CRT

ACCURATE MEASUREMENT

Technical Library

As a Service to the HydroCarbon Measurement Industry, CRT-SERVICES Curates this collection of Digital resources.

www.crt-services.com
www.crtsupply.com

11133 Interstate 45 S Suite O
Conroe, Texas 77302
(713) 242-1190

VOLUME 4C

Firmware Revisions 22.74/26.74

Modbus Database Addresses and Index Numbers

Omni 3000 / 6000 Flow Computer
User Manual

Liquid Turbine/PD Meters with Meter Factor Linearization

Effective June 2007

Omni®

Volume 4

MODBUS™ DATABASE ADDRESSES AND INDEX NUMBERS

Contents of Volume 4

For Your Information

Omni®

Measure the Difference!®

OMNI flow computers -
Our products are currently being used world-wide at:

- ❑ Offshore oil and gas production facilities
- ❑ Crude oil, refined products, LPG, NGL and gas transmission lines
- ❑ Storage, truck and marine loading/offloading terminals
- ❑ Refineries; petrochemical and cogeneration plants.

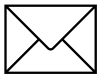
About Our Company

OMNI Flow Computers, Inc. is the world's leading manufacturer and supplier of panel-mount custody transfer flow computers and controllers. Our mission is to continue to achieve higher levels of customer and user satisfaction by applying the basic company values: our people, our products and productivity.

Our products have become the international flow computing standard. OMNI Flow Computers pursues a policy of product development and continuous improvement. As a result, our flow computers are considered the "brain" and "cash register" of liquid and gas flow metering systems.

Our staff is knowledgeable and professional. They represent the energy, intelligence and strength of our company, adding value to our products and services. With the customer and user in mind, we are committed to quality in everything we do, devoting our efforts to deliver workmanship of high caliber. Teamwork with uncompromising integrity is our lifestyle.

Contacting Our Corporate Headquarters



OMNI Flow Computers, Inc.
12620 west Airport Ste #100
Sugar Land Texas 77478

Phone: 281-240-6161
Fax: 281-240-6162

World-wide Web Site:
http://www.omniflow.com

E-mail Addresses:
Helpdesk@omniflow.com

Getting User Support

Technical and sales support is available world-wide through our corporate or authorized representative offices. If you require user support, please contact the location nearest you (see insert) or our corporate offices. Our staff and representatives will enthusiastically work with you to ensure the sound operation of your flow computer.

About the Flow Computer Applications

OMNI 6000 and OMNI 3000 Flow Computers are integrable into the majority of liquid and gas flow measurement and control systems. The current firmware revisions of OMNI 6000/OMNI 3000 Flow Computers are:

- ❑ **20.74/24.74:** Turbine/Positive Displacement/Coriolis Liquid Flow Metering Systems with K Factor Linearization (US/metric units)
- ❑ **21.74/25.74:** Orifice/Differential Pressure Liquid Flow Metering Systems (US/metric units)
- ❑ **22.74/26.74:** Turbine/Positive Displacement Liquid Flow Metering Systems with Meter Factor Linearization (US/metric units)
- ❑ **23.74/27.74:** Orifice/Turbine Gas Flow Metering Systems (US/metric units)

About the User Manual

This manual applies to .74+ firmware revisions of OMNI 6000 and OMNI 3000 Flow Computers. It is structured into 5 volumes and is the principal part of your flow computer documentation.

Target Audience

As a user's reference guide, this manual is intended for a sophisticated audience with knowledge of liquid and gas flow measurement technology. Different user levels of technical know-how are considered in this manual. You need not be an expert to operate the flow computer or use certain portions of this manual. However, some flow computer features require a certain degree of expertise and/or advanced knowledge of liquid and gas flow instrumentation and electronic measurement. In general, each volume is directed towards the following users:

- ❑ Volume 1. System Architecture and Installation
  - ♦ Installers
  - ♦ System/Project Managers
  - ♦ Engineers/Programmers
  - ♦ Advanced Operators
  - ♦ Operators
- ❑ Volume 2. Basic Operation
  - ♦ All Users
- ❑ Volume 3. Configuration and Advanced Operation
  - ♦ Engineers/Programmers
  - ♦ Advanced Operators
- ❑ Volume 4. Modbus™ Database Addresses and Index Numbers
  - ♦ Engineers/Programmers
  - ♦ Advanced Operators
- ❑ Volume 5. Technical Bulletins
  - ♦ Users with different levels of expertise.

Manual Structure

The User Manual comprises 5 volumes; each contained in separate binding for easy manipulation. You will find a detailed table of contents at the beginning of each volume.

Volume 1. System Architecture and Installation

Volume 1 is generic to all applications and considers both US and metric units. This volume describes:

- ❑ Basic hardware/software features
- ❑ Installation practices
- ❑ Calibration procedures
- ❑ Flow computer specifications

Volume 2. Basic Operation

User Reference Documentation - The User Manual is structured into five volumes. Volumes 1 and 5 are generic to all flow computer application revisions. Volumes 2, 3 and 4 are application specific. These have four versions each, published in separate documents; i.e., one per application revision per volume. You will receive the version that corresponds to your application revision.

The volumes respective to each application revision are:

Revision 20/24.74+:
Volume #s 2a, 3a, 4a

Revision 21/25.74+:
Volume #s 2b, 3b, 4b

Revision 22/26.74+:
Volume #s 2c, 3c, 4c

Revision 23/27.74+:
Volume #s 2d, 3d, 4d

For example, if your flow computer application revision is 22/26.74+, you will be supplied with Volumes 2a, 3a & 4a, along with Volumes 1 & 5.

Volume 2 is generic to all applications and considers both US and metric units. It covers the essential and routine tasks and procedures that may be performed by the flow computer operator. Both US and metric units are considered.

General computer-related features are described, such as:

- ❑ Overview of keypad functions
- ❑ Adjusting the display
- ❑ Clearing and viewing alarms
- ❑ Computer totalizing
- ❑ Printing and customizing reports

The application-related topics may include:

- ❑ Batching operations
- ❑ Proving functions
- ❑ PID control functions
- ❑ Audit trail
- ❑ Other application specific functions

Depending on your application, some of these topics may not be included in your specific documentation. An index of display variables and corresponding key press sequences that are specific to your application are listed at the end of each version of this volume.

Volume 3. Configuration and Advanced Operation

Volume 3 is intended for the advanced user. It refers to application specific topics and is available in four separate versions (one for each application revision). This volume covers:

- ❑ Application overview
- ❑ Flow computer configuration data entry
- ❑ User-programmable functions
- ❑ Modbus™ Protocol implementation
- ❑ Flow equations and algorithms

Volume 4. Modbus™ Database Addresses and Index Numbers

Volume 4 is intended for the system programmer (advanced user). It comprises a descriptive list of database point assignments in numerical order, within our firmware. This volume is application specific, for which there is one version per application revision.

Volume 5. Technical Bulletins

Manual Updates and Technical Bulletins - Volume 5 of the User Manual is a compendium of Technical Bulletins. They contain updates to the user manual. You can view and print updates from our website:
http://www.omniflow.com

Volume 5 includes technical bulletins that contain important complementary information about your flow computer hardware and software. Each bulletin covers a topic that may be generic to all applications or specific to a particular revision. They include product updates, theoretical descriptions, technical specifications, procedures, and other information of interest.

This is the most dynamic and current volume. Technical bulletins may be added to this volume after its publication. You can view and print these bulletins from our website.

Conventions Used in this Manual

Typographical Conventions - These are standard graphical/text elements used to denote types of information. For your convenience, a few conventions were established in the manual's layout design. These highlight important information of interest to the reader and are easily caught by the eye.

Several typographical conventions have been established as standard reference to highlight information that may be important to the reader. These will allow you to quickly identify distinct types of information.

CONVENTION USED	DESCRIPTION
Sidebar Notes / Info Tips Example: **INFO -** Sidebar notes are used to highlight important information in a concise manner.	Sidebar notes or "Info Tips" consist of concise information of interest which is enclosed in a gray-shaded box placed on the left margin of a page. These refer to topics that are either next to them, or on the same or facing page. It is highly recommended that you read them.
Keys / Key Press Sequences Example: **[Prog] [Batch] [Meter] [*n*]**	Keys on the flow computer keypad are denoted with brackets and bold face characters (e.g.: the 'up arrow' key is denoted as **[↑]**). The actual function of the key as it is labeled on the keypad is what appears between brackets. Key press sequences that are executed from the flow computer keypad are expressed in a series of keys separated by a space (as shown in the example).

Screen Displays
Example:
`Use Up/Down Arrows`
`To Adjust Contrast;`
`Left, Right Arrows`
`To Adjust Backlight`
	Sample screens that correspond to the flow computer display appear surrounded by a dark gray border with the text in bold face characters and mono-spaced font. The flow computer display is actually 4 lines by 20 characters. Screens that are more than 4 lines must be scrolled to reveal the text shown in the manual.

CONVENTION USED	DESCRIPTION
Headings Example: **2. Chapter Heading** **2.3. Section Heading** **2.3.1. Subsection Heading**	Sequential heading numbering is used to categorize topics within each volume of the User Manual. The highest heading level is a chapter, which is divided into sections, which are likewise subdivided into subsections. Among other benefits, this facilitates information organization and cross-referencing.
Figure Captions Example: **Fig. 2-3.** *Figure No. 3 of Chapter 2*	Figure captions are numbered in sequence as they appear in each chapter. The first number identifies the chapter, followed by the sequence number and title of the illustration.
Page Numbers Example: **2-8**	Page numbering restarts at the beginning of every chapter and technical bulletin. Page numbers are preceded by the chapter number followed by a hyphen. Technical bulletins only indicate the page number of that bulletin. Page numbers are located on the outside margin in the footer of each page.
Application Revision and Effective Publication Date Examples: **All.74+ ◆ 06/07** **20/24.74+ ◆ 06/07** **21/25.74+ ◆ 06/07** **22/26.74+ ◆ 06/07** **23/27.74+ ◆ 06/07**	The contents of Volume 1 and Volume 5 are common to all application revisions and are denoted as **All.74**. Content of Volumes 2, 3 and 4 are application specific and are identified with the application number. These identifiers are included on every page in the inside margin of the footer, opposite the page number. The publication/effective date of the manual follows the application identification. The date is expressed as month/year (e.g.: June 2007 is 06/07).

Trademark References

The following are trademarks of OMNI Flow Computers, Inc.:

- ❑ OMNI 3000
- ❑ OMNI 6000
- ❑ OmniCom®

Other brand, product and company names that appear in this manual are trademarks of their respective owners.

Copyright Information and Modifications Policy

OMNI Flow Computers, Inc., in conformance with its policy of product development and improvement, may make any necessary changes to this document without notice.

Warranty, Licenses and Product Registration

Important!

Product warranty and licenses for use of OMNI Flow Computer Firmware and of OmniCom Configuration PC Software are included in the first pages of each Volume of this manual. We require that you read this information before using your OMNI Flow Computer and the supplied software and documentation.

If you have not done so already, please complete and return to us the product registration form included with your flow computer. We need this information for warranty purposes, to render you technical support and serve you in future upgrades. Registered users will also receive important updates and information about their flow computer and metering system.

Chapter 1

Modbus™ Protocol Implementation

1.1. Introduction

OMNI Flow Computers implement a superset of the Gould Modbus™ Protocol on Serial Ports #1 (selectable), #2, #3 and #4 (selectable), thus allowing simultaneous communications with two totally independent Modbus systems. Maximum transmission baud rate is 38.4 kbps with an average answer response time of 70 msec plus any modem warm-up time.

The Modbus™ Protocol specifies one master and up to 247 slaves on a common communication line. Each slave is assigned a fixed unique device address in the range of 1 to 247. The Master always initiates the transaction. Transactions are either a query/response type (only one slave is accessed at a time) or a broadcast / no response type (all slaves are accessed at the same time). A transaction comprises a single query and single response frame or a single broadcast frame.

1.2. Modes of Transmission

Two basic modes of transmission are available: ASCII or Remote Terminal Unit (RTU). The mode selected depends on the equipment being used.

AVAILABLE TRANSMISSION MODES		
	TRANSMISSION MODE	
	ASCII	RTU
Coding System	Hexadecimal	8-bit binary
NUMBER OF BITS:		
Start Bits	1	1
Data Bits	7	8
Parity (Optional)	Odd, Even, None (1 or 0)	Odd, Even, None (1 or 0)
Stop Bits	1 or 2	1 or 2
Error Checking	LRC	CRC
Baud Rate	300 bps to 38.4 kbps	300 bps to 38.4 kbps

1.2.1. ASCII Framing and Message Format

Framing in ASCII Transmission Mode is accomplished by the use of the colon (:) character indicating the beginning of a frame and a carriage return (CR) line feed (LF) to delineate end of frame. The line feed character also serves as a synchronizing character which indicates that the transmitting station is ready to receive an immediate reply.

ASCII Message Format						
Beginning of Frame	Address	Function Code	Data	Error Check	End of Frame	Ready to Receive Response
:	2 Char	2 Char	N x 2 Char	2 Char	CR	LF
7 Bits	14 Bits	14Bits	N x 14 Bits	14 Bits	7 Bits	7 Bits

Assuming 7 bits per transmitted character. →

1.2.2. Remote Terminal Unit (RTU) Framing and Message Format

Frame synchronization can be maintained in RTU Transmission Mode only by simulating a synchronous message. The 'OMNI' monitors the elapsed time between receipt of characters. If 3.5 character times elapse without a new character or completion of the frame, then the frame is reset and the next bytes will be processed looking for a valid address.

RTU Message Format			
Address	Function	Data	Error Check
8 Bits	8 Bits	N x 8 Bits	16 Bits

1.3. Message Fields

1.3.1. Address Field

The address field immediately follows the beginning of the frame and consists of 2 characters (ASCII) or 8 bits (RTU). These bits indicate the user assigned address of the slave device that is to receive the message sent by the master. Each slave must be assigned a unique address and only the addressed slave will respond to a query that contains its address. When the slave sends a response, the slave address informs the master which slave is communicating. In broadcast mode, an address of zero (0) is used. All slaves interpret this as an instruction to read and take action, but do not issue a response message.

1.3.2. Function Code Field

Note: See **4.5** for descriptions and examples of these function codes. See **4.4** for a description of exception responses.

The function code field tells the addressed slave what function to perform. The high order bit of the function code field is set by the slave device to indicate that other than a normal response is being transmitted to the Master device. This bit remains 0 if the message is a query or a normal response message.

FUNCTION CODE	ACTION
0102	READ MULTIPLE BOOLEAN POINTS
03/04	READ STRINGS OR MULTIPLE 16 OR 32 BIT VARIABLES
05	WRITE SINGLE BOOLEAN POINT
06	WRITE SINGLE 16 BIT INTEGER
07	READ DIAGNOSTIC STATUS
08	LOOPBACK TEST
15	WRITE MULTIPLE BOOLEAN POINTS
16	WRITE STRINGS OR MULTIPLE 16 OR 32 BIT VARIABLES
65	READ ASCII TEXT BUFFER
66	WRITE ASCII TEXT BUFFER

1.3.3. Data Field

The data field contains the information needed by the slave to perform the specific function or it contains data collected by the slave in response to a query. This information may be text strings, values, and exception code or text buffers.

1.3.4. Error Check Field

This field allows the master and slave devices to check a message for errors in transmission. A transmitted message may be altered slightly due to electrical noise or other interference while it is on its way from one unit to another. The error checking assures that the master and the slave do not react to messages that have been changed during transmission. The error check field uses a longitudinal redundancy check (LRC) in the ASCII Mode and a CRC-16 check in the RTU Mode. The bytes checked include the slave address and all bytes up to the error checking bytes. Checking is done with the data in the binary mode or RTU mode.

The LRC Mode

The error check is an 8-bit binary number represented and transmitted as two ASCII hexadecimal (hex) characters. The error check is produced by first stripping the Colon, CR and LF and then converting the hex ASCII characters to binary. Add the binary bytes (including slave address) discarding any carries, and then two's complement the result. At the received end the LRC is recalculated and compared to the LRC as sent. The colon, CR, LF, and any imbedded non ASCII hex characters are ignored in calculating the LRC (see page 1-7 of the **Gould Modbus™ Reference Guide** for more details).

The CRC Mode

The message is considered as one continuous binary number whose most significant bit (MSB) is transmitted first. The message is pre-multiplied by x 16 (shifted left 16-bits), then divided by ($x^{16}+x^{15}+x^2+1$) expressed as the binary number (11000000000000101).The integer quotient digits are ignored and the 16-bit remainder (initialized to all ones at the start to avoid the case of all zeros being an accepted message) is appended to the message (MSB first) as the two CRC check bytes. The resulting message including CRC, when divided by the same polynomial (x16 + x15 + x2 + 1) at the receiver will give a zero remainder if no errors have occurred (see pages1-4 through 1-6 of the Gould Modbus™ Reference Guide for more details).

1.4. Exception Response

Programming or operation errors are those involving illegal data in a message, no response or difficulty in communicating with a slave. These errors result in an exception response from the slave, depending on the type of error. When such a message is received from the master the slave sends a response to the master echoing the slave address, function code (with high bit set), exception code and error check fields. To indicate that the response is a notification of an error, the high order bit of the function code is set to 1.

EXCEPTION CODE	DESCRIPTION
01	ILLEGAL FUNCTION
02	ILLEGAL DATA ADDRESS
03	ILLEGAL DATA VALUE
04	DATA CANNOT BE WRITTEN
05	PASSWORD NEEDED

1.5. Function Codes

1.5.1. Function Codes 01 and 02 (Read Boolean Status)

Note:
Function Code 02 is identical to Function Code 01. It can be used by communication devices that do not support Function Code 01.

These functions allow the user to obtain the 'on/off' status of Booleans used to control discrete outputs from the addressed slaves only. Broadcast mode is not supported with this function code. In addition to the slave address and function field, the message requires that the information field contain the initial point number to be read (starting point) and the number of points that will be read to obtain the Boolean data.

Boolean points are numbered as from 1001; (Boolean number 1= 1001). The data is packed one bit for each Boolean flag variable. The response includes the slave address, function code, quantity of data characters, the data characters, and error checking. Data will be packed with one bit for each Boolean flag (1 = on, 0 = off). The low order bit of the first character contains the addressed flag and the remainder follows. For Boolean quantities that are not even multiples of eight, the last characters will be filled-in with zeros at high order end.

