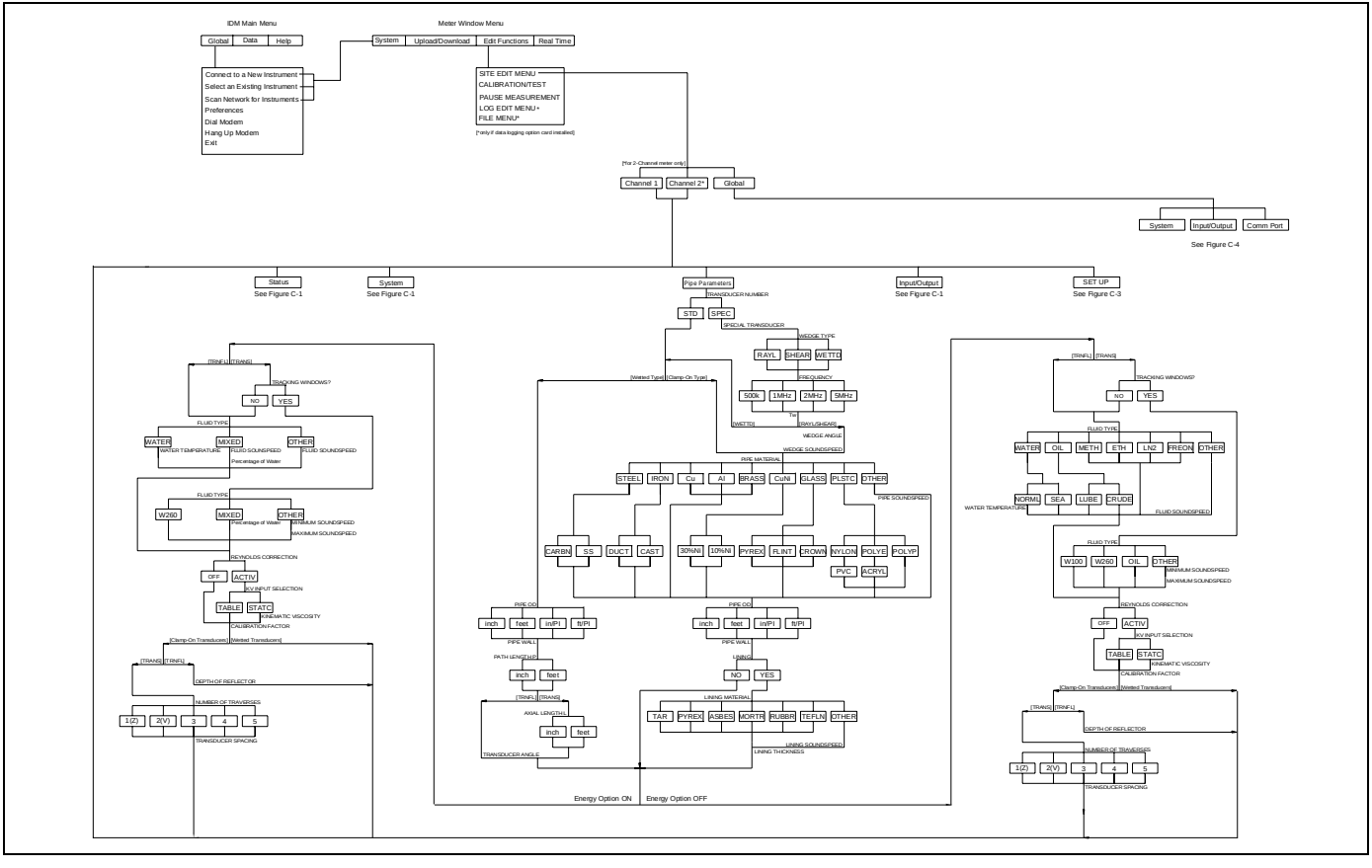


Figure C-2: The CHx-PIPE Menu Map