Example: *Read Booleans 1120 to 1131 from Slave Device #01.*

Poll Master-to-Slave : ASCII Transmission Mode						
Address	Function Code	Data Starting Point #		Number of Points		LCR Check 8-Bit
		Hi	Lo	Hi	Lo	
: 3031	3031	3034	3630	3030	3043	3845 CR LF

Poll Master-to-Slave : RTU Transmission Mode						
Address	Function Code	Data Starting Point #		Number of Points		CRC Check 16-Bit
		Hi	Lo	Hi	Lo	
01	01	04	60	00	0C	'nn' 'nn'

Slave Response : ASCII Transmission Mode					
Address	Function Code	Byte Count	Data		LCR Check 8-Bit
			Hi	Lo	
: 3031	3031	3032	3038	3030	4634 CR LF

Slave Response : RTU Transmission Mode					
Address	Function Code	Byte Count	Data		LCR Check 8-Bit
			Hi	Lo	
01	01	02	08	00	'nn' 'nn'

The status of Booleans 1120 through 1127 is shown as 08 (hex) = 0000 1000 (binary). Reading right to left, this shows that status 1123 is 'on'. The other data flags are decoded similarly. Due to the quantity of Boolean status requested, the last data field, which is shown as 00 (hex) = 0000 0000 (binary), contains the status of only four flags. The four left most bits are provided as zeros to fill the 8-bit format.

1.5.2. Function Codes 03 and 04 (Read 16-Bit Register Sets)

Note:
Function Code 04 is identical to Function Code 03. It can be used by communication devices that do not support Function Code 03.

Function Codes 03 and 04 allow the master to obtain the binary contents of holding registers in the addressed slave. The protocol allows for a maximum of 125 16-bit registers to be obtained at each request. Broadcast mode is not allowed for functions 03 and 04.

These 16-bit registers are also grouped in sets of registers and accessed as one variable. The numeric range of the point number defines the variable type and indicates how many 16-bit registers make up that variable.

Register Groups for Long Integer Variable Type -
Points 6XXX or 15XXX long integers apply only to Revision 23 for US customary units.

REGISTER GROUPS FOR TYPES OF VARIABLES				
POINT # RANGE	VARIABLE TYPE	16-BIT REGS. / POINT	Nº OF BYTES / POINT	MAX POINTS / MESSAGE
3XXX or 13XXX	Short Integer	1 Register	2 Bytes	125
4XXX	8-Char. ASCII String	4 Registers	8 Bytes	31
6XXX or 15XXX	Long Integer	2 Registers	4 Bytes	62
17XXX or 18XXX	IEEE Floating Point	2 Registers	4 Bytes	62
14XXX	16-Char. ASCII String	8 Registers	16 Bytes	15

The addressed slave responds with its address and the function code, followed by the information field. The information field contains a single byte indicating the number of data bytes returned followed by the actual data bytes. The data is returned in multiples of two bytes, with the binary content right justified. The data is sent MS Byte first.

Example: *Read Short Integer Message 3012 through 3013 from Slave #2.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE						
ADDRESS	FUNCTION CODE	DATA STARTING POINT #		QUANTITY OF POINTS		CRC CHECK 16-BIT
		HI	LO	HI	LO	
02	03	0B	C4	00	02	'nn' 'nn'

SLAVE RESPONSE : RTU Transmission Mode							
ADDRESS	FUNCTION CODE	BYTE COUNT	DATA		DATA		CRC CHECK 16-BIT
			HI	LO	HI	LO	
02	03	04	1F	40	1F	3E	'nn' 'nn'

The slave responds with its address and the function code, byte count of the data field followed by the actual data field. In the example above, the data field contains 4 bytes representing the value of the requested data.

1.5.3. Function Code 05 (Write Single Boolean)

This message forces a single Boolean variable either 'on' or 'off'. Boolean variables are points numbered 1XXX or 2XXX. Writing the 16-bit value 65,280 (FF00 HEX) will set the Boolean 'on'. Writing the value zero will turn it 'off'. All other values are illegal and will not affect the Boolean. Using a slave address '00' (Broadcast Mode) will force all slaves to modify the desired Boolean.

Example: *Turn Single Boolean Point 1711 'on' - Slave #2.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE						
ADDRESS	FUNCTION CODE	BOOLEAN POINT #		DATA		CRC CHECK
		HI	LO	HI	LO	
02	05	06	AF	FF	00	'nn' 'nn'

SLAVE RESPONSE : RTU Transmission Mode						
ADDRESS	FUNCTION CODE	BOOLEAN POINT #		DATA		CRC CHECK
		HI	LO	HI	LO	
02	05	06	AF	FF	00	'nn' 'nn'

The normal response to the command request is to retransmit the message as received after the Boolean state has been altered.

1.5.4. Function Code 06 (Write Single 16-Bit Integer)

Any numeric variable that has been defined on the 16-bit integer index table can have its contents changed by this message. The 16-bit integer points are numbered from 3XXX or 13XXX.

When used with slave address zero (Broadcast Mode) all slaves will load the specified points with the contents specified. The following example sets one 16-bit integer at address 3106 (0C22 HEX) of Slave #2 (i.e., load address 3106 with data 0003).

Example: *Set Single 16-Bit Integer Slave #2.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE						
ADDRESS	FUNCTION CODE	POINT #		DATA		CRC CHECK
		HI	LO	HI	LO	
02	06	0C	22	00	03	'nn' 'nn'

SLAVE RESPONSE : RTU Transmission Mode						
ADDRESS	FUNCTION CODE	POINT #		DATA		CRC CHECK
		HI	LO	HI	LO	
02	06	0C	22	00	03	'nn' 'nn'

The normal response to a Function 06 query is to retransmit the message as received after the 16-bit integer has been altered.

1.5.5. Function Code 07 (Read Diagnostic Status)

This function allows the user to obtain basic diagnostic data and determines the OMNI communication port number (serial port number) being used to communicate. This diagnostic data is hard programmed and cannot be reconfigured. Following are the five status values reported:

- ❑ EPROM Checksum error flag
- ❑ Unit in Program mode
- ❑ Unit in Diagnostic mode
- ❑ Redundant Master status
- ❑ Power failed flag

Example: *Request to Modbus ID # 13 (Address HEX: 0D) to respond with event status and communication port number.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE		
ADDRESS	FUNCTION CODE	CRC CHECK 8-Bit
0D	07	'nn' 'nn'

SLAVE RESPONSE : RTU Transmission Mode			
ADDRESS	FUNCTION CODE	DATA	CRC CHECK 8-Bit
0D	07	4C	'nn' 'nn'

The slave responds with the Modbus slave address (0D), the function code, and the data, followed by the CRC check. The data field contains 1 byte representing the value of the requested data. Following is the conversion of hexadecimal data to binary, to determine the diagnostic status and communication port number.

Hex 4C = 0100 1100 (Bit 7, Bit 6, Bit 5, Bit 4, Bit 3, Bit 2, Bit 1, Bit 0)

Bit 7, Bit 6, Bit 5 represents the communication port:

OMNI Port #	Bit 7	Bit 6	Bit 7
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0

Bit 4, Bit 3, Bit 2, Bit 1, Bit 0 represent the following event status:

Bit 4 → Power failed flag (1=Yes, 0=No); Modbus database address = 1829
Bit 3 → Master status (1=Yes, 0=No); Modbus database address = 2864
Bit 2 → In diagnostic mode (1=Yes, 0=No)
Bit 1 → In program mode (1=Yes, 0=No)
Bit 0 → Invalid EPROM Checksum error flag (1=Yes, 0=No); Modbus database address = 1837

1.5.6. Function Code 08 (Loopback Test)

Function Code 08 sends diagnostics test message to slave, to evaluate communications processing. The purpose is to test the communication system only; it does not perform any write function. The system (slave) responds with an echo.

Example: *Loopback Test – Simple return of query message sent to Slave Address Identification # 13.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE						
ADDRESS	FUNCTION CODE	DATA DIAGNOSTICS CODE		DATA DIAGNOSTICS CODE		CRC CHECK
		HI	LO	HI	LO	
0D	08	00	00	A5	37	'nn' 'nn'

SLAVE RESPONSE : RTU Transmission Mode						
ADDRESS	FUNCTION CODE	DATA DIAGNOSTICS CODE		DATA DIAGNOSTICS CODE		CRC CHECK
		HI	LO	HI	LO	
0D	08	00	00	A5	37	'nn' 'nn'

The slave responds with an echo; i.e., identical Modbus ID (address), function code, and data.

1.5.7. Function Code 15 (Write Multiple Boolean)

Function Code $0F_{HEX}$ (15) writes to each Boolean variable in a consecutive block of Boolean variables to a desired 'on' or 'off' state. Each Boolean is packed in the data field, one bit for each Boolean flag (1 = on, 0 = off). The data field consists of increments of 2 bytes and can be up to 250 bytes (2000 points). Boolean points are packed right-to-left, 8 to a byte with unused bits set to '0'. The use of slave address '00' (Broadcast Mode) will force all slaves to modify the desired Boolean bits. The following example writes to 14 Boolean variables starting at address 1703. The data field value 05, 1703 through 1710, and data field value 20 represents the status of points 1711 through 1716. These data values are transmitted as 0000 0101 and 0010 0000, indicating that Booleans points 1703, 1705, 1716 are to be forced 'on' and 1704 and 1706 through 1715 are to be forced 'off' (the two most significant positions of the second byte are unused and set to '0').

Example: *Turn on Boolean points 1703, 1705, 1716 ON Slave #3.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE										
ADDRESS	FUNCTION CODE	STARTING ADDRESS		QUANTITY OF POINTS		BYTE COUNT	DATA		CRC CHECK	
							HI	LO		
03	0F	06	A7	00	0E	02	05	20	'nn'	'nn'

SLAVE RESPONSE : RTU Transmission Mode							
ADDRESS	FUNCTION CODE	STARTING ADDRESS		QUANTITY OF POINTS		CRC CHECK	
03	0F	06	A7	00	0E	'nn'	'nn'

The normal response to a Function 15 query is to echo the slave address, function code, starting address, and quantity of points written.

1.5.8. Function Code 16 (Write 16-Bit Register Sets)

Function Code 10_{HEX} (16) allows the master to change the binary contents of holding registers in the addressed slave. The protocol allows for a maximum of 125 16-bit registers to be changed at each download. Using a slave address of zero (00) allows the master to change registers in all slaves simultaneously (Broadcast Mode).

These 16-bit registers are also grouped as sets of registers and accessed as one variable. The numeric range of the point number defines the variable type and indicates how many 16-bit registers make up that variable.

Register Groups for Long Integer Variable Type - Points 6XXX or 15XXX long integers apply only to Revision 23 for US customary units.

REGISTER GROUPS FOR TYPES OF VARIABLES				
POINT # RANGE	VARIABLE TYPE	16-BIT REGS. / POINT	Nº OF BYTES / POINT	MAX POINTS / MESSAGE
3XXX or 13XXX	Short Integer	1 Register	2 Bytes	125
4XXX	8-Char. ASCII String	4 Registers	8 Bytes	31
6XXX or 15XXX	Long Integer	2 Registers	4 Bytes	62
7XXX or 17XXX	IEEE Floating Point	2 Registers	4 Bytes	62
14XXX	16-Char. ASCII String	8 Registers	16 Bytes	15

The addressed slave responds with its address and the function code, followed by the information field. The information field contains a single byte indicating the number of data bytes returned and the actual data bytes. The data is sent as multiples of two bytes, with the binary content right justified. The data is sent MS Byte first.

Example: *Write Short Integers 3012 through 3013 to Slave #2.*

Byte Count: The Byte Count will be increments of 2, 4, 8 or 16 bytes depending on the address range of the points downloaded.

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE												
ADDR	FUNC CODE	STARTING POINT #		QUANTITY OF POINTS		BYTE COUNT	DATA		DATA		CRC CHECK	
							HI	LO	HI	LO		
02	10	0B	C4	00	02	04	1F	40	1F	3E	'nn'	'nn'

SLAVE RESPONSE : RTU Transmission Mode							
ADDRESS	FUNCTION CODE	STARTING ADDRESS		QUANTITY OF POINTS		CRC CHECK	
02	10	0B	C4	00	02	'nn'	'nn'

The slave responds with its address and the function code, starting point number and quantity of points.

Example: *Write a Long Integer 5101 to Slave #4*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE												
ADDR	FUNC CODE	STARTING POINT #		QUANTITY OF POINTS		BYTE COUNT	DATA		DATA		CRC CHECK	
							HI	LO	HI	LO		
04	10	13	ED	00	01	04	00	4F	20	4E	'nn'	'nn'

SLAVE RESPONSE : RTU Transmission Mode							
ADDRESS	FUNCTION CODE	STARTING ADDRESS		QUANTITY OF POINTS		CRC CHECK	
04	10	13	ED	00	01	'nn'	'nn'

The slave responds with its address and the function code, starting point number and quantity of points.

1.5.9. Function Code 65 (Read ASCII Text Buffer)

Function Code 41_{HEX} (65) allows the master to read the contents of an ASCII text buffer within an addressed slave. Data is always sent and received in packets containing 128 characters. Packets are numbered from 0 to 255. The size of the text buffer is always an exact multiple of 128 bytes. The last buffer will contain a HEX 1A (end of file character). The last buffer will contain an ASCII ^Z (end of file character).

Example: *Read 2nd packet of an ASCII Text Buffer Point 9001 from Slave # 5.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE							
ADDRESS	FUNCTION CODE	POINT #		PACKET #		CRC CHECK	
		HI	LO	HI	LO		
05	41	23	29	00	01	'nn'	'nn'

SLAVE RESPONSE : RTU Transmission Mode									
ADDR	FUNC CODE	POINT #		PACKET #		DATA BYTE 0	....	Data BYTE 128	CRC CHECK	
		HI	LO	HI	LO				
05	41	23	29	00	01	30		41	'nn'	'nn'

1.5.10. Function Code 66 (Write ASCII Text Buffer)

Function Code 42_{HEX} (66) is used by the master to download an ASCII text buffer to an addressed slave. Data is always sent and received in packets containing 128 characters. Packets are numbered from 0 to 255. The size of the text buffer is always an exact multiple of 128 bytes. The last buffer will contain a HEX 1A (end of file character).

Example: *Write 1st packet of an ASCII Text Buffer Point 9002 to Slave # 2.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE									
ADDR	FUNC CODE	POINT #		PACKET #		DATA BYTE 0	....	DATA BYTE 128	CRC CHECK	
		HI	LO	HI	LO				
02	42	23	2A	00	00	39		2F	'nn'	'nn'

SLAVE RESPONSE : RTU Transmission Mode							
ADDRESS	FUNCTION CODE	POINT #		PACKET #		CRC CHECK	
		HI	LO	HI	LO		
02	42	23	2A	00	00	'nn'	'nn'

1.6. Custom Data Packets

Many point numbers were left unused when numbering the variables within the database. This allows for future growth and different application data. Without custom data packets many polls would be required to retrieve data distributed throughout the database. The custom data packets allow you to concatenate or join different groups or sets of data in any order and of any data type into 1 message response. These custom packets are a type 03 read and are located at points 1, 201 and 401 in the database.

Example: *Read Custom Data Packet #1 at Point 0001 from Slave #2.*

POLL MASTER-TO-SLAVE : RTU TRANSMISSION MODE						
ADDRESS	FUNCTION CODE	STARTING POINT #		QUANTITY OF POINTS		CRC CHECK 16-BIT
		HI	LO	HI	LO	
02	03	00	01	00	00	'nn' 'nn'

Dummy number of points

SLAVE RESPONSE : RTU Transmission Mode									
ADDRESS	FUNCTION CODE	BYTE COUNT	DATA		.....	DATA		CRC CHECK 16-BIT	
			HI	LO	.....	HI	LO		
02	03	??	??	??	.....	??	??	'nn'	'nn'

Depends on the size of packet configured

Depends on the number and type of data points included

1.7. Peer-to-Peer on the Modbus™ Link

Serial Port #2 (Modbus Port #1) can be configured to allow peer-to-peer communications. In this mode any OMNI flow computer can act as a Modbus master and communicate with any other Modbus device on the communication link (see technical Bulletin **TB-980401** "**Peer-to-Peer Basics**").

1.8. Half Duplex Wiring Configuration Required

The physical wiring of a Modbus link is usually full duplex, although the Modbus communication protocol is a half duplex protocol (i.e., both devices **never** transmit at the same time). For peer-to-peer communications the physical link must be wired for half duplex operation with all transmit and receive terminals wired in parallel (see **7.4** in **Volume 1**). This allows all devices to hear all transmissions; even their own.

1.9. Active Master

Control of the communication link is passed from the current master to the next master in the sequence by broadcasting the ID number of the next master in sequence. When that flow computer has completed its transaction list (see **7.4** in **Volume 1**) it will in turn hand over control to the next master in the sequence.

1.10. Error Recovery

Should the next master in the sequence fail to take control of the link the current master will search for an active master. To ensure best performance and fastest recovery in the event of an error, always number Modbus masters consecutively starting from 01.

1.11. Serial/Ethernet

Firmware support for the Serial/Ethernet module (SE) firmware V2 has been added. The SE module equipped with V2 firmware is capable of being configured via the Omnicom, and it provides for network printing of all flow computers reports. Two network printers can be configured. Report will still be printed locally at the flow computer if a printer is configured and connected.

1.12. Scaling of 32 Bit Integers

Changing the totalizer resolution on Revision 26+ firmware means that there are many more 32 bit integers in the data base which may require scaling. Essentially, all of the totalizers will need scaling, which is based on the selected resolution settings made by the user when configuring the flow computer with Revision 26+. Revision 22+, 32 bit integers that may require scaling have been noted in the data base list.

The following three registers which contain the user's decimal resolution settings:

13386 Resolution required for all Gross (IV) Totalizers (0, 1, 2 or 3 digits to right of decimal)

13387 Resolution required for all Net (GSV & NSV) Totalizers (0, 1, 2 or 3 digits to right of decimal)

13388 Resolution required for all Mass Totalizers (0, 1, 2 or 3 digits to right of decimal)

The following registers in Revision 26+ will need scaling adjusted depending upon the contents of the above registers:

For each meter run:

5n01 through 5n12

5n16 (if 3099=0, use register 13387….if 3099=1, use 13386 to determine resolution)

5n37 No implied decimal resolution

5n38 (if 3099=0, use register 13387….if 3099=1, use 13386 to determine resolution

5n44 through 5n47

5n50 through 5n89

5n91 Use 13387 to determine resolution

5n92 Use 13387 to determine resolution

5n93 Use 13387's value minus 1 to determine resolution, if the value in 13387 is 0, use 0

5n94 Use 13387's value minus 1 to determine resolution, if the value in 13387 is 0, use 0

5n95 Use 13387's value minus 1 to determine resolution, if the value in 13387 is 0, use 0

5n96 Use 13387 to determine resolution

5n97
to
5n99

For the station:

5801 through 5812

5814 **Use 13387 to determine resolution**

5815 **(if 3099=0, use register 13387….if 3099=1, use 13386 to determine resolution)**

5816 **(if 3099=0, use register 13387….if 3099=1, use 13386 to determine resolution)**

5844 through 5847

5850 through 5889

5891 **Use 13387 to determine resolution**

5892 **Use 13387 to determine resolution**

5893 **Use 13387's value minus 1 to determine resolution, if the value in 13387 is 0, use 0**

to

5895 **Use 13387's value minus 1 to determine resolution, if the value in 13387 is 0, use 0**

5896 **Use 13387 to determine resolution**

All remaining Revision 26+ software, 32 bit integers are scaled the same as Revision 22.

Chapter 2

User-Defined, Status and Command Data (0001 - 2999)

2.1. Custom Data Packets or Modicon™ Compatible Register Arrays

INFO - This data is accessed using Modbus function code 03 for reads and 16 for writes. Boolean data bits are packed 8 to a byte.

These three addresses specify reserved areas used to access user defined groups of data variables. Data can be accessed as read only blocks of data or the data is arranged as an array of adjacent 16-bit registers which can be read or written independently, if the Modicon Compatible mode is selected when setting up the serial port.

0001 **Custom Data Packet / Array #1**
Maximum 250 bytes using Modbus RTU mode (for Packet/Array definition see Index **3001**-**3040**).

0201 **Custom Data Packet / Array #2**
Maximum 250 bytes using Modbus RTU mode (for Packet/Array definition see Index **3041**-**3056**).

0401 **Custom Data Packet / Array #3**
Maximum 250 bytes using Modbus RTU mode (for Packet/Array definition see Indices **3057**-**3096**).

2.2. Archive Control Flags

Data to be added into the Text Archive RAM is flagged by embedding Boolean Point **1000** or **2000** within the appropriate custom report immediately preceding the data to be archived. You may enable or disable the archiving of data by resetting or setting this variable.

1000 **Archive Control Flag**
Report data following flag will be archived not printed.

2000 **Archive Control Flag**
Report data following flag is printed and archived.

2.3. Status / Command Data

2.3.1. Reading and Writing the Physical Digital I/O

⚠ IMPORTANT ⚠

Never set a physical I/O point which has been assigned as an input as this could cause a DC voltage to appear on the input terminals of that point which may conflict with any voltage already present on those terminals.

The current status of physical Digital I/O Points 01 through 12 (OMNI 3000) or 01 through 24 (OMNI 6000) can be accessed by reading Modbus Indexes **1001** through **1024**.

All points which are to be written to exclusively via the Modbus must first have the point assigned to Modbus control by entering zero (0) for 'Digital Point Assign' (see **2.5.15 Vol.3**). Assigning to '0' prevents the OMNI application software from overwriting the Modbus write.

1001 **Digital I/O Point #1**
to
1024 **Digital I/O Point #24**

2.3.2. Programmable Booleans

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

Points **1025** through **1088** are updated every 100 msec with the current value of the programmable Boolean statements (see **2.5.12 Vol.3**). You may read from or write to these variables, but anything that you write may be overwritten by the flow computer depending upon the logic functions programmed into the logic statement.

1025 **Boolean Point #25**
to
1088 **Boolean Point #88**

2.3.3. Programmable Accumulator Points

Points **1089** through **1099** are paired with Floating Point Variables **7089** through **7099**. For example, numeric data placed in **7089** can be output as pulses by assigning a Digital I/O Point to **1089**.

1089 **Programmable Accumulator #1**
Used to pulse out data placed into **7089**.
to
1099 **Programmable Accumulator #11**
Used to pulse out data placed into **7099**.

2.3.4. Meter Run Status and Alarm Points

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note:
* Used to assign accumulator to the front panel counters or digital I/O points)

The second digit of the index number defines the number of the meter run. For example: Point **1105** is the Meter Active Flag for Meter Run #1. Point **1405** would be the Meter Active Flag for Meter Run #4.

* **1n01** **Pulses - Gross Indicated Volume**

* **1n02** **Pulses - Net Volume (GSV)**

* **1n03** **Pulses - Mass**

* **1n04** **Pulses - Net Standard Volume**
S&W corrected GSV.

1n05 **Meter Run Active Flag**
Flow pulses above threshold frequency.

1n06 **Meter Being Proved**
Activates during proving of this meter.

1n07 **Any Meter Run Specific Alarm This Meter**
Clears if acknowledged.

1n08 **Batch End Acknowledge**
Toggle ON/OFF.

1n09 **Auto Prove Problem**
Ten consecutive attempts to auto-prove have failed.

1n10 **Batch Preset Reached**
Batch total equal or exceeds the batch preset.

1n11 **Batch Preset Warning Flag**
Batch total is within 'X' volume or mass units of the batch preset ('X' is stored at **5n38**).

1n12 **Batch End Acknowledge**
500 msec pulse.

1n13 **Calculation Out of Range Alarm**
Usually temperature, pressure or density is outside of the range of the algorithm selected.

1n14 **Override In Use - Density Pressure**
Override in use for any reason.

1n15 **Auto Prove Flag**
Indicates that flowmeter '*n*' will be automatically proved based on changes in flow rate or meter run time, etc. It is cleared if prove sequence is completed or prove is aborted.

1n16 **Override In Use - Temperature**

1n17 **Override In Use - Pressure**

1n18 **Override In Use - Relative Density (Gravity) / Density Transducer**

1n19 **Override In Use - Density Temperature**

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

INFO - Transducer and flow rate alarms remain set while the alarm condition exists.

1n20 **Flow Rate - Low Low Alarm**
For points **1n20**-**1n23**, flow rate units are either gross volume or mass units (depending on which unit is selected) for all products.

1n21 **Flow Rate - Low Alarm**

1n22 **Flow Rate - High Alarm**

1n23 **Flow Rate - High High Alarm**

1n24 **Meter Temperature - Transducer Failed Low Alarm**

1n25 **Meter Temperature - Low Alarm**

1n26 **Meter Temperature - High Alarm**

1n27 **Meter Temperature - Transducer Failed High Alarm**

1n28 **Meter Pressure - Transducer Failed Low Alarm**

1n29 **Meter Pressure - Low Alarm**

1n30 **Meter Pressure - High Alarm**

1n31 **Meter Pressure - Transducer Failed High Alarm**

1n32 **Relative Density (Gravity) / Density - Transducer Failed Low Alarm**

1n33 **Relative Density (Gravity) / Density - Low alarm**

1n34 **Relative Density (Gravity) / Density - High Alarm**

1n35 **Relative Density (Gravity) / Density - Transducer Failed High Alarm**

1n36 **Density Temperature - Transducer Failed Low Alarm**

1n37 **Density Temperature - Low Alarm**

1n38 **Density Temperature - High Alarm**

1n39 **Density Temperature - Transducer Failed High Alarm**

1n40 **Spare**
to
1n43 **Spare**

1n44 **Density Pressure - Transducer Failed Low**

1n45 **Density Pressure - Low Alarm**

1n46 **Density Pressure - High Alarm**

1n47 **Density Pressure - Transducer Failed High**

1n48 **Turbine - Meter Comparitor Alarm**
Only when dual pulse fidelity check enabled.

1n49 **Turbine - Channel A Failed**
Total absence of pulses on Channel A.

1n50 **Turbine - Channel B Failed**
Total absence of pulses on Channel B.

1n51 **Turbine - Difference Detected Between A & B Channel**
Missing or added pulses.

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - The second digit of the index number defines the number of the meter run.

Note: See **2n00** area for even more meter run alarms and status points.

1n52 **Spare**

1n53 **Spare**

1n54 **Any Meter Run Specific Alarm This Meter**
Clears only if acknowledged and alarm condition is cleared.

1n55 **Meter Off-line Flag**
Pulses for 500 msec when Meter Active (**1n05**) goes false.

1n56 **Batch in Progress Flag**
Set when flow occurs at start of batch. Reset at batch end command.

1n57 **Batch Start Acknowledge**
Pulses for 500 msec when **1727**-**1730** command is received.

1n58 **Meter Not Active / Batch Suspended**
True when batch is in progress but Meter Active (**1n05**) is false.

1n59 **Meter #1 Crude Oil Flag (Print BS&W Flag)**

1n60 **Meter #1 Non-Crude Oil Flag (Not Print BS&W Flag)**

1n61 **Meter #1 Day End Flag (500ms)**

1n62 **Spare**
to
1n75 **Spare**

1n76 **Batch Re-calculation Acknowledge Flag**
Pulses for 500 msec when **2756** command received.

1n77 **Correctable Totalizer Error Occurance**

1n78 **Non Correctable Totalizer Error**

1n79 **Spare**

1n80 **Spare**

1n81 **Meter Factor Changed**

1n82 **Retroactive Adjustment Occurred**

1n83 **Spare**
to
1n96 **Spare**

1n97 **Meter 'n' Maintenance Mode Status**

1n98 **Meter #n No Stack Operation Batch End Flag (500ms)**

1500 **Spare**

2.3.5. User Scratchpad Boolean Points

There are two groups of user scratchpad flags which can be used to store the results of Boolean statements or to group data to be transmitted or received over a Modbus data link.

1501 **Scratchpad - Point 01**
to
1599 **Scratchpad - Point 99**

1600 **Reserved**
DO NOT USE!

1601 **Scratchpad - Point 100**
to
1649 **Scratchpad - Point 148**

2.3.6. User Scratchpad One-Shot Boolean Points

Many times it is necessary to send a command which momentarily turns on a Boolean point. The following one-shot Boolean points simplify this action. They remain activated for exactly 2 seconds after they have been written to.

1650 **Scratchpad One-Shot - Point 01**
to
1699 **Scratchpad One-Shot - Point 50**

2.3.7. Command Boolean Points/Variables

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - Unless indicated as being 'Level Sensitive', most commands are 'edge triggered'.

Hardware Interaction - Unreliable operation will result if a command which has been assigned to a digital I/O point directly also needs to be activated via a Modbus write. This is because the On/Off state of the digital I/O point overwrites the command point every 100 msec and most command point actions are only triggered every 500 msec.

INFO- Notice that all write commands have addresses with a '7' in the 3rd digit from the right.

Unless indicated as being 'Level Sensitive', most commands are 'edge triggered'. To activate a command simply write a '1' (1 = True) to that point. It is not necessary to write a '0' (0 = False) after the command. The status of a command may also be read or used as input in a Boolean or variable statement.

1700 **Dummy**
Used only to reserve a digital I/O point to be used as an input. Point **1700** can be assigned to as many I/O points as needed.

1701 **Prover Seal is OK**
Must be true when sphere is between detectors.

1702 **End Batch - Station**
End batch on all meter runs defined in station.

1703 **End Batch - Meter #1**
Points **1703**-**1706** individual end batch commands always work.

1704 **End Batch - Meter #2**

1705 **End Batch - Meter #3**

1706 **End Batch - Meter #4**

1707 **Station - 'Change Product' Strobe**
Rising edge triggers batch end and change to product selected by **1743**-**1746**. Used with Station Product ID Bit 0-3 (**1820**-**1823**).

1708 **Prove - Meter #1 Request**
Edge triggered.

1709 **Prove - Meter #2 Request**

1710 **Prove - Meter #3 Request**

1711 **Prove - Meter #4 Request**

1712 **Station Alarm Acknowledge**
Acknowledges all alarms.

1713 **Reset Power Failed Flag**
See power fail Flag **1829**.

1714 **Trial Prove - Meter #1 Request**
Edge triggered.

1715 **Trial Prove - Meter #2 Request**

1716 **Trial Prove - Meter #3 Request**

1717 **Trial Prove - Meter #4 Request**

1718 **Abort the Prove in Progress**

1719 **Request Local Snapshot Report**
Printed on local printer connected to flow computer.

1720 **Snapshot Report to Modbus Buffer**
Move Snapshot Report to buffer located at **9402**.

1721 **Alarm Report to Modbus Buffer**
Move Alarm Report to buffer located at **9402**.

INFO - Unless indicated as being 'Level Sensitive', most commands are 'edge triggered'. To activate a command simply write a '1' or 'True' to that point. It is not necessary to write a '0' or 'False' after the command is given. The status of a command may also be read or used as input in a Boolean or variable statement.

Note:
These points are defaulted to 'active' and need not be manipulated unless the application requires it.

Note:
***** These points also affect station totalizing (see also point **1761**). Level sensitive.

 # 1722 1st PID Permissive - Loop #1
Points **1722**-**1725** enable PID startup and shutdown ramping for the respective meter (see **1752**-**1755**). Level sensitive.

 # 1723 1st PID Permissive - Loop #2

 # 1724 1st PID Permissive - Loop #3

 # 1725 1st PID Permissive - Loop #4

 # 1726 Prover Start Permissive
Checked after temperature and flow are stable. Indicates that the meter divert valves are lined up. Enables prover sequencing when set.

1727 Start Ramp-up PID - Loop #1
Initiates PID start up sequence by activating 1st and 2nd PID Permissive (see **1n57** for acknowledge pulse). These commands are edge triggered, simply turn on.

1728 Start Ramp-up PID - Loop #2

1729 Start Ramp-up PID - Loop #3

1730 Start Ramp-up PID - Loop #4

1731 Compact Prover Piston Downstream
Applies only to Brooks small volume prover (SVP), must be false before the piston can be re-launched.

1732 Alarm Acknowledge - Meter Run #1
Points **1732**-**1735** are meter run specific alarms only.

1733 Alarm Acknowledge - Meter Run #2

1734 Alarm Acknowledge - Meter Run #3

1735 Alarm Acknowledge - Meter Run #4

*** 1736 Disable Flow Totalizing - Meter Run #1**

*** 1737 Disable Flow Totalizing - Meter Run #2**

*** 1738 Disable Flow Totalizing - Meter Run #3**

*** 1739 Disable Flow Totalizing - Meter Run #4**

1740 Spare

1741 Remote Up Arrow Key
Duplicates the keypad function. Level sensitive.

1742 Remote Down Arrow Key
Duplicates the keypad function. Level sensitive.

1743 Product Select - Bit 0
Points **1743**-**1746** represent the product number to change to as offset binary; i.e., 0000 = product #1. 1111=product #16 (see **1707**, **1747**-**1750**).

1744 Product Select - Bit 1

1745 Product Select - Bit 2

1746 Product Select - Bit 3

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

1747 **'Change Product' Strobe - Meter #1**
For points **1747**-**1750**, rising edge triggers a batch end and a change to the product specified by points **1743**-**1746**.

1748 **'Change Product' Strobe - Meter #2**

1749 **'Change Product' Strobe - Meter #3**

1750 **'Change Product' Strobe - Meter #4**

1751 **Freeze Analog Inputs**
Used when calibrating analog inputs. Freezes ALL analogs. Level sensitive.

1752 **2nd PID Permissive - Meter #1**
Points **1752**-**1755** limit the PID ramp-down to the minimum output % setting (see **1722**-**1725**). Level sensitive.

1753 **2nd PID Permissive - Meter #2**

1754 **2nd PID Permissive - Meter #3**

1755 **2nd PID Permissive - Meter #4**

1756 **Recalculate & Print Batch Meter #1**

1757 **Recalculate & Print Batch Meter #2**

1758 **Recalculate & Print Batch Meter #3**

1759 **Recalculate & Print Batch Meter #4**

1760 **Leak Detection Freeze Command**
Stores totalizers, temperatures, pressures and density variables to temporary storage (see **5n66** and **7634**). This command is usually broadcast to all RTUs simultaneously.

1761 **Disable Flow Totalizing Station**
This command has no effect in individual meter run totalizing (see also points **1736**-**1739**). Level sensitive.

1762 **Remote Print - Previous Batch Report #1**
At local printer.

to

1769 **Remote Print - Previous Batch Report #8**

INFO- Notice that all write commands have indexes / point addresses with a '7' in the 3rd digit from the right.

1770 **Remote Print - Previous Daily Report #1**
At local printer.

to

1777 **Remote Print - Previous Daily Report #8**

1778 **Remote Print - Previous Prove Report #1**
At local printer.

to

1785 **Remote Print - Previous Prove Report #8**

1786 **Remote Print - Alarm Report**
At local printer.

Note: More 'Command Boolean Points' are located at address **2701**.

1787 Implement Last Prove Meter Factor
Causes the meter factor determined at the last complete prove to be implemented and saved. Edge triggered.

1788 Shutdown PID - Loop #1
Points **1788**-**1791** start ramp-down to 'top off' valve setting by deactivating the 1st PID permissive. These commands are edge triggered; simply turn on.

INFO - Unless indicated as being 'Level Sensitive', most commands are 'edge triggered'. To activate a command simply write a '1' or 'True' to that point. It is not necessary to write a '0' or 'False' after the command is given. The status of a command may also be read or used as input in a Boolean or variable statement.

1789 Shutdown PID - Loop #2

1790 Shutdown PID - Loop #3

1791 Shutdown PID - Loop #4

1792 Stop Flow PID - Loop #1
Points **1792**-**1795** deactivate the 1st and 2nd PID permissive, causing the valve to ramp to the 'top off' setting, and then immediately closes the valve. If the valve is already at the 'top off' setting, the valve immediately closes.

1793 Stop Flow PID - Loop #2

1794 Stop Flow PID - Loop #3

1795 Stop Flow PID - Loop #4

⚠ CAUTION ⚠

Stored archive data may be lost! See chapter on 'Raw Data Archive' before manipulating these data points. These functions are duplicated using integers at **13920** and **13921**.

⚠ 1796 Raw Data Archive 'Run'
Level sensitive.

⚠ 1797 Reconfigure Archive
Level sensitive.

1798 Recalculate and Print Selected Batch - Station
The previous batch selected by register **3879** is recalculated. Edge triggered.

1799 Storing Specific Meter Data on Report Buffer When Triggered

1800 Not Used

2.3.8. Meter Station Alarm and Status Points

Data points not specifically connected to a particular meter run are grouped here. These include flow computer general system alarms and metering group alarms and status points.