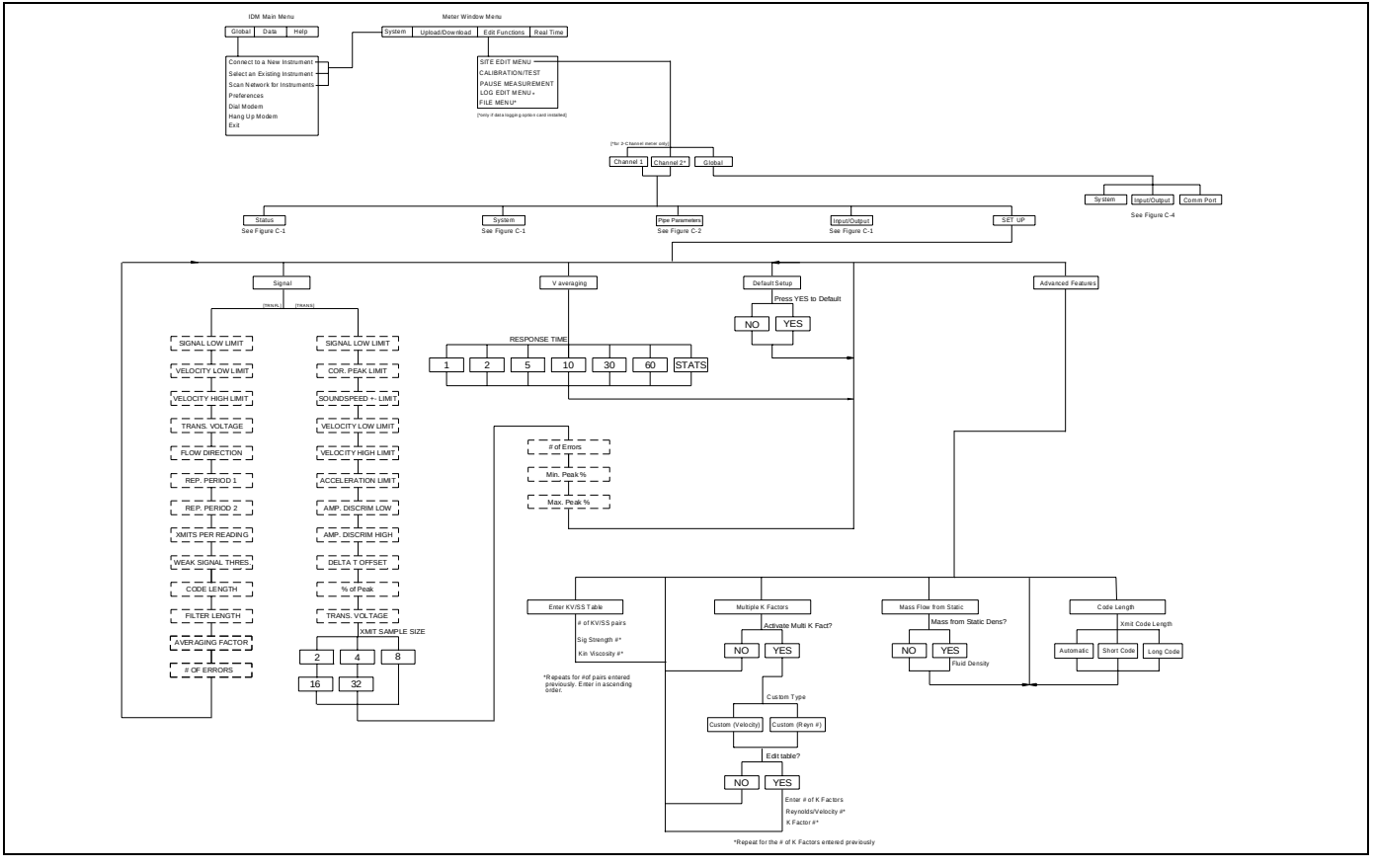


Figure C-3: The CHx-SETUP Menu Map

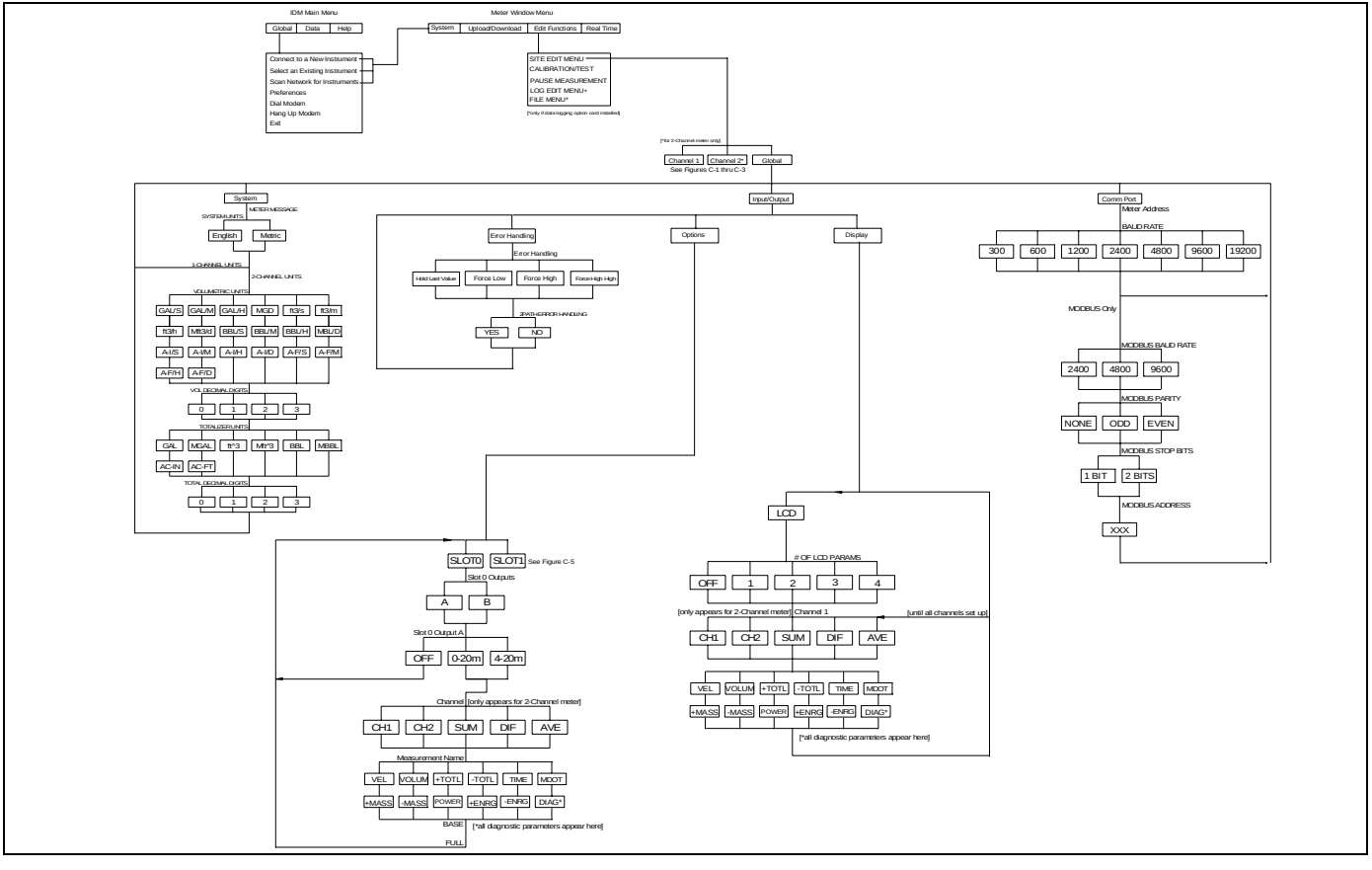


Figure C-4: The GLOBAL-SYSTEM, I/O-ERROR HANDLING, SLOT0, DISPLAY and COMM PORT Menu Maps