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

*** 1801 Positive - Gross Volume Pulses (IV)**

*** 1802 Positive - Net Volume Pulses (GSV)**

*** 1803 Positive - Mass Pulses**

*** 1804 Positive - S&W Corrected Net Volume Pulses (NSV)**

*** 1805 Negative - Gross Volume Pulses (IV)**
Points **1805**-**1808** refer to flow which occurs in the reverse direction.

*** 1806 Negative - Net Volume Pulses (GSV)**

*** 1807 Negative - Mass Pulses**

*** 1808 Negative - S&W Corrected Net Volume Pulses (NSV)**

Note:
* Used to assign accumulators to the front panel electromechanical counters and digital I/O points.

1809 Flow Rate - Low Low Alarm
For points **1809**-**1812**, flow rate units are gross volume or mass units (depending on which unit is selected) for all products.

1810 Flow Rate - Low Alarm

1811 Flow Rate - High Alarm

1812 Flow Rate - High High Alarm

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

1813 **Spare**

1814 **Spare**

1815 **Any System Alarm**
Includes acknowledged alarms also.

1816 **Any New System Alarm**
Does not include acknowledged alarms.

1817 **Batch End Acknowledge**
Toggle state at batch end (see **1835**).

1818 **Batch Preset Warning Flag**
Station batch total is within 'X' volume or mass units of the batch preset ('X' is stored at **5815**).

1819 **Batch Preset Reached Flag**
Station batch total equal or exceeds the batch preset

1820 **Station - Current Product ID Bit 0**
Points **1820**-**1823** are the offset binary representation of the current running product for the station (0000=Product #1; 1111=Product #16).

1821 **Station - Current Product ID Bit 1**

1822 **Station - Current Product ID Bit 2**

1823 **Station - Current Product ID Bit 3**

1824 **Run Switching - Threshold Flag 1**
Flags **1824**-**1826** activate/deactivate depending on the run switching threshold settings and are based on current station flow rates.

1825 **Run Switching - Threshold Flag 2**

1826 **Run Switching - Threshold Flag 3**

1827 **Leak Detection Freeze Command was received**
See point **1760**.

Note:
These points pulse high for one 500 msec cycle time.

**1828** **Day Start Flag**
True at specified day start hour (e.g.: 07:00:00).

1829 **Power Fail Flag**
True after power up (see **1713** for reset).

1830 **Print Buffer Full Flag**
Reports may be lost if 32K spooling buffer overflows due to the printer being 'off-line' or jammed with paper.

**1831** **Hour Start Flag**

**1832** **Week Start Flag**
True at specified 'day start' hour Monday.

**1833** **Month Start Flag**
True at specified 'day start' hour on 1st day of month.

**1834** **Year Start Flag**
True at specified 'day start' hour on 1st January.

**1835** **Batch End Acknowledge**
Pulses at batch end (see **1817**).

**1836** **Snapshot Printed**
Indicates snapshot report printed.

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

1837 **EPROM error Flag**
Invalid checksum detected in EPROM memory.

1838 **Peer-to-Peer Master Flag**
Momentarily true when this computer is peer-to-peer master.

1839 **Station No Stack Operation Batch End Flag (500ms)**
.

~ **1840** **Boolean Statement Alarm**
Tried to execute more than 100 Boolean statements.

~ **1841** **Variable Statement Alarm**
Tried to execute more than 100 variable statements.

1842 **Peer-to-Peer - Transaction #1 - Communication Error**
Points **1842**-**1857** refer to an error occurred while communicating with the slave in the appropriate transaction. If a slave is involved in multiple transactions which fail, only the first will be flagged.

to

1857 **Peer-to-Peer - Transaction #16 - Communication Error**

Notes:
- ~ The system limits the maximum number of statement evaluations to 100 to protect against possible lock-ups due to recursive loops. Any additional statement evaluations are ignored.
- # These points pulse high for one 500 msec. cycle time.
- * These flags are usually used to conditionally print appropriate information messages on the batch and daily reports.

1858 **Calendar Day Start Flag**
Format: 00:00:00.

1859 **Calendar Week Start Flag**
Format: 00:00:00 Monday.

1860 **Calendar Month Start Flag**
Format: 00:00:00 1st day of month.

1861 **Calendar Year Start Flag**
Format: 00:00:00 Jan 1st.

1862 **Station Density - Transducer Failed Low**

1863 **Station Density - Low Alarm**

1864 **Station Density - High Alarm**

1865 **Station Density - Transducer Failed High**

1866 **Station Density Temperature - Transducer Failed Low**

to

1869 **Station Density Temperature - Transducer Failed High**

1870 **Station Density Pressure - Transducer Failed Low**

to

1873 **Station Density Pressure - Transducer Failed High**

1874 **Print CTPL on Report Flag**

* **1875** **Spare**

1876 **Batch Recalculation Acknowledge Flag**
Pulses for 500 msec when the **1798** command is received.

1877 **Day End Flag (500ms)** *(Revision 27)*

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

* **1878** **Previous Batch - Station Alarm Flag**
Set if any station alarm during the previous batch.

* **1879** **Previous Batch - Station Totalizer Roll-over Flag**
Set if any station totalizer rolled during the previous batch.

* **1880** **Previous Daily - Station Totalizer Roll-over Flag**
Set if any station totalizer rolled during the previous day.

1881 **Spare**

1882 **Station Day End Flag** *(Revision 22)*

1883 **Auxiliary Input #1 - Transducer Failed Low**

1884 **Auxiliary Input #1 - Low Alarm**

1885 **Auxiliary Input #1 - High Alarm**

1886 **Auxiliary Input #1 - Transducer Failed High**

1887 **Auxiliary Input #2 - Transducer Failed Low**
to
1890 **Auxiliary Input #2 - Transducer Failed High**

1891 **Auxiliary Input #3 - Transducer Failed Low**
to
1894 **Auxiliary Input #3 - Transducer Failed High**

1895 **Auxiliary Input #4 - Transducer Failed Low**
to
1898 **Auxiliary Input #4 - Transducer Failed High**

Note: See **2600** area and **2800** area for more station alarms and status points.

1899 **Net Volume @ 2nd Reference Temperature Appears on Reports Flag**
Set when **7699** is assigned a non-zero value. Prints on reports.

2.3.9. Prover Alarm and Status Points

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

Alarm and Status points connected with the meter proving system are grouped here. The second digit '9' defines a prover. See the **1700** area for command points associated with the prover.

1901 **Inlet (Left) Pressure - Transducer Low Alarm**
1902 **Inlet (Left) Pressure - Transducer High Alarm**
1903 **Outlet (Right) Pressure - Transducer Low Alarm**
1904 **Outlet (Right) Pressure - Transducer High Alarm**

1905 **Inlet (Left) Temperature - Transducer Low Alarm**
1906 **Inlet (Left) Temperature - Transducer High Alarm**
1907 **Outlet (Right) Temperature - Transducer Low Alarm**
1908 **Outlet (Right) Temperature - Transducer High Alarm**

Note:
These alarms are active until the next prove sequence is started.

 # 1909 **Meter-to-Prover Temperature Unstable During Prove**
 # 1910 **Meter-to-Prover Temperature Deviation Exceeded**
 # 1911 **Prove Sequence - Successfully Completed**
 # 1912 **Prove Sequence Aborted - Did Not Complete**

1913 **1st Detector Sensed - Sphere in Flight Forward Direction**
1914 **3rd Detector Sensed - Sphere in Flight Reverse Direction**
1915 **2nd Detector Sensed - In Over-travel Forward Direction**
1916 **4th Detector Sensed - In Over-travel Reverse Direction**
1917 **Launch Sphere - Forward Direction**
Two second pulse.
1918 **Launch Sphere - Reverse Direction**
Two second pulse.

 # 1919 **Prove Aborted - Run Repeatability Deviation Limit Exceeded**
 # 1920 **Prove Aborted - Prover Seal Not OK - Sphere Between Detectors**
See **1701**.
 # 1921 **Prove Aborted - Flow Rate was Unstable**
 # 1922 **Prove Aborted - No Prover Permissive Received**
See **1726**.
 # 1923 **Meter Factor Obtained was Not Implemented**
 # 1924 **Meter Selected was not Flowing during Prove Request.**
See **1n05**.

1925 **Plenum - Charge Required**
Points **1925** and **1926** refer to Brooks small volume provers only. Plenum pressure can be automatically adjusted by adding or venting nitrogen.
1926 **Plenum - Vent Required**
1927 **Brooks Small Volume Prover - Run Command Output**
Active low output to launch piston.

1928 **Prove Sequence - Successfully Completed Flag**
500 msec pulse at end of prove.

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note:

* These flags are used to modify the prove report format and cause data to be conditionally printed on the prover report.

	1929	**Using Fixed Override - Prover Inlet (Left) Temperature**
	1930	**Using Fixed Override - Prover Outlet (Right) temperature**
	1931	**Using Fixed Override - Prover Inlet (Left) Pressure**
	1932	**Using Fixed Override - Prover Outlet (Right) Pressure**
	1933	**Spare**
	1934	**Spare**
	1935	**Spare**
	1936	**Spare**
	1937	**Spare**
	1938	**Meter Factor Repeatability in Use Flag** Printed Prover Report Flag
	1939	**Spare**
	1940	**Print Official Prove Report Flag**
	1941	**Print Unofficial Prove Report Flag**
	1942	**Spare**
	1943	**Bi-Directional Prove Flag**
	1944 to 1954	**Spare**
	1955	**Proving Meter Use CTPL Flag**
	1956	**Proving Meter Not Use CTPL Flag**
	1957	**Proved Meter Factor - Out of Limits from Meter Factor Base Curve**
	1958	**Proved Meter Factor - Out of Limits from Average of Historical Meter Factor**
*	1959	**Prove Report - Print 4 Decimal Places for Correction Factors**
*	1960	**Prove Report - Print 5 Decimal Places for Correction Factors**
*	1961	**Prove Report - Print 6 Decimal Places for Correction Factors**
	1962	**Spare**
	1963	**Print 4th abandoned Run on Prove Report Flag**
	1964	**Print 3rd abandoned Run on Prove Report Flag**
	1965	**Print 2nd abandoned Run on Prove Report Flag**
	1966	**Print 1st abandoned Run on Prove Report Flag**
	1967	**Print Run #1 on Prove Report Flag**
	1968	**Print Run #2 on Prove Report Flag**
	1969	**Print Run #3 on Prove Report Flag**
	1970	**Print Run #4 on Prove Report Flag**
	1971	**Print Run #5 on Prove Report Flag**
	1972	**Print Run #6 on Prove Report**

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

1973	**Print Run #7 on Prove Report**
1974	**Print Run #8 on Prove Report**
1975	**Print Run #9 on Prove Report**
1976	**Print Run #10 on Prove Report**
1977 to 1979	**Spare**
1980	**Inlet Pressure - Fail to Low**
1981	**Inlet Pressure - Low Alarm**
1882	**Inlet Pressure - High Alarm**
1983	**Inlet Pressure - Fail to High**
1984	**Outlet Pressure - Fail to Low**
1985	**Outlet Pressure - Low Alarm**
1986	**Outlet Pressure - High Alarm**
1987	**Outlet Pressure - Fail to High**
1988	**Inlet Temperature - Fail to Low**
1989	**Inlet Temperature - Low Alarm**
1990	**Inlet Temperature - High Alarm**
1991	**Inlet Temperature - Fail to High**
1992	**Outlet Temperature - Fail to Low**
1993	**Outlet Temperature - Low Alarm**
1994	**Outlet Temperature - High Alarm**
1995	**Outlet Temperature - Fail to High**
1996 to 2000	**Spare**

2.3.10. Meter Totalizer Roll-over Flags

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note: The 'In Progress' flags are those which the flow computer uses when printing the reports on the connected printer.

Use the 'Previous' flags if the report is being printed by another device such as a SCADA or MMI. This is necessary because the flow computer clears the 'In Progress' data immediately after it prints the local report.

The following Boolean points are flags indicating that a totalizer has rolled-over (i.e., reached maximum count and restarted from zero). These flags are used to conditionally print characters (usually '**') in front of the totalizer which has rolled on the appropriate report. Examination of an OMNI 'Custom Report Template' will show how this is accomplished. The second digit of the index number defines the number of the meter run. See also points at **2801** for station versions of these flags.

2n01 Batch In Progress - Gross (IV) Totalizer Rollover Flag
2n02 Batch In Progress - Net (GSV) Totalizer Rollover Flag
2n03 Batch In Progress - Mass Totalizer Rollover Flag
2n04 Batch In Progress - Net (NSV) Totalizer Rollover Flag

2n05 Batch In Progress - Cumulative - Gross (IV) Totalizer Rollover Flag
2n06 Batch In Progress - Cumulative - Net (GSV) Totalizer Rollover Flag
2n07 Batch In Progress - Cumulative - Mass Totalizer Rollover Flag
2n08 Batch In Progress - Cumulative - Net (NSV) Totalizer Rollover Flag

2n09 Daily In Progress - Gross (IV) Totalizer Rollover Flag
2n10 Daily In Progress - Net (GSV) Totalizer Rollover Flag
2n11 Daily In Progress - Mass Totalizer Rollover Flag
2n12 Daily In Progress - Net (NSV) Totalizer Rollover Flag

2n13 Daily In Progress - Cumulative - Gross (IV) Totalizer Rollover Flag
2n14 Daily In Progress - Cumulative - Net (GSV) Totalizer Rollover Flag
2n15 Daily In Progress - Cumulative - Mass Totalizer Rollover Flag
2n16 Daily In Progress - Cumulative - Net (NSV) Totalizer Rollover Flag

2n17 Previous Batch '*n*' - Gross (IV) Totalizer Rollover Flag
2n18 Previous Batch '*n*' - Net GSV) Totalizer Rollover Flag
2n19 Previous Batch '*n*' - Mass Totalizer Rollover Flag
2n20 Previous Batch '*n*' - Net (NSV) Totalizer Rollover Flag

2n21 Previous Batch '*n*' - Cumulative - Gross (IV) Totalizer Rollover Flag
2n22 Previous Batch '*n*' - Cumulative - Net (GSV) Totalizer Rollover Flag
2n23 Previous Batch '*n*' - Cumulative - Mass Totalizer Rollover Flag
2n24 Previous Batch '*n*' - Cumulative - Net (NSV) Totalizer Rollover Flag

2n25 Previous Daily - Gross (IV) Totalizer Rollover Flag
2n26 Previous Daily - Net (GSV) Totalizer Rollover Flag
2n27 Previous Daily - Mass Totalizer Rollover Flag
2n28 Previous Daily - Net (NSV) Totalizer Rollover Flag

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

Note: See **1800** area and **2800** area for more station alarms and status points.

2n29 Previous Daily - Cumulative - Gross (IV) Totalizer Rollover Flag
2n30 Previous Daily - Cumulative - Net (GSV) Totalizer Rollover Flag
2n31 Previous Daily - Cumulative - Mass Totalizer Rollover Flag
2n32 Previous Daily - Cumulative - Net (NSV) Totalizer Rollover Flag

2n33 Batch In Progress - 2nd Net (GSV) Totalizer Rollover Flag
2n34 Daily In Progress - 2nd Net (GSV) Totalizer Rollover Flag
2n35 Previous Batch '*n*' - 2nd Net (GSV) Totalizer Rollover Flag
2n36 Previous Daily - 2nd Net (GSV) Totalizer Rollover Flag

2n37 Previous Batch 'n' Density override used
2n38 Previous Batch 'n' Density Temperature override used.
2n39 Previous Batch 'n' Maintenance Ticket Flag
2n40 Previous Batch 'n' Unofficial Ticket Flag
2n41 Previous Batch 'n' Non-Unofficial Ticket Flag
2n42 Previous Batch 'n' Official Ticket Flag
2n43 Previous Batch 'n' Non-Official Ticket Flag
2n44 Previous Batch 'n' Delivery Ticket Flag
2n45 Previous Batch 'n' Non-Delivery Ticket Flag
2n46 Previous Batch 'n' Receipt Ticket Flag
2n47 Previous Batch 'n' Non-Receipt Ticket Flag
2n48 Previous Batch 'n' Crude Oil Flag (PrintBS&W)
2n49 Previous Batch 'n' Non-Crude Oil Flag
2150 Previous Batch Use CTPL Flag

2151 Spare
to
2191 Spare

2192 Meter #1 Gross Increment Exceeds Limits
2193 Meter #1 Net Increment Exceeds Limits
2194 Meter #1 Mass Increment Exceeds Limits
2195 Meter #1 NSV Increment Exceeds Limits

2196 Spare
to
2600 Spare

2.3.11. Miscellaneous Meter Station Alarm and Status Points

INFO - To differentiate between normal message responses and unsolicited transmissions, Modbus function code 67 appears in the transmitted message rather than function code 03.

2601 Auxiliary Input #1 - Override in Use
to
2604 Auxiliary Input #4 - Override in Use
2605 Inlet Temperature - Override in Use
2606 Outlet Temperature - Override in Use
2607 Inlet Pressure - Override in Use
2608 Outlet Pressure - Override in Use

2609 Reserved
to
2619 Reserved

2620 **Calibration Data Checksum Error**
Correctable as secondary copy was OK.

2621 **System Initialized Flag**
True after power up or system reset, clears when reset power fail command is set (**1713**).

2622 **Day Light Savings Time**
'On' means that spring adjustment was made. 'Off' means autumn adjustment was made.

2623 **Archive Memory Alarm**
0 = Ok; 1 = Fail.

2624 to 2650 **Spare**

2631 **Serial #1 as Ethernet Module (0=No, 1=Yes)**
2632 **Serial #2 as Ethernet Module (0=No, 1=Yes)**
2633 **Serial #3 as Ethernet Module (0=No, 1=Yes)**
2634 **Serial #4 as Ethernet Module (0=No, 1=Yes)**
2635 **Serial #5 as Ethernet Module (0=No, 1=Yes)**
2636 **Serial #6 as Ethernet Module (0=No, 1=Yes)**

2637 **SE-1 Module Mode (0=VO, 1=V2)**
2638 **SE-1 Module Mode (0=VO, 1=V2)**
2639 **SE-1 Module Mode (0=VO, 1=V2)**
2640 **SE-1 Ethernet Printer #1 Error**
2641 **SE-1 Ethernet Printer #2 Error**

2642 to 2645 **Spare**

2646 **SE-2 Ethernet Printer #1 Error**
2647 **SE-2 Ethernet Printer #2 Error**

2648 to 2651 **Spare**

2652 **SE-3 Ethernet Printer #1 Error**
2653 **SE-3 Ethernet Printer #2 Error**

2654 to 2657 **Spare**

2658 **SE-1 Ethernet Link Down**
2659 **SE-2 Ethernet Link Down**
2660 **SE-3 Ethernet Link Down**

2661 to 2699 **Spare**

2.3.12. Commands Which Cause Custom Data Packets to be Transmitted Without a Poll

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note: Notice that all write commands have indexes / point addresses with a '7' in the 3rd digit from the right.

Activating any of the 'edge triggered' command points below causes the appropriate 'Custom Data Packet' to be transmitted out of the selected serial port without the serial port being polled for data. This function can be useful when communicating via VSAT satellite systems where operating cost is directly proportional to RF bandwidth used.

2701 Data Packet #1 to Serial Port #1
2702 Data Packet #2 to Serial Port #1
2703 Data Packet #3 to Serial Port #1

2704 Data Packet #1 to Serial Port #2
2705 Data Packet #2 to Serial Port #2
2706 Data Packet #3 to Serial Port #2

2707 Data Packet #1 to Serial Port #3
2708 Data Packet #2 to Serial Port #3
2709 Data Packet #3 to Serial Port #3

2710 Data Packet #1 to Serial Port #4
2711 Data Packet #2 to Serial Port #4
2712 Data Packet #3 to Serial Port #4

2.3.13. Commands Needed To Accomplish a Redundant Flow Computer System

Accomplishing a redundant flow computer system requires two identically configured flow computers to share input and output signals. In addition four digital I/O points are cross connected to enable each flow computer to monitor the other.

2713 Others - Watchdog Status
Assigned to a digital I/O point monitoring other flow computers watchdog (see **2863**).

2714 Others - Master Status
Assigned to a digital I/O point monitoring other flow computers master status (see **2864**).

2715 Assume Master Status Command
Set to take mastership. Edge triggered.

2716 Assume Slave Status Command
Set to relinquish mastership. Edge triggered.

2717 to 2736 Spare

2.3.14. Commands to Recalculate and Print Selected Batch

2737	Maintenance Mode Command Meter #1
2738	Maintenance Mode Command Meter #2
2739	Maintenance Mode Command Meter #3
2740	Maintenance Mode Command Meter #4
2741	Force Day End Meter #1
2742	Force Day End Meter #2
2743	Force Day End Meter #3
2744	Force Day End Meter #4
2745	Force Day End Station
2746	Remote Request to Print Audit Trail
2747 to 2750	Spare
2751	End Batch meter #1 No Stack Operation
2752	End Batch meter #2 No Stack Operation
2753	End Batch meter #3 No Stack Operation
2754	End Batch meter #4 No Stack Operation
2755	End Batch Station No Stack Operation
2756	Recalculate and Print Selected Batch – Meter #1
2757	Recalculate and Print Selected Batch – Meter #2
2758	Recalculate and Print Selected Batch – Meter #3
2759	Recalculate and Print Selected Batch – Meter #4
2760	Serial #1 has Ethernet Printers (0=No, 1=Yes)
2761	Reserved
2762	Serial #2 has Ethernet Printers (0=No, 1=Yes)
2763	Reserved
2764	Serial #3 has Ethernet Printers (0=No, 1=Yes)
2765	Reserved
2766	Serial #4 has Ethernet Printers (0=No, 1=Yes)
2767	Reserved
2768	Serial #5 has Ethernet Printers (0=No, 1=Yes)
2769	Reserved
2770	Serial #6 has Ethernet Printers (0=No,1 =yes)
2771 to 2774	Spare
2775	SE1 Ethernet Set configuration Status Command
2776	SE2 Ethernet Set Configuration Status Command
2777	SE3 Ethernet Set Configuration Status Command
2778 to 2800	Spare

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

INFO - Remember that the station is defined as a group of individual meter runs.

In Progress Flags - The 'In Progress' flags are the flags which the flow computer uses when printing the reports on the connected printer.

Use the 'Previous' flags if the report is being printed by another device such as an SCADA or MMI. This is necessary because the flow computer clears the 'In Progress' data immediately after it prints the local report.

2.3.15. Station Totalizer Roll-over Flags

The following Boolean points are flags indicating that a totalizer has rolled-over (i.e., reached maximum count and restarted from zero). These flags are used to conditionally print characters (usually '**') in front of the totalizer which has rolled on the appropriate report. Examination of an OMNI 'Custom Report Template' will show how this is accomplished. See also points at **2n01** for meter run versions of flags.

2801 Batch In Progress - Gross (IV) Totalizer Rollover Flag
2802 Batch In Progress - Net (GSV)) Totalizer Rollover Flag
2803 Batch In Progress - Mass Totalizer Rollover Flag
2804 Batch In Progress - Net (NSV) Totalizer Rollover Flag

2805 Batch In Progress - Cumulative - Gross (IV) Totalizer Rollover Flag
2806 Batch In Progress - Cumulative - Net (GSV) Totalizer Rollover Flag
2807 Batch In Progress - Cumulative - Mass Totalizer Rollover Flag
2808 Batch In Progress - Cumulative - Net (NSV) Totalizer Rollover Flag

2809 Daily In Progress - Gross (IV) Totalizer Rollover Flag
2810 Daily In Progress - Net (GSV) Totalizer Rollover Flag
2811 Daily In Progress - Mass Totalizer Rollover Flag
2812 Daily In Progress - Net (NSV) Totalizer Rollover Flag

2813 Daily In Progress - Cumulative - Gross (IV) Totalizer Rollover Flag
2814 Daily In Progress - Cumulative - (GSV) Net (GSV) Totalizer Rollover Flag
2815 Daily In Progress - Cumulative - Mass Totalizer Rollover Flag
2816 Daily In Progress - Cumulative - Net (NSV) Totalizer Rollover Flag
2817 Previous Batch '*n*' - Gross (IV) Totalizer Rollover Flag
2818 Previous Batch '*n*' - Net (GSV) Totalizer Rollover Flag
2819 Previous Batch '*n*' - Mass Totalizer Rollover Flag
2820 Previous Batch '*n*' - Net (NSV) Totalizer Rollover Flag

2821 Previous Batch '*n*' - Cumulative - Gross (IV) Totalizer Rollover Flag
2822 Previous Batch '*n*' - Cumulative - Net (GSV) Totalizer Rollover Flag
2823 Previous Batch '*n*' - Cumulative - Mass Totalizer Rollover Flag
2824 Previous Batch '*n*' - Cumulative - Net (NSV) Totalizer Rollover Flag

2825 Previous Daily - Gross (IV) Totalizer Rollover Flag
2826 Previous Daily - Net (GSV) Totalizer Rollover Flag
2827 Previous Daily - Mass Totalizer Rollover Flag
2828 Previous Daily - Net (NSV) Totalizer Rollover Flag

2829 Previous Daily - Cumulative - Gross (IV) Totalizer Rollover Flag
2830 Previous Daily - Cumulative - Net (GSV) Totalizer Rollover Flag
2831 Previous Daily - Cumulative - Mass Totalizer Rollover Flag
2832 Previous Daily - Cumulative - Net (NSV) Totalizer Rollover Flag

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

2833 to 2848 **Spare**

2849 **Pressure Unit Selected in kPa**

2850 **Pressure Unit Selected in Bar**

2851 **Pressure Unit Selected in kg/cm2**

2.3.16. Station Totalizer Decimal Resolution Flags

INFO - Remember that the station is defined as a group of individual meter runs.

All totalizers within the flow computer are 'long integer types'. This data type uses an 'implied' decimal position. The computer uses these flags internally to determine how to format all totalizers of the same type for printing purposes.

2852 **Batch Report - Print 4 Decimal Places for Correction Factors**

2853 **Batch Report - Print 5 Decimal Places for Correction Factors**

2854 **Batch Report - Print 6 Decimal Places for Correction Factors**

2855 to 2857 **Spare**

2858 **Print 0 Decimal Places for Gross and Net Totalizer**

2859 **Print 1 Decimal Place for Gross and Net Totalizer**

2860 **Print 2 Decimal Place for Gross and Net Totalizer**

2861 **Print 3 Decimal Place for Gross and Net Totalizer**

2862 **Spare**

2863 **Watchdog Status Out**
Normally High Watchdog. Monitored by other flow computer in a redundant system (see **2713**).

2864 **Master Status**
Indicates mastership. Monitored by other flow computer in a redundant system (see **2714** area).

INFO - Boolean data is accessed using Modbus function codes 01 for reads, 05 for single point writes and 15 for multiple bit writes. Boolean data is packed 8 points to a byte when reading.

2865 **Print 0 Decimal Places for Mass Totalizer**

2866 **Print 1 Decimal Places for Mass Totalizer**

2867 **Print 2 Decimal Places for Mass Totalizer**

2868 **Print 3 Decimal Places for Mass Totalizer**

2869 **Print 0 Decimal Places for Net Totalizer**

2870 **Print 1 Decimal Places for Net Totalizer**

2871 **Print 2 Decimal Places for Net Totalizer**

2872 **Print 3 Decimal Places for Net Totalizer**

2873 **Print 0 Decimal Places for Barrel**

2874 **Print 1 Decimal Places for Barrel**

2875 **Print 2 Decimal Places for Barrel**

2876 **Print 3 Decimal Places for Barrel**

2869 to 2999 **Spare**

Chapter 3

16-Bit Integer Data (3001 - 3999)

3.1. Custom Data Packet Definition Variables

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3.1.1. Custom Data Packet #1

The 16-bit integers needed to define the 20 groups of data that make up **Custom Data Packet #1** which is accessed at database Index **0001** are listed below.

3000	**Not Used**
3001	**Group 1 - Starting Index Point Number**
3002	**Group 1 - Number of Index Points**
to	
3039	**Group 20 - Starting Index Point Number**
3040	**Group 20 - Number of Index Points**

3.1.2. Custom Data Packet #2

The 16-bit integers needed to define the 8 groups of data that make up **Custom Data Packet #2** which is accessed at database Index **0201** are listed below.

3041	**Group 1 - Starting Index Point Number**
3042	**Group 1 - Number of Index Points**
to	
3055	**Group 8 - Starting Index Point Number**
3056	**Group 8 - Number of Index Points**

3.1.3. Custom Data Packet #3

The 16-bit integers needed to define the 20 groups of data that make up **Custom Data Packet #3** which is accessed at database Index **0401** are listed below.

3057	**Group 1 - Starting Index Point Number**
3058	**Group 1 - Number of Index Points**
to	
3095	**Group 20 - Starting Index Point Number**
3096	**Group 20 - Number of Index Points**

3.2. Miscellaneous 16-Bit Integer Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

3097 **Spare**

3098 **Number of Totalizer Digits**
Totalizers roll at: 0=9 digits; 1=8 digits.

3099 **Spare**

3.3. Meter Run 16-Bit Integer Data

The second digit of the index number defines the number of the meter run. For example: **3106** is the 'Meter Active Frequency' for Meter Run # 1. The same point for Meter Run # 4 would be **3406**.

3n00 **Spare**

3n01 **Override Code - Temperature**
For points **3n01**-**3n05**: 0=Never use; 1=Always use; 2=Use if transmitter fails; 3=If transmitter fails use last hours average.

3n02 **Override Code - Pressure**

3n03 **Override Code - Relative Density (Gravity) / Density**

3n04 **Override Code - Density Temperature**

3n05 **Override Code - Density Pressure**

3n06 **Active Threshold Hz**
Point **1n05** is set when flow pulses exceed this frequency.

3n07 **Prover Volume Select**
Brooks Small Volume Prover (SVP): 0=Use downstream; 1=Use upstream.

3n08 **Auto Prove Enable 0=No, 1=Yes**

3n09 **Meter #1 Maintenance Ticket (0=No, 1=Yes)**

3n10 **Meter #1 Official/Unofficial Ticket**

3n11 **Meter #1 Receipt/Delivery Ticket**

3n12 **Spare**

3n13 **Meter Factor Used in Net and Mass**
0=No; 1=Yes.

3n14 **Is Meter Already Temperature Compensated?**
0=No; 1=Yes.

3n15 **Spare**

3n16 **S&W Source**
0=None; 1=Auxiliary #1; 2=Auxiliary #2; 3=Auxiliary #3; 4=Auxiliary #4; 5=Modbus.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

	3n17	**Spare**
	3n18	**Spare**
	3n19	**PID Control Mode** Do not write if **3n20** is '1'. 1=Manual; 0=Auto.
	3n20	**Setpoint Mode** 1=Local; 0=Remote.
	3n21	**PID Loop Status** Read only. 1=Secondary; 0=Primary.
	3n22	**Spare**
	to	
	3n33	**Spare**
	3n34	**Meter #1 Move Previous Batch 'n' to Print Area.**
	3n35	**Meter #1 Previous Batch 'n' # of Calculation Times**
	3n36	**Spare**
	to	
	3n39	**Spare**

Notes:

2s complement numbers based on span entries **17176** through **17189**. Values expressed as percentages of span in tenth percent increments;. i.e., 1000 represents 100.0%

***** Unsigned integer totalizers cumulative based. They roll at 65536.

~ 2s complement numbers based on the 4-20 mA spans. Values are expressed as percentages of span in tenth percent increments; i.e., 1000 equals 100.0 %.

#	**3n40**	**Current Net (GSV) Flow Rate**
*****	**3n41**	**Net (GSV) Totalizer**
#	**3n42**	**Current Gross (IV) Flow Rate**
*****	**3n43**	**Gross (IV) Totalizer**
#	**3n44**	**Current Mass Flow Rate**
*****	**3n45**	**Mass Totalizer**
~	**3n46**	**Current Meter Run Pressure**
~	**3n47**	**Current Meter Run Temperature**
~	**3n48**	**Current Transducer Density / Relative Density (Gravity)**
#	**3n49**	**Current S&W Corrected Net (NSV) Flow Rate**
*****	**3n50**	**S&W Corrected Net (NSV) Totalizer**
	3n51	**Spare**
	3n52	**Spare**
	3n53	**Spare**
	to	
	3n99	**Spare**
	3500	**Spare**

3.4. Scratchpad 16-Bit Integer Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Ninety-nine integer registers are provided for user scratch pad. These registers are typically used to store and group data that will be moved via peer-to-peer operations or similar operations.

3501 **Scratchpad - Short Integer #1**
to
3599 **Scratchpad - Short Integer #99**

3.5. User Display Definition Variables

The 16-bit integers needed to define the variables that appear in the eight User Displays are listed below. Look in the **4601** area for string associated with setting up User Displays.

3.5.1. User Display Number 1

3600 **Not Used**
3601 **Database Index Number of 1st Variable**
3602 **Decimal Places for 1st Variable**
3603 **Database Index Number of 2nd Variable**
3604 **Decimal Places for 2nd Variable**
3605 **Database Index Number of 3rd Variable**
3606 **Decimal Places for 3rd Variable**
3607 **Database Index Number of 4th Variable**
3608 **Decimal Places for 4th Variable**

3.5.2. User Display Number 2

3609 **Database Index Number of 1st Variable**
to
3616 **Decimal Places for 4th Variable**

3.5.3. User Display Number 3

3617 **Database Index Number of 1st Variable**
to
3624 **Decimal Places for 4th Variable**

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3.5.4. User Display Number 4

3625	Database Index Number of 1st Variable
to	
3632	Decimal Places for 4th Variable

3.5.5. User Display Number 5

3633	Database Index Number of 1st Variable
to	
3640	Decimal Places for 4th Variable

3.5.6. User Display Number 6

3641	Database Index Number of 1st Variable
to	
3648	Decimal Places for 4th Variable

3.5.7. User Display Number 7

3649	Database Index Number of 1st Variable
to	
3656	Decimal Places for 4th Variable

3.5.8. User Display Number 8

3657	Database Index Number of 1st Variable
to	
3664	Decimal Places for 4th Variable

3665	Spare
to	
3700	Spare

3.6. Data Used to Access the Raw Data Archive Records

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

See the chapter describing how to use the raw data archiving features of the flow computer including how to manipulate the 'pointers' below.

3701 **Archive 701 - Maximum Records**
Number of data records in archive file.

3702 **Archive 701 - Current Record Number**
Number of the last record updated.

3703 **Archive 701 - Request Record Number**
Write the number of the record you wish to read.

3704 **Archive 702 - Maximum Records**
Number of data records in archive file.

3705 **Archive 702 - Current Record Number**
Number of the last record updated.

3706 **Archive 702 - Request Record Number**
Write the number of the record you wish to read.

3707 **Archive 703 - Maximum Records**
Number of data records in archive file.

3708 **Archive 703 - Current Record Number**
Number of the last record updated.

3709 **Archive 703 - Request Record Number**
Write the number of the record you wish to read.

3710 **Archive 704 - Maximum Records**
Number of data records in archive file.

3711 **Archive 704 - Current Record Number**
Number of the last record updated.

3712 **Archive 704 - Request Record Number**
Write the number of the record you wish to read.

3713 **Archive 705 - Maximum Records**
Number of data records in archive file.

3714 **Archive 705 - Current Record Number**
Number of the last record updated.

3715 **Archive 705 - Request Record Number**
Write the number of the record you wish to read.

3716 **Archive 706 - Maximum Records**
Number of data records in archive file.

3717 **Archive 706 - Current Record Number**
Number of the last record updated.

3718 **Archive 706 - Request Record Number**
Write the number of the record you wish to read.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3719 **Archive 707 - Maximum Records**
Number of data records in archive file.

3720 **Archive 707 - Current Record Number**
Number of the last record updated.

3721 **Archive 707 - Request Record Number**
Write the number of the record you wish to read.

3722 **Archive 708 - Maximum Records**
Number of data records in archive file.

3723 **Archive 708 - Current Record Number**
Number of the last record updated.

3724 **Archive 708 - Request Record Number**
Write the number of the record you wish to read.

3725 **Archive 709 - Maximum Records**
Number of data records in archive file.

3726 **Archive 709 - Current Record Number**
Number of the last record updated.

3727 **Archive 709 - Request Record Number**
Write the number of the record you wish to read.

3728 **Archive 710 - Maximum Records**
Number of data records in archive file.

3729 **Archive 710 - Current Record Number**
Number of the last record updated.

3730 **Archive 710 - Request Record Number**
Write the number of the record you wish to read.

3731 **Archive 711 - Maximum Records**
Number of data records in archive file.

3732 **Archive 711 - Current Record Number**
Number of the last record updated.

3733 **Archive 711 - Request Record Number**
Write the number of the record you wish to read.

3734 **Archive 712 - Maximum Records**
Number of data records in archive file.