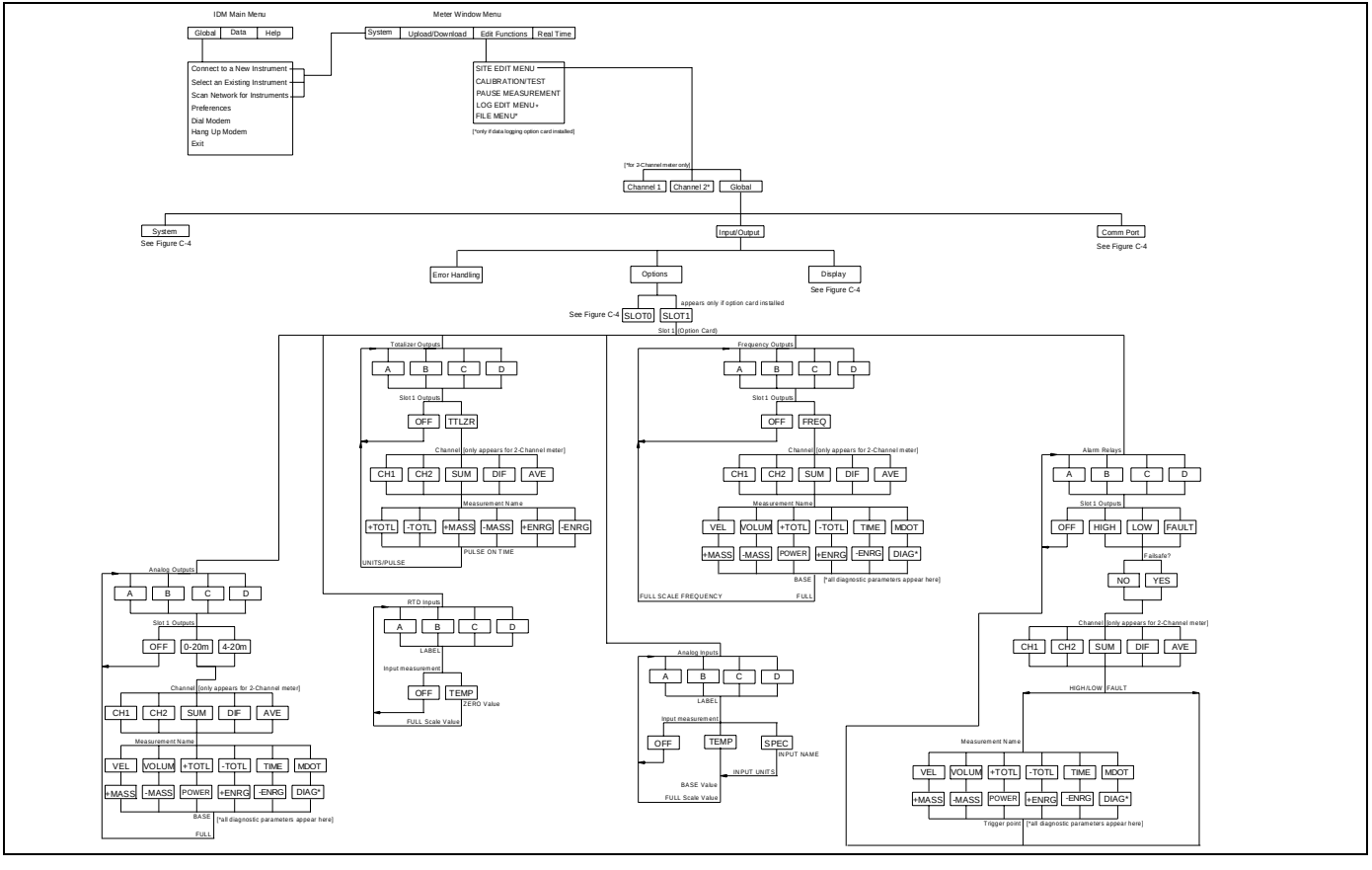


Figure C-5: The GLOBL-I/O-OPTIONS-SLOT1 Menu Map

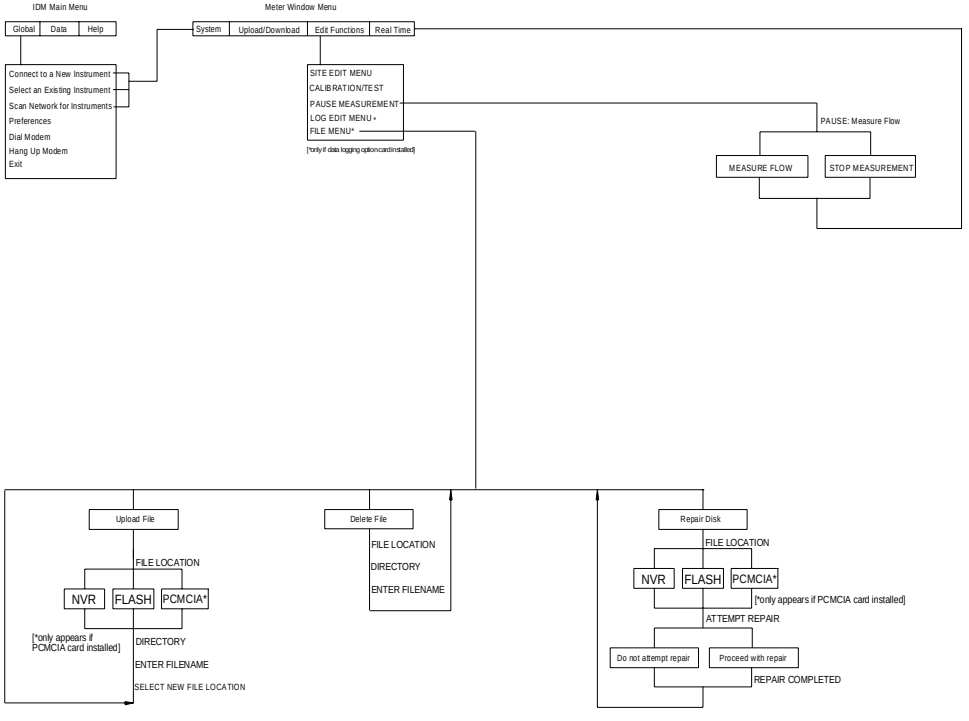


Figure C-6: The PAUSE MEASUREMENT and FILE Menu Maps

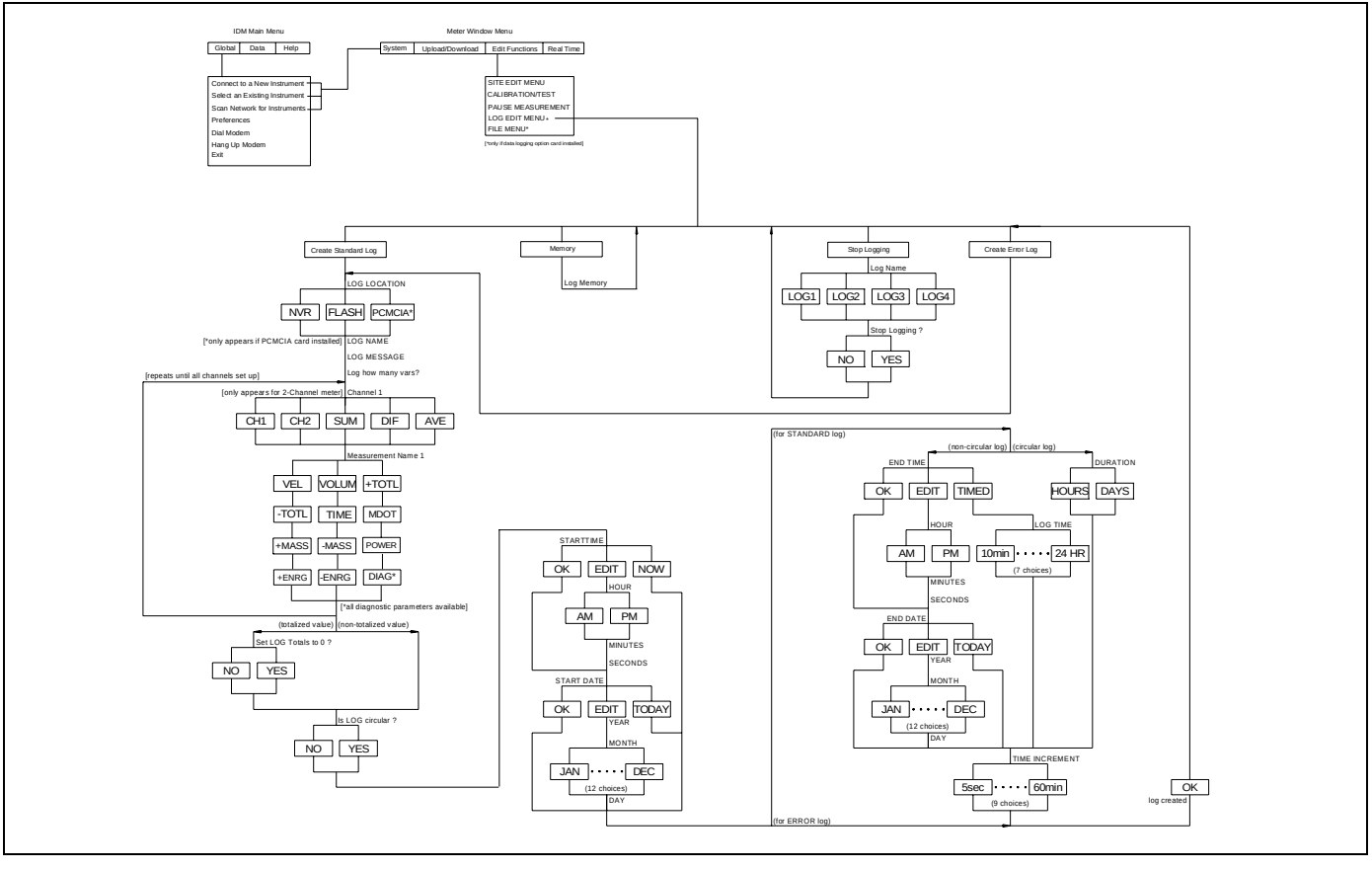


Figure C-7: The LOG Menu Map

Index

A

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C (cont.)

Index (cont.)

D

E

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G

H

Index (cont.)

I

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L

Index (cont.)

M

M (cont.)

N

O

Index (cont.)

P

R

R (cont.)

S

Index (cont.)

T

U

V

Z

GE Panametrics

DECLARATION OF CONFORMITY

We,

GE Panametrics
Shannon Industrial Estate
Shannon, Co. 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 61326:1998, Class A, Annex A, Continuous Unmonitored Operation