3735 **Archive 712 - Current Record Number**
Number of the last record updated.

3736 **Archive 712 - Request Record Number**
Write the number of the record you wish to read.

3.7. More Miscellaneous 16-Bit Integer Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Notes:

* Unsigned integer totalizers cumulative based. They roll at 65536.

~ To avoid flushing the audit trail, audit events other than complete 'downloads' to the flow computer are usually not documented in the 'audit trail' unless serial port passwords have been enabled Rigorous auditing of a serial port or group of serial ports can be activated by placing the appropriate hexadecimal code in **3800** (S = Serial Port):

000A = Audit S1
00A0 = Audit S2
0A00 = Audit S3
A000 = Audit S4

To monitor multiple ports; e.g.:
A0 A0 = Audit S4 & S2

\# 2s complement numbers based on span entries **17176** through **17189**. Values expressed as percentages of span in tenth percent increments. i.e. 1000 represents 100.0% . No over range or under range checking is done.

3737 **Archive File System - Memory Allocation Status**
0=OK; 1=Allocation Error.

3738 **Time Tag**
MM/DD or DD/MM format.

3739 **Time Tag**
YY/HH format

3740 **Time Tag**
MM/SS format.

3741 **New Archive**
Bit 0-Bit 9 for files 701-710

3742 **Spare**
to
3744 **Spare**

3745 **Batch End No Stack Operation (0=No, 1=Yes)**
3746 **Starting Index of Displayed Database Registers**
3747 **Use Default Snapshot Template 0=No, 1=Yes**
3748 **Use Default Batch Template 0=No, 1=Yes**
3749 **Use Default Daily Template 0=No, 1=Yes**
3750 **Use Default Prove Template 0=No, 1=Yes**

3751 **Run Switch In Auto Mode 0=No 1=Yes**
3752 **Run Switch Timer (Seconds)**

3753 **Spare**
to
3768 **Spare**

3769 **Number of Historical Alarms to Send to Modbus Buffer**
The number of historical alarms indicated are written to the Modbus buffer (**9402**)

3770 **Spare**
to
3799 **Spare**

3781 **Product #1 Use Observed Density Y/N (API 11.1)**
Product #1 Use API 11.1 Pressure Correction (Y/N)
to
3788 **Product #8 Use Observed Density Y/N (API 11.1)**
Product #8 Use API 11.1 Pressure Correction (Y/N)

3789 **Spare**
to
3799 **Spare**

3.8. Meter Station 16-Bit Integer Data

~	3800	**Special Diagnostic Function** Used to enable rigorous 'Audit Trail' reporting of all serial port transactions (see side bar note).
	3801	**Running Product Number** Common Batch Stack - Station.
#	3802	**Current Net (GSV) Flow Rate**
*	3803	**Net (GSV) Totalizer**
#	3804	**Current Gross (IV)Flow Rate**
*	3805	**Gross (IV) Totalizer**
#	3806	**Current Mass Flow Rate**
*	3807	**Mass Totalizer**
#	3808	**Current Pressure**
#	3809	**Current Temperature**
#	3810	**Current Relative Density (Gravity) / Density**
	3811	**Allen Bradley - CRC Error Counter**
	3812	**Allen Bradley - Message 'Type' Error Counter**
	3813	**Algorithm Select - Product #1** Points **3813**-**3828** select the API, ASTM, NIST calculations that will be used when selecting these products.
	3814	**Algorithm Select - Product #2**
	3815	**Algorithm Select - Product #3**
	3816	**Algorithm Select - Product #4**
	3817	**Algorithm Select - Product #5**
	3818	**Algorithm Select - Product #6**
	3819	**Algorithm Select - Product #7**
	3820	**Algorithm Select - Product #8**
	3821 to 3828	**Spare**
	3829	**Flow Average Factor** Number of 500 msec calculation cycles to average.
	3830	**Print Priority** 0=Not sharing a printer; 1=Master; n=slaves 2-12.
	3831	**Number of Nulls After Carriage Return** Used to slow data to a printer if no hardware handshake.
	3832	**Print Interval in Minutes** Time interval between automatic snapshot reports.
	3833	**Automatic - Weekly Batch Select** 0=None; 1=Monday; 7=Sunday.
	3834	**Automatic - Monthly Batch Select** 0=None; 1=1st day of the month.
	3835	**Automatic - Hourly Batch Select** 0=No; 1=Yes.
	3836	**Default Report Templates** 0=Custom templates; 1=Default reports.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3837 **Batch Stack Mode Select**
0=Independent stacks; 1=Common stack.

3838 **Clear Daily @ Batch End Select**
0=24hr Totals; 1=Cleared at batch end.

3839 **API Rounding Rule (Y/N)**

3840 **Dual Pulse Delay Cycle**

3841 **Spare**

3842 **Select Date Type**
Selects date format: 0=dd/mm/yy; 1=mm/dd/yy.

3.9. Batch Stack Storage of Product Numbers to Run

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

The following 24 registers are treated as either one 24-position shift stack or, 4 separate 6-position shift stacks depending upon register **3837**. ***Data in the stack(s) is shifted automatically at the end of a batch***. A new batch starts after either a 'station batch end' (**1702**) or 'meter batch end' (**1703** to **1706**) command is received **and** meter pulses occur. Data on the top of a stack is the 'current running product' for the batch in progress. This entry is discarded (popped off) and replaced with the entry below on receipt of a 'batch end'. A 'batch stack may be stopped from shifting by leaving the second entry '0'. Note that these entries are only part of the 'batch stack'. Matching entries for other data types such as long integers and strings can be found at **5819** and **4852**. All three 'data type' stacks act as a single unit, they all synchronize and shift together.

3.9.1. Meter #1 Batch Sequence

3843 **Sequence #1 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #1**

3844 **Sequence #2 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #2**

3845 **Sequence #3 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #3**

3846 **Sequence #4 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #4**

3847 **Sequence #5 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #5**

3848 **Sequence #6 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #6**

3.9.2. Meter #2 Batch Sequence

3849 **Sequence #1 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #7**

3850 **Sequence #2 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #8**

3851 **Sequence #3 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #9**

3852 **Sequence #4 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #10**

3853 **Sequence #5 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #11**

3854 **Sequence #6 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #12**

3.9.3. Meter #3 Batch Sequence

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3855 **Sequence #1 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #13**

3856 **Sequence #2 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #14**

3857 **Sequence #3 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #15**

3858 **Sequence #4 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #16**

3859 **Sequence #5 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #17**

3860 **Sequence #6 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #18**

3.9.4. Meter #4 Batch Sequence

3861 **Sequence #1 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #19**

3862 **Sequence #2 - Individual Batch Stack Current Running Product or Common Batch Stack - Product #20**

3863 **Sequence #3 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #21**

3864 **Sequence #4 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #22**

3865 **Sequence #5 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #23**

3866 **Sequence #6 - Individual Batch Stack Current Running Product or Common Batch Stack - Sequence #24**

3.10. Flow Computer Time and Date Variables

Time and date can be read and written here. See also **4847** and **4848**.

3867 **Current - Hour**
0-23.

3868 **Current - Minute**
0-59.

3869 **Current - Second**
0-59.

3870 **Current - Month**
1-12.

3871 **Current - Day of Month**
1-31.

3872 **Current - Year**
0-99; Year 2000=00.

3873 **Current - Day of Week**
Read only. 1=Monday; 7=Sunday.

3874 **Disable Daily Report**
0=print daily report; 1=no daily report.

3.11. More Miscellaneous 16-Bit Integer Data

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3875 **Move Previous Meter Factor Product '*n*' to View Area**
See **4743** and **6785** areas.

3876 **Override Code - Density**

3877 **Override Code - Density Temperature**

3878 **Override Code - Density Pressure**

3879 **Move Previous Batch '*n*' to Print Area**
1 through 4; 1=last batch completed.

3880 **Density Factor - Select A/B - Product #1**
to
3887 **Density Factor - Select A/B - Product #8**

3888 **Spare**
to
3900 **Spare**

3.12. Prover 16-Bit Integer Data

3901 **Prove Run**

3902 **Proving Meter Number**
Current meter run in progress (1-4).

3903 **Prover Outlet (Right) - Pressure %**
0-999.

3904 **Prover Outlet (Right) - Temperature %**
0-999.

3905 **Prover Inlet (Left) - Pressure %**
0-999.

3906 **Prover Inlet (Left) - Temperature %**
0-999.

3907 **Prove Counts**
Current run (see **5901**).

3908 **Spare**

3909 **Print Uni-Directional Prove Format (0=No,1=Yes)**

3910 **Archive All Prove Report 0=No, 1=Yes**

3911 **Enable Trial Prove Report**
0=No; 1=Yes.

3912 **Number of Passes per Prover Run**
1-25.

3913 **Number of Prover Runs to Average**
Maximum 10.

3914 **Number of Total Prove Runs**
Maximum 99.

3915 **Prove - Inactivity Timer**
Seconds.

3916 **Prove - Temperature Stability Sample Time**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

3917 **Override Code - Prover Inlet (Left) Temperature**

3918 **Override Code - Prover Outlet (Right) Temperature**

3919 **Override Code - Prover Inlet (Left) Pressure**

3920 **Override Code - Prover Outlet (Right) Pressure**

3921 **Uni- or Bi-directional Prover**
0=Uni, 1=Bi; 2=Uni-Compact; 3=Bi-SVP; 4=Master Meter Prove; 5=2 Series Bi-directional.

3922 **Automatic Implement Prove Meter Factor**
0=No; 1=Yes.

3923 **Apply Prove Meter Factor Retroactively**
0=No; 1=Yes.

3924 **Spare**

3925 **Prover Flow Stable Period**
Minutes.

3926 **Prove Meter Down Period**
Hours.

3927 **Compact Prover - Print Run Passes**
0=No; 1=Yes.

3928 **Prove Run Repeatability on Meter Factor**
0=No; 1=Yes.

3929 **Number of Historical Meter Factors to Average**

3930 **Proved Meter Temperature Compensated**

3931 **Prove Run # - 4th Last Rejected Run**

3932 **Prove Run # - 3rd Last Rejected Run**

3933 **Prove Run # - 2nd Last Rejected Run**

3934 **Prove Run # - Last Rejected Run**

3935 **Prove Run # - 1st Accepted Run**

3936 **Prove Run # - 2nd Accepted Run**

3937 **Prove Run # - 3rd Accepted Run**

3938 **Prove Run # - 4th Accepted Run**

3939 **Prove Run # -5th Accepted Run**

3940 **Prove Run # - 6th Accepted Run**

3941 **Prove Run # - 7th Accepted Run**

3942 **Prove Run # - 8th Accepted Run**

3943 **Prove Run # - 9th Accepted Run**

3944 **Prove Run # - 10th Accepted Run**

3945 **Current Prove Passes**

3946 **Prove - Manual Implementation Time Limit**
Minutes; 0=disable time limit.

3947 **Spare**
to
4099 **Spare**

4n00 **Spare**

Chapter 4

8-Character ASCII String Data (4001 - 4999)

4.1. Meter Run ASCII String Data

INFO - These ASCII string variables are accessed using Modbus function codes 03 for all reads and 16 for all writes.

Note: The index number of each string refers to the complete string which occupies the space of 4 registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each point counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each string counts as 4 registers. The starting address of the string still applies.

Note:
Last batch end for this meter run.

The second digit of the index number defines the number of the meter run. For example: **4114** is the 'Meter ID' for Meter Run #1. The same point for Meter Run #4 would be **4414**. Each ASCII string is 8 characters occupying the equivalent of 4 short integer registers (see the side bar comments).

	4n01	**Running Batch - Start Date**
	4n02	**Running Batch - Start Time**
#	**4n03**	**Batch End - Date**
#	**4n04**	**Batch End - Time**
	4n05	**Running Product Name**
	4n06	**Current Calculation Mode** Algorithm set used, in string format.
	4n07	**Current Batch ID** Characters 1-8.
	4n08	**Current Batch ID** Characters 9-16.
	4n09	**Meter Factor Used in Net / Mass** Used on reports. It contains 'Yes' or 'No'. Characters 1-8.
	4n10	**Spare**
	4n11	**Flowmeter - Serial Number**
	4n12	**Flowmeter - Size**
	4n13	**Flowmeter - Model**
	4n14	**Flowmeter - ID**
	4n15	**Flowmeter Tag**
	4n16	**Spare**
	4n17	**Transmitter Tag - Temperature**
	4n18	**Transmitter Tag - Pressure**
	4n19	**Transmitter Tag - Densitometer**
	4n20	**Transmitter Tag - Density Temperature**
	4n21	**Transmitter Tag - Density Pressure**
	4n22	**Output Tag - PID Control**
	4n23 to 4n25	**Spare**
	4n26	**Meter #n Day Start Time**
	4n27	**Meter #n Day Start Date**
	4n28 to 4n30	**Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

4n31 **Previous Batch '*n*' - Batch Start Date**
4n32 **Previous Batch '*n*' - Batch Start Time**
4n33 **Previous Batch '*n*' - Batch End Date**
4n34 **Previous Batch '*n*' - Batch End Time**
4n35 **Previous Batch '*n*' - Product Name**
4n36 **Previous Batch '*n*' - API Table**
4n37 **Previous Batch '*n*' - Batch ID**
Characters 1-8.
4n38 **Previous Batch '*n*' - Batch ID**
Characters 9-16.
4n39 **Previous Batch '*n*' - Meter Factor Used in Net/Mass**

4n40 **Meter #n Previous Batch 'n' Batch Number ASCII**

4n41 **Meter #n Previous Day Start Time**
4n42 **Meter #n Previous Day Start Date**
4n43 **Meter #n Previous Day End Time**
4n44 **Meter #n Previous Day End Date**

4n45 **Meter #n Previous Day End Date**
to
4500 **Meter #n Previous Day End Date**

4.2. Scratchpad ASCII String Data

Storage for ninety-nine ASCII strings is provided for user scratch pad. These registers are typically used to store and group data that will be moved via peer-to-peer operations or similar operations.

4501 **Scratchpad - ASCII String #1**
to
4599 **Scratchpad - ASCII String #99**

4.3. User Display Definition String Variables

The string variables which define the descriptor tags that appear in the eight User Displays and the key press combinations which recall the displays are listed below.

INFO - See **3601** area for more data points needed to setup the user displays.

4601 **User Display #1 - Descriptor Tag – 1st Variable**
4602 **User Display #1 - Descriptor Tag – 2nd Variable**
4603 **User Display #1 - Descriptor Tag – 3rd Variable**
4604 **User Display #1 - Descriptor Tag – 4th Variable**

4605 **User Display #2 - Descriptor Tag – 1st Variable**
to
4632 **User Display #8 - Descriptor Tag – 4th Variable**

4633 **User Display #1 - Key Press Sequence**
to
4640 **User Display #8 - Key Press Sequence**

4.4. String Variables Associated with the Station Auxiliary Inputs

INFO - These ASCII string variables are accessed using Modbus function codes 03 for all reads and 16 for all writes.

Note: The index number of each string refers to the complete string which occupies the space of 4 registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each point counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each string counts as 4 registers. The starting address of the string still applies.

4641	**Spare**
to	
4706	**Spare**

4707	**Auxiliary Tag - Input #1**
to	
4710	**Auxiliary Tag - Input #4**

4.5. Product Meter Factor Curve 8-Character ASCII String Data

4711	**Product #1 - Date of Meter Factor Curve - Meter #1**
4712	**Product #1 - Date of Meter Factor Curve - Meter #2**
4713	**Product #1 - Date of Meter Factor Curve - Meter #3**
4714	**Product #1 - Date of Meter Factor Curve - Meter #4**

4715	**Product #2 - Date of Meter Factor Curve - Meter #1**
to	
4718	**Product #2 - Date of Meter Factor Curve - Meter #4**

4719	**Product #3 - Date of Meter Factor Curve - Meter #1**
to	
4722	**Product #3 - Date of Meter Factor Curve - Meter #4**

4723	**Product #4 - Date of Meter Factor Curve - Meter #1**
to	
4726	**Product #4 - Date of Meter Factor Curve - Meter #4**

4727	**Product #5 - Date of Meter Factor Curve - Meter #1**
to	
4730	**Product #5 - Date of Meter Factor Curve - Meter #4**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

4731 Product #6 - Date of Meter Factor Curve - Meter #1
to
4734 Product #6 - Date of Meter Factor Curve - Meter #4

4735 Product #7 - Date of Meter Factor Curve - Meter #1
to
4738 Product #7 - Date of Meter Factor Curve - Meter #4

4739 Product #8 - Date of Meter Factor Curve - Meter #1
to
4742 Product #8 - Date of Meter Factor Curve - Meter #4

4743 Product "n"- Meter #1 - Date of Last Proved Meter Factor Curve
4744 Product "n"- Meter #1 - Date of 2nd Last Proved Meter Factor Curve
4745 Product "n"- Meter #1 - Date of 3rd Last Proved Meter Factor Curve
4746 Product "n"- Meter #1 - Date of 4th Last Proved Meter Factor Curve
4747 Product "n"- Meter #1 - Date of 5th Last Proved Meter Factor Curve
4748 Product "n"- Meter #1 - Date of 6th Last Proved Meter Factor Curve
4749 Product "n"- Meter #1 - Date of 7th Last Proved Meter Factor Curve
4750 Product "n"- Meter #1 - Date of 8th Last Proved Meter Factor Curve
4751 Product "n"- Meter #1 - Date of 9th Last Proved Meter Factor Curve
4752 Product "n"- Meter #1 - Date of 10th Last Proved Meter Factor Curve

4753 Product "n"- Meter #2 - Date of Last Proved Meter Factor Curve
to
4762 Product "n"- Meter #2 - Date of 10th Last Proved Meter Factor Curve

4763 Product "n"- Meter #3 - Date of Last Proved Meter Factor Curve
to
4772 Product "n"- Meter #3 - Date of 10th Last Proved Meter Factor Curve

4773 Product "n"- Meter #4 - Date of Last Proved Meter Factor Curve
to
4782 Product "n"- Meter #4 - Date of 10th Last Proved Meter Factor Curve

4783 Spare
to
4800 Spare

4.6. Meter Station 8-Character ASCII String Data

INFO - These ASCII string variables are accessed using Modbus function codes 03 for all reads and 16 for all writes.

Note: The index number of each string refers to the complete string which occupies the space of 4 registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each point counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each string counts as 4 registers. The starting address of the string still applies.

4801 **Station - Batch Start Date**

4802 **Station - Batch Start Time**

4803 **Station - Batch End Date**

4804 **Station - Batch End Time**

4805 **Station - Running Product Name**

4806 **Station - Current Calculation Mode**

4807 **Date of Last Database Change**
Updated each time the Audit Trail is updated.

4808 **Time of Last Database Change**

4809 **Reserved**

4810 **Esc Sequence to Print Condensed**
Raw ASCII characters sent to printer (see **14149** for Hex ASCII setup).

4811 **Esc Sequence to Print Normal**
Raw ASCII characters sent to printer (see **14150** for Hex ASCII setup).

4812 **Daylight Savings Starts**
Date format field (**/**/**).

4813 **Daylight Savings Ends**
Date format field (**/**/**).

4814 **Density / Relative Density (Gravity) Tag**

4815 **Station - ID**

4816 **Station - Density Temperature Tag**

4817 **Station - Density Pressure Tag**

4818 **Print Interval Timer Start Time**
Time format field (**:**:**).

4819 **Time to Print Daily Report**
Time format field (**:**:**).

4820 **Product #1 - Name**
to
4827 **Product #8 - Name**

4828 **Spare**
to
4829 **Spare**

4830 **Proved/Checked for String (Char 1-8)**

4831 **Proved/Checked for String (Char 9-16)**

4832 **Spare**
to
4835 **Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

4836 Flow Computer ID

4837 Company Name
Characters 1-8.

4838 Company Name
Characters 9-16.

4839 Company Name
Characters 17-24.

4840 Company Name
Characters 25-32.

4841 Company Name
Characters 33-38. (**Note:** Last two characters are spares.)

4842 Station Location
Characters 1-8.

4843 Station Location
Characters 9-16.

4844 Station Location
Characters 17-24.

4845 Station Location
Characters 25-32.

4846 Station Location
Characters 33-38. (**Note:** Last two characters are spares.)

Note:

* The flow computer time and date can be set by writing to these ASCII variables. Be sure to include the colons (:) in the time string and the slashes (/) in the date string.

* **4847 Current Date**
Point **3842** selects date format (see also **3870**-**3872**).

* **4848 Current Time**
See also 3867-3869.

4849 Software Version Number
Example: 20.71

4850 Online Password / EPROM Checksum
Dual function point. Write password. Read provides EPROM Checksum.

4851 Spare

4.7. Batch Stack Storage 16-Character Batch Identification Strings

INFO - These ASCII string variables are accessed using Modbus function codes 03 for all reads and 16 for all writes.

Note: The index number of each string refers to the complete string which occupies the space of 4 registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each point counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each string counts as 4 registers. The starting address of the string still applies.

The following 24 register pairs are treated as either one 24-position shift stack or, 4 separate 6-position shift stacks depending upon register **3837**. ***Data in the stack(s) is shifted automatically at the end of a batch***. A new batch starts after either a 'station batch end' (**1702**) or 'meter batch end' (**1703**-**1706**) command is received **and** meter pulses occur. Data on the top of a stack is the 'current running product' for the batch in progress. This entry is discarded (popped off) and replaced with the entry below on receipt of a 'batch end'. A 'batch stack may be stopped from shifting by leaving the second entry '0'. Note that these entries are only part of the 'batch stack'. Matching entries for other data types such as integers and long integers can be found at **3843** and **5819**. All three 'data type' stacks act as a single unit, they are all synchronized and shift together.

4.7.1. Meter #1 Batch ID

4852 **Individual Batch Stack - Sequence #1 —or— Common Batch Stack - Sequence #1**

4853 **Batch ID**

4854 **Individual Batch Stack - Sequence #2 —or— Common Batch Stack - Sequence #2**

4855 **Batch ID**

4856 **Individual Batch Stack - Sequence #3 —or— Common Batch Stack - Sequence #3**

4857 **Batch ID**

4858 **Individual Batch Stack - Sequence #4 —or— Common Batch Stack - Sequence #4**

4859 **Batch ID**

4860 **Individual Batch Stack - Sequence #5 —or— Common Batch Stack - Sequence #5**

4861 **Batch ID**

4862 **Individual Batch Stack - Sequence #6 —or— Common Batch Stack - Sequence #6**

4863 **Batch ID**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

4.7.2. Meter #2 Batch ID

4864	**Individual Batch Stack - Sequence #1 —or— Common Batch Stack - Sequence #7**
4865	**Batch ID**
to	
4874	**Individual Batch Stack - Sequence #6 —or— Common Batch Stack - Sequence #12**
4875	**Batch ID**

4.7.3. Meter #3 Batch ID

4876	**Individual Batch Stack - Sequence #1 —or— Common Batch Stack - Sequence #13**
4877	**Batch ID**
to	
4886	**Individual Batch Stack - Sequence #6 —or— Common Batch Stack - Sequence #18**
4887	**Batch ID**

4.7.4. Meter #4 Batch ID

4888	**Individual Batch Stack - Sequence #1 —or— Common Batch Stack - Sequence #19**
4889	**Batch ID**
to	
4898	**Individual Batch Stack - Sequence #6 —or— Common Batch Stack - Sequence #24**
4899	**Batch ID**

4.8. Prover ASCII String Data

INFO - These ASCII string variables are accessed using Modbus function codes 03 for all reads and 16 for all writes.

Note: The index number of each string refers to the complete string which occupies the space of 4 registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each point counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each string counts as 4 registers. The starting address of the string still applies.

4901 **Prove Meter - Product Name**

4902 **Prove Meter - Calculation Mode Text**

4903 **Prove Meter - Batch ID**
Characters 1-8.

4904 **Prove Meter - Batch ID**
Characters 9-16.

4905 **Prove Meter - Serial Number**
Manufacturer's Number.

4906 **Prove Meter - Size**

4907 **Prove Meter - Model**
Manufacturer Model Number.

4908 **Prove Meter - ID**

4909 **Prove Meter - Tag**

4910 **Prover Tag**

4911 **Prover - Inlet (Left) Temperature Tag**

4912 **Prover - Outlet (Right) Temperature Tag**

4913 **Prover - Inlet (Left) Pressure Tag**

4914 **Prover - Outlet (Right) Pressure Tag**

4915 **Compact Prover - Plenum Pressure Tag**

4916 **Prover Manufacturer**

4917 **Prover Material**

4918 **Prover Serial Number**

4919 **Proving Meter Manufacturer**

4920 **Reserved**

4921 **Prove - Date**

4922 **Prove - Time**

4923 **Meter # 'n' Manufacturer**

4924 **Prove - Meter Product Name**

4925 **Prove - Meter ID**

4926 **Prove - Meter Serial #**

4927 **Prove - Meter Size**

4928 **Prove - Meter Model**

4929 **Last Official Prove Date**

4930 **Last Official Prove Time**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

4931 **Prove - Result String**
Characters 1-8. Printed on Prove Report.

4932 **Prove - Result String**
Characters 9-16.

4933 **Prove - Result String**
Characters 17-24.

4934 **Prove - Result String**
Characters 25-32.

4935 **Prove - Reason String**
Characters 1-8. Printed on Prove Report.

4936 **Prove - Reason String**
Characters 9-16.

4937 **Prove - Reason String**
Characters 17-24.

4938 **Prove - Reason String**
Characters 25-32.

4939 **Master Meter - ID**

4940 **Master Meter - Serial Number**

4941 **Master Meter - Size**

4942 **Master Meter - Model**

4943 **Proving Meter - Initial Date of Meter Factor Curve**

4944 **Spare**
to
4949 **Spare**

4950 **Date of Last Meter Factor Implemented**

4951 **Date of 2nd Last Meter Factor Implemented**

4952 **Date of 3rd Last Meter Factor Implemented**

4953 **Date of 4th Last Meter Factor Implemented**

4954 **Date of 5th Last Meter Factor Implemented**

4955 **Date of 6th Last Meter Factor Implemented**

4956 **Date of 7th Last Meter Factor Implemented**

4957 **Date of 8th Last Meter Factor Implemented**

4958 **Date of 9th Last Meter Factor Implemented**

4959 **Date of 10th Last Meter Factor Implemented**

4960 **Spare**
to
5099 **Spare**

5n00 **Spare**

Chapter 5

32-Bit Integer Data (5001 - 5999)

5.1. Meter Run 32-Bit Integer Data

The second digit of the index number defines the number of the meter run. For example: **5105** is the 'Cumulative Gross (IV) Totalizer' for Meter Run # 1. The same point for Meter Run # 4 would be **5405**.

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes. Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

Notes:

* The increment for all totalizers depends upon the 'totalizer resolution' settings shown in the 'Factor Setup' menu of OmniCom. They can only be changed via the keypad entries made in the 'Pass-word Maintenance' menu after 'Resetting all Totalizers'. These Variables are stored with 4 places after the implied decimal point. i.e. 10000 is interpreted as 1.0000.

S = Scaling in Rev 22+ Data base points 5n13 -5n15 which may require scaling in Revision 22, should be divided by 10,000

	5n01	**Batch in Progress - Gross (IV) Totalizer** Points **5n01**-**5n04** represent the total batch quantities measured so far for the batch in progress. Results are moved to **5n50** area at the end of the batch.
*	**5n02**	**Batch in Progress - Net (GSV) Totalizer**
*	**5n03**	**Batch in Progress - Mass Totalizer**
*	**5n04**	**Batch in Progress - Net (NSV) Totalizer**
*	**5n05**	**Cumulative In Progress - Gross (IV) Totalizer** Points **5n05**-**5n08** are non-resettable totalizers which are snapshot for opening readings.
*	**5n06**	**Cumulative In Progress - Net (GSV) Totalizer**
*	**5n07**	**Cumulative In Progress - Mass Totalizer**
*	**5n08**	**Cumulative In Progress - Net (NSV) Totalizer**
*	**5n09**	**Today's In Progress - Gross (IV) Totalizer** Points **5n09**-**5n12** are total daily quantities measured since the 'day start hour' today. These are moved to the **5n54** area at the start of a new day.
*	**5n10**	**Today's In Progress - Net (GSV) Totalizer**
*	**5n11**	**Today's In Progress - Mass Totalizer**
*	**5n12**	**Today's In Progress - Net (NSV) Totalizer**
S	**5n13**	**Meter Factor in Use Now**
S	**5n14**	**Average Meter Factor - Batch in Progress**
S	**5n15**	**Average Meter Factor - Today's In Progress**
	5n16	**Batch Preset Remaining**
	5n17	**Running Product Number**
	5n18	**'Dual Pulse' (Comparator) Error Counts for Batch** When pulse fidelity check enabled only.
	5n19	**In Progress Batch Report Number** Increments each batch start.
	5n20	**Raw Input Counts (500 msec)** Turbine counts this 500 msec cycle.

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

S **= Scaling of 32 bit integers in Application Revision 22+ -** Data base points 5n21 – 5n23 which may require scaling in Revision 22, should be divided by 10,000.

Scaling of 32 Bit integers for Revision 26+ see page 1-17 Vol 4C.

S **5n21** **Meter Factor - @ Base Flow Rate to Adjust Meter Factor Curve**

S **5n22** **Meter Factor - from Base Curve**

S **5n23** **Meter Factor – Adjustment**
5113 Meter Factor= 5122 Meter Factor from base cure+5123 Meter Factor Adjustment

S **5n24** **Meter Factor from Base Curve at Base Flowrate**

5n25 **Spare**

to

5n36 **Spare**

5n37 **Meter Factor Retroactive**
Bbls/m^3.

5n38 **Batch Preset Warning Volume**
Bbls/m^3.

5n39 **Meter # Comparator Error Threshold**

5n40 **Max Comparator - Error Counts per Batch - Meter #n**
Point represents dual pulse error check.

5n41 **Spare**

5n42 **Meter #1 Batch Net at 2nd Reference Temperature**

5n43 **In Progress - Raw Input Counts for Hour**
Raw turbine counts for the hour so far.

5n44 **In Progress - Gross (IV) Totalizer for Hour**
Points **5n44**-**5n47** represent the total quantities for the current hour in progress. These will be moved to 5n74 area at the start of the new hour.

5n45 **In Progress - Net (GSV) Totalizer for Hour**

5n46 **In Progress - Mass Totalizer for Hour**

5n47 **In Progress - Net (NSV) Totalizer for Hour**

5n48 **In Progress - Raw Input Counts for Batch**
Raw turbine counts; this batch.

5n49 **In Progress - Raw Input Counts for Day**
Raw turbine counts; today so far.

5n50 **Previous Batch '*n*' - Gross (IV) Totalizer**
Points **5n50**-**5n53** represent the total batch quantities for the previous batch.

5n51 **Previous Batch '*n*' - Net (GSV) Totalizer**

5n52 **Previous Batch '*n*' - Mass Totalizer**

5n53 **Previous Batch '*n*' - Net (NSV) Totalizer**

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes. Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

5n54 **Previous Day's - Gross (IV) Totalizer**
Points **5n54**-**5n57** are the total quantities for the previous day; 'day start hour' to 'day start hour'.

5n55 **Previous Day's - Net (GSV) Totalizer**

5n56 **Previous Day's - Mass Totalizer**

5n57 **Previous Day's - Net (NSV) Totalizer**

5n58 **Current Batch - Opening Gross (IV) Totalizer**
Points **5n58**-**5n61** are cumulative totalizers snapshot at the start of the batch in progress. These variables are also the closing totalizers for the previous batch.

5n59 **Current Batch - Opening Net (GSV) Totalizer**

5n60 **Current Batch - Opening Mass Totalizer**

5n61 **Current Batch - Opening Net (NSV) Totalizer**

5n62 **Today's - Opening Gross (IV) Totalizer**
Points **5n62**-**5n65** are cumulative totalizers snapshot at day start hour for today. These variables are also the closing totalizers for the previous day.

5n63 **Today's - Opening Net (GSV) Totalizer**

5n64 **Today's - Opening Mass Totalizer**

5n65 **Today's - Opening Net (NSV) Totalizer**

5n66 **Cumulative - Gross (IV) Totalizer @ Leak Detection Freeze Command**
Points **5n66**-**5n69** are cumulative totalizers snapshot when the Leak Detection Freeze Command (**1760**) is received (see also points **7634**, **7644**, **7654** & **7664**).

5n67 **Cumulative - Net (GSV) Totalizer @ Leak Detection Freeze Command**

5n68 **Cumulative - Mass Totalizer @ Leak Detection Freeze Command**

5n69 **Cumulative - Net (NSV) Totalizer @ Leak Detection Freeze Command**

5n70 **Increment - Gross (IV) Totalizer**
Points **5n70**-**5n73** contains the incremental integer counts that were added to the totalizers for this current cycle (500msec).

5n71 **Increment - Net (GSV) Totalizer**

5n72 **Increment - Mass Totalizer**

5n73 **Increment - Net (NSV) Totalizer**

5n74 **Previous Hourly - Gross (IV) Totalizer**
Points **5n74**-**5n77** represent the total quantities measured for the last hour. These are moved here from **5n44** area at the end of hour.

5n75 **Previous Hourly - Net (GSV) Totalizer**

5n76 **Previous Hourly - Mass Totalizer**

5n77 **Previous Hourly - Net (NSV) Totalizer**

5n78 **Previous Batch '*n*' - Opening Gross (IV) Totalizer**
Data from **5n58** area gets moved to **5n78**-**5n81** at the end of each batch.

5n79 **Previous Batch '*n*' - Opening Net (GSV) Totalizer**

5n80 **Previous Batch '*n*' - Opening Mass Totalizer**

5n81 **Previous Batch '*n*' - Opening Net (NSV) Totalizer**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

S **= Scaling of 32 bit integers in Application Revision 22+ -** Data base points 5n91,5n92 which may require scaling in Revision 22, should be divided by 100. Data base point 5n93 should be divided by 1,000, Data base points 5n94 – 5n96 should be divided by 100

Scaling of 32 Bit integers for Revision 26+ see page 1-17 Vol 4C

5n82 Previous Day's - Opening Gross (IV) Totalizer
Data from **5n62** area gets moved to **5n82**-**5n85** at the end/beginning of each day.

5n83 Previous Day's - Opening Net (GSV) Totalizer

5n84 Previous Day's - Opening Mass Totalizer

5n85 Previous Day's - Opening Net (NSV) Totalizer

5n86 Previous Batch '*n*' - Closing Gross (IV) Totalizer

5n87 Previous Batch '*n*' - Closing Net (GSV) Totalizer

5n88 Previous Batch '*n*' - Closing Mass Totalizer

5n89 Previous Batch '*n*' - Closing Net (NSV) Totalizer

5n90 Previous Batch '*n*' - Batch Report Number
Use this value on Batch Report.

S **5n91 Previous Batch '*n*' - Gross Standard Volume (GSV)**

S **5n92 Previous Batch '*n*' - Net (GSV) @ 15°C**

S **5n93 Previous Batch '*n*' - Net (GSV) @ 60°F & 0 PSIg**
For Revision 22+ the value of this number will be in M/3.
For Revision 26+ the value of this number will be in Barrels.

S **5n94 Previous Batch '*n*' - Net Weight Long Tons**

S **5n95 Previous Batch '*n*' - Net Weight Metric Tons**

S **5n96 Previous Batch '*n*' - Factored Gross Volume**

5n98 Previous Batch '*n*' - Net (GSV) @ 2nd Reference Temperature

5n99 Previous Daily - Net (GSV) @ 2nd Reference temperature

5500 Spare

5.2. Scratchpad 32-Bit Integer Data

Ninety-nine 32-bit integer registers are provided for user scratch pad. These registers are typically used to store the results of variable statement calculations, to group data that will be moved via peer-to-peer operations or similar types of operations.