- EN 61010-1:1993 + A2:1995, Overvoltage Category II, Pollution Degree 2

following the provisions of the 89/336/EEC EMC 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 - June 1, 2002

Mr. James Gibson
GENERAL MANAGER

CE

NSAI
I.S. EN ISO 9002
Shannon

TÜV
TÜV ESSEN
ISO 9001
U.S.

GE Panametrics

DECLARATION DE CONFORMITE

Nous,

GE Panametrics
Shannon Industrial Estate
Shannon, Co. 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 61326:1998, Class A, Annex A, Continuous Unmonitored Operation
- EN 61010-1:1993 + A2:1995, Overvoltage Category II, Pollution Degree 2

suivant les régles de la Directive de Compatibilité Electromagnétique 89/336/EEC 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 - June 1, 2002

Mr. James Gibson
DIRECTEUR GÉNÉRAL

CE

NSAI I.S. EN ISO 9002 Shannon

TÜV ESSEN ISO 9001 U.S.

GE Panametrics

KONFORMITÄTS-ERKLÄRUNG

Wir,

GE Panametrics
Shannon Industrial Estate
Shannon, Co. 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 61326:1998, Class A, Annex A, Continuous Unmonitored Operation
- EN 61010-1:1993 + A2:1995, Overvoltage Category II, Pollution Degree 2

gemäß den Europäischen Richtlinien, Niederspannungsrichtlinie Nr.: 73/23/EWG und EMV-Richtlinie Nr.: 89/336/EWG.

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 - June 1, 2002

Mr. James Gibson
GENERALDIREKTOR

CE

I.S. EN ISO 9002
Shannon

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TÜV ESSEN
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March 2003

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