5501 Scratchpad - 32-Bit Integer #1
to
5599 Scratchpad - 32-Bit Integer #99

5600 Not Used

5.3. Product 32-Bit Integer Totalizer Data

Product #1 Gross, Net, Mass and NSV Totalizers for Meter #1

5601 Product #1 Meter #1 Gross Totalizer
5602 Product #1 Meter #1 Net Totalizer
5603 Product #1 Meter #1 Mass Totalizer
5604 Product #1 Meter #1 NSV Totalizer

Product #1 Gross, Net, Mass and NSV totalizers for Meter #2

5605 Product #1 Meter #2 Gross Totalizer
5606 Product #1 Meter #2 Net Totalizer
5607 Product #1 Meter #2 Mass Totalizer
5608 Product #1 Meter #2 NSV Totalizer

Product #1 Gross, Net, Mass and NSV totalizers for Meter #3

5609 Product #1 Meter #3 Gross Totalizer
5610 Product #1 Meter #3 Net Totalizer
5611 Product #1 Meter #3 Mass Totalizer
5612 Product #1 Meter #3 NSV Totalizer

Product #1 Gross, Net, Mass and NSV totalizers for Meter #4

5613 Product #1 Meter #4 Gross Totalizer
5614 Product #1 Meter #4 Net Totalizer
5615 Product #1 Meter #4 Mass Totalizer
5616 Product #1 Meter #4 NSV Totalizer

Product #2 Gross, Net, Mass and NSV Totalizers for Meter #1

5617 to 5620

Product #2 Gross, Net, Mass and NSV Totalizers for Meter #2

5621 to 5624

Product #2 Gross, Net, Mass and NSV Totalizers for Meter #3

5625 to 5628

Product #2 Gross, Net, Mass and NSV Totalizers for Meter #4

5629 to 5632

Product #3 Gross, Net, Mass and NSV Totalizers for Meter #1

5633 to 5636

Product #3 Gross, Net, Mass and NSV Totalizers for Meter #2

5637 to 5640

Product #3 Gross, Net, Mass and NSV Totalizers for Meter #3

5641 to 5644

Product #3 Gross, Net, Mass and NSV Totalizers for Meter #4

5645 Product #3 Meter #4 Gross Totalizer
5646 Product #3 Meter #4 Net Totalizer
5647 Product #3 Meter #4 Mass Totalizer
5648 Product #3 Meter #4 NSV Totalizer

Product #4 Gross, Net, Mass and NSV Totalizers for Meter #1

5649 Product #4 Meter #1 Gross Totalizer
5650 Product #4 Meter #1 Net Totalizer
5651 Product #4 Meter #1 Mass Totalizer
5652 Product #4 Meter #1 NSV Totalizer

Product #4 Gross, Net, Mass and NSV Totalizers for Meter #2

5653 to 5656

Product #4 Gross, Net, Mass and NSV Totalizers for Meter #3

5657 to 5660

Product #4 Gross, Net, Mass and NSV Totalizers for Meter #4

5661 to 5664

Product #5 Gross, Net, Mass and NSV Totalizers for Meter #1

5665 to 5668

Product #5 Gross, Net, Mass and NSV Totalizers for Meter #2

5669 to 5672

Product #5 Gross, Net, Mass and NSV Totalizers for Meter #3

5673 to 5676

Product #5 Gross, Net, Mass and NSV Totalizers for Meter #4

5677 to 5680

Product #6 Gross, Net, Mass and NSV Totalizers for Meter #1

5681 to 5684

Product #6 Gross, Net, Mass and NSV Totalizers for Meter #2

5685 to 5688

Product #6 Gross, Net, Mass and NSV Totalizers for Meter #3

5689 to 5692

Product #6 Gross, Net, Mass and NSV Totalizers for Meter #4

5693 to 5696

Product #7 Gross, Net, Mass and NSV Totalizers for Meter #1

5697 Product #7 Meter #1 Gross Totalizer

5698 **Product #7 Meter #1 Net Totalizer**
5699 **Product #7 Meter #1 Mass Totalizer**
5700 **Product #7 Meter #1 NSV Totalizer**

Product #7 Gross, Net, Mass and NSV Totalizers for Meter #2

5701 **Product #7 Meter #2 Gross Totalizer**
5702 **Product #7 Meter #2 Net Totalizer**
5703 **Product #7 Meter #2 Mass Totalizer**
5704 **Product #7 Meter #2 NSV Totalizer**

Product #7 Gross, Net, Mass and NSV Totalizers for Meter #3

5705 to 5708

Product #7 Gross, Net, Mass and NSV Totalizers for Meter #4

5709 to 5712

Product #8 Gross, Net, Mass and NSV Totalizers for Meter #1

5713 to 5716

Product #8 Gross, Net, Mass and NSV Totalizers for Meter #2

5717 to 5720

Product #8 Gross, Net, Mass and NSV Totalizers for Meter #3

5721 to 5724

Product #8 Gross, Net, Mass and NSV Totalizers for Meter #4

5725 to 5728

5729 to 5800 **Spare**

5.4. Station 32-Bit Integer Data

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes. Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

Note:

* The increment for all totalizers depends upon the 'totalizer resolution' settings shown in the 'Factor Setup' menu of OmniCom. They can only be changed via the keypad entries made in the 'Pass-word Maintenance' menu after 'Resetting all Totalizers'.

* **5801** **Station - Batch in Progress - Gross (IV) Totalizer**
Points **5801**-**5804** are total batch quantities measured so far for the batch in progress. These are moved to **5850** area at the end of the batch.

* **5802** **Station - Batch in Progress - Net (GSV) Totalizer**

* **5803** **Station - Batch in Progress - Mass Totalizer**

* **5804** **Station - Batch in Progress - Net (NSV) Totalizer**

* **5805** **Station - Cumulative in Progress - Gross (IV) Totalizer**
Points **5805**-**5808** are non-resettable totalizers which are snapshot for opening readings.

* **5806** **Station - Cumulative in Progress - Net (GSV) Totalizer**

* **5807** **Station - Cumulative in Progress - Mass Totalizer**

* **5808** **Station - Cumulative in Progress - Net (NSV) Totalizer**

* **5809** **Station - Today's in Progress - Gross (IV) Totalizer**
Points **5809**-**5812** are total daily quantities measured since the 'day start hour' today. These are moved to the **5854** area at the start of a new day.

* **5810** **Station - Today's in Progress - Net (GSV) Totalizer**

* **5811** **Station - Today's in Progress - Mass Totalizer**

* **5812** **Station - Today's in Progress - Net (NSV) Totalizer**

5813 **Spare**

5814 **Station - Line Pack Remaining**

5815 **Station - Batch Preset Warning**

5816 **Station - Batch Preset Remaining**

5817 **Station - Running Product ID**

5818 **Station - Batch Number**

5.5. Batch Size 32-Bit Integer Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

5.5.1. Meter #1 Batch Size

5819	Current Batch or Common Batch Stack Sequence #1
5820	Batch Sequence #2 or Common Batch Stack Sequence #2
5821	Batch Sequence #3 or Common Batch Stack Sequence #3
5822	Batch Sequence #4 or Common Batch Stack Sequence #4
5823	Batch Sequence #5 or Common Batch Stack Sequence #5
5824	Batch Sequence #6 or Common Batch Stack Sequence #6

5.5.2. Meter #2 Batch Size

5825	Current Batch or Common Batch Stack Sequence #7
to	
5830	Batch Sequence #6 or Common Batch Stack Sequence #12

5.5.3. Meter #3 Batch Size

5831	Current Batch or Common Batch Stack Sequence #13
to	
5836	Batch Sequence #6 or Common Batch Stack Sequence #18

5.5.4. Meter #4 Batch Size

5837	Current Batch or Common Batch Stack Sequence #19
to	
5842	Batch Sequence #6 or Common Batch Stack Sequence #24

5843 Spare

5.6. More Meter Station 32-Bit Integer Data

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes. Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

5844 **Station - In Progress - Gross (IV) Total for Hour**
Points **5844**-**5847** represent the total station quantities for the current hour in progress. These will be moved to 5n74 area at the start of the new hour.

5845 **Station - In Progress - Net (GSV) Total for Hour**

5846 **Station - In Progress - Mass Total for Hour**

5847 **Station - In Progress - Net (NSV) Total for Hour**

5848 **Station - Time in hh/mm/ss format**
Read (e.g.: the number 103125 represents 10:31:25).

5849 **Station - Date in yy/mm/dd format**
Read (e.g.: the number 970527 represents May 27, 1997). The date format used here does not follow the US/European format selection.

5850 **Station - Previous Batch '*n*' - Gross (IV) Totalizer**
Points **5850**-**5853** are total batch quantities for the previous batch. These are moved here from **5801** area at the end of a batch.

5851 **Station - Previous Batch '*n*' - Net (GSV) Totalizer**

5852 **Station - Previous Batch '*n*' - Mass Totalizer**

5853 **Station - Previous Batch '*n*' - Net (NSV) Totalizer**

5854 **Station - Previous Day's - Gross (IV) Totalizer**
Points **5854**-**5857** are total quantities for the previous day; 'day start hour' to 'day start hour'. These are moved here from **5809** area at the end of the day.

5855 **Station - Previous Day's - Net (GSV) Totalizer**

5856 **Station - Previous Day's - Mass Totalizer**

5857 **Station - Previous Day's - Net (NSV) Totalizer**

5858 **Station - Current Batch - Opening Gross (IV) Totalizer**
Points **5858**-**5861** are cumulative totalizers snapshot at the start of the batch in progress. These variables are also the closing totalizers for the previous batch.

5859 **Station - Current Batch - Opening Net (GSV) Totalizer**

5860 **Station - Current Batch - Opening Mass Totalizer**

5861 **Station - Current Batch - Opening Net (NSV) Totalizer**

5862 **Station - Today's - Opening Gross (IV) Totalizer**
Points **5862**-**5865** are cumulative totalizers snapshot at day start hour for today. These variables are also the closing totalizers for the previous day.

5863 **Station - Today's - Opening Net (GSV) Totalizer**

5864 **Station - Today's - Opening Mass Totalizer**

5865 **Station - Today's - Opening Net (NSV) Totalizer**

5866 **Station - Cumulative - Gross (IV) Totalizer @ Leak Detection Freeze**
Points **5866**-**5869** are cumulative totalizers snapshot when the Leak Detection Freeze Command (**1760**) is received (see also points **7634**, **7644**, **7654** & **7664**).

5867 **Station - Cumulative - Net (GSV) Totalizer @ Leak Detection Freeze**

5868 **Station - Cumulative - Mass Totalizer @ Leak Detection Freeze**

5869 **Station - Cumulative - Net (NSV) Totalizer @ Leak Detection Freeze**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Notes:

* The increment for all totalizers depends upon the 'totalizer resolution' settings shown in the 'Factor Setup' menu of OmniCom. They can only be changed via the keypad entries made in the 'Password Maintenance' menu after 'Resetting all Totalizers'.

\# See point **3879**.

S **= Scaling of 32 bit integers in Application Revision 22+ -** Data base points 5891,5892 which may require scaling in Revision 22, should be divided by 100. Data base point 5893 should be divided by 1,000, Data base points 5894 – 5896 should be divided by 100.

Scaling of 32 Bit integers for Revision 26+ see page 1-17 Vol 4C.

* **5870** **Station - Increment - Gross (IV) Totalizer**
Points **5870**-**5873** contain the incremental integer counts that were added to the totalizers for this current cycle.

* **5871** **Station - Increment - Net (GSV) Totalizer**

* **5872** **Station - Increment - Mass Totalizer**

* **5873** **Station - Increment - Net (NSV) Totalizer**

5874 **Station - Previous Hourly - Gross (IV)**
Points **5874**-**5877** represent the total quantities measured for the last hour. These are moved here from **5844** area at the end of hour.

5875 **Station - Previous Hourly - Net (GSV) Total**

5876 **Station - Previous Hourly - Mass Total**

5877 **Station - Previous Hourly - Net (NSV) Total**

\# **5878** **Station - Previous Batch '*n*' - Opening Gross (IV) Totalizer**
Data from **5858** area gets moved to points **5878**-**5881** at the end of each batch.

\# **5879** **Station - Previous Batch '*n*' - Opening Net (GSV) Totalizer**

\# **5880** **Station - Previous Batch '*n*' - Opening Mass Totalizer**

\# **5881** **Station - Previous Batch '*n*' - Opening Net (NSV) Totalizer**

5882 **Station - Previous Day's - Opening Gross (IV) Totalizer**
Data from **5862** area gets moved to points **5882**-**5885** at the end/beginning of each day.

5883 **Station - Previous Day's - Opening Net (GSV) Totalizer**

5884 **Station - Previous Day's - Opening Mass Totalizer**

5885 **Station - Previous Day's - Opening Net (NSV) Totalizer**

\# **5886** **Station - Previous Batch '*n*' - Closing Gross (IV) Totalizer**

\# **5887** **Station - Previous Batch '*n*' - Closing Net (GSV) Totalizer**

\# **5888** **Station - Previous Batch '*n*' - Closing Mass Totalizer**

\# **5889** **Station - Previous Batch '*n*' - Closing Net (NSV) Totalizer**

\# **5890** **Station - Previous Batch '*n*' - Batch Number**

\# **5891** **Station - Previous Batch '*n*' - Gross Standard Volume (GSV)**

\# **5892** **Station - Previous Batch '*n*' - Net (GSV) @ 60°F & 0 PSIg**

\# **5893** **Station - Previous Batch '*n*' - Net (GSV) @ 15°C**
For Revision 22+ the value of this number will be in M/3.
For Revision 26+ the value of this number will be in Barrels.

\# **5894** **Station - Previous Batch '*n*' - Net Weight Long Tons**

\# **5895** **Station - Previous Batch '*n*' - Net Weight Metric Tons**

\# **5896** **Station - Previous Batch '*n*' - Factored Gross Volume**

\# **5897** **Station - Daily - Net (GSV) @ 2nd Reference Temperature**

\# **5898** **Station - Previous Batch '*n*' - Net (GSV) @ 2nd Reference Temperature**

\# **5899** **Station - Previous Daily - Net (GSV) @ 2nd Reference Temperature**

5900 **Not Used**

5.7. Prover 32-Bit Integer Data

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes. Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon™ Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

S **= Scaling of 32 bit integers in Application Revision 22+ -** Data base points 5902,5903 which may require scaling in Revision 22, should be divided by 1,000.000. Data base point 5905 should be divided by 10,000

Scaling of 32 Bit integers for Revision 26+ see page 1-17 Vol 4C

	5901	**Prove Counts**
S	**5902**	**Compact Prover - TDVOL Timer Pulses** Timer pulses accumulated between detectors switches (each pulse is 200nsec).
S	**5903**	**Compact Prover - TDFMP Timer Pulses** Timer pulses accumulated between first flow pulse after each detector switches (each pulse is 200nsec).
	5904	**Proved Meter Run Identifier - For Redundant Slave** Used to transfer the 'new meter factor' after a prove to a redundant flow computer, using the peer-to-peer link. Contains the number of the meter run "just proved". In redundant flow computer systems, this data is sent to the slave flow computer.
S	**5905**	**New Proved Meter Factor - For Redundant Slave** Used to transfer the 'new meter factor' after a prove to a redundant flow computer, using the peer-to-peer link. Contains the new "just proved" meter factor (**5995**). In redundant flow computer systems, this data is sent to the slave flow computer.
	5906	**Proved Meter Run Identifier - Echo from Redundant Slave** Used to transfer the 'new meter factor' after a prove to a redundant flow computer, using the peer-to-peer link. In redundant flow computer systems, the master flow computer reads this data which is an echo of point **5904**. At the end of a prove, the master detects that the slave has accepted the new meter factor by reading back the meter number proved.
	5907	**Last -3 run Reverse Pulses**
	5908	**Last -2 run Reverse Pulses**
	5909	**Last -1 run Reverse Pulses**
	5910	**Last Run Reverse Pulses**
	5911 to 5920	**Run #1 Reverse Pulses** **Run #10 Reverse Pulses**
	5921 to 5929	**Spare** **Spare**
	5930	**Net Total Since Last MF Implemented**
	5931	**Prove Report Number**
	5932	**Net Total at Last MF Implemented**
	5933	**Totalizer Reading This Prove**
	5934	**Pulses - Forward - 4th Last Prove**
	5935	**Pulses - Total - 4th Last Prove**
	5936	**Pulses - Forward - 3rd Last Prove**
	5937	**Pulses - Total - 3rd Last Prove**
	5938	**Pulses - Forward - 2nd Last Prove**
	5939	**Pulses - Total - 2nd Last Prove**
	5940	**Pulses - Forward - Last Prove**
	5941	**Pulses - Total - Last Prove**
	5942	**Pulses - Forward - 1st Prove Run**
	5943 to 5960	**Pulses - Total - 1st Prove Run** **Pulses - Forward - Prove 10th Run**
	5961	**Pulses - Total - Prove 10th Run**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

S **= Scaling of 32 bit integers in Application Revision 22+ -** Data base points 5963 which may require scaling in Revision 22, should be divided by 10,000. Data base points 5974 through 5993 should be divided by 1,000.000. Data base points 5994 through 5997 should be divided by 10,000.

5962 **Previous Prove Meter Factor**

S **5963** **Actual Meter Factor- Current Prove**

5964 **Flowmeter Frequency - 1st Prove Run**
to
5973 **Flowmeter Frequency - 10th Prove Run**

S **5974** **Compact Prover - TDVOL Timer Pulses - 1st Run**
Timer pulses accumulated between detector switches (each pulse is 200nsec).

S **5975** **Compact Prover - TDFMP Timer Pulses 1st Run**
Timer pulses accumulated between first flow pulse after each detector switch (each pulse is 200nsec).

to
S **5992** **Compact Prover - TDVOL Timer Pulses - 10th Run**

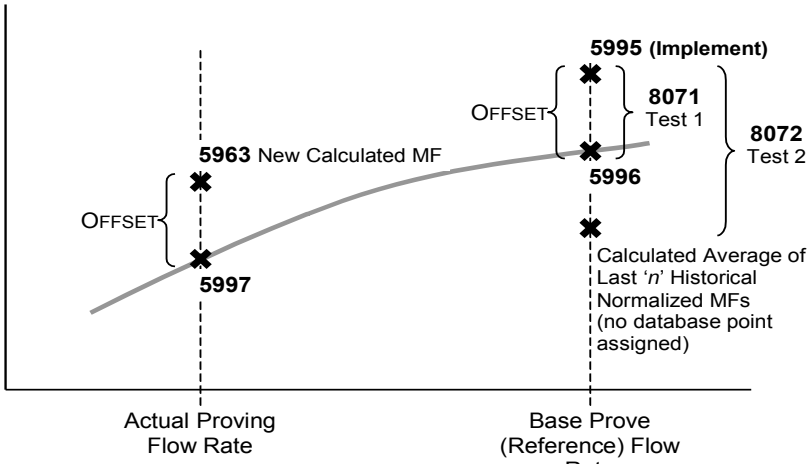
S **5994** **Meter Factor - Trial Prove**

S **5995** **New Meter Factor - Normalized to the Base Proving Flow Rate**

S **5996** **Meter Factor - @ Base Proving Flow Rate Interpolated from Meter Factor Base Curve**

S **5997** **Base Curve Meter Factor - @ Actual Prove Flow Rate - Interpolated from Meter Factor Base Curve**

The new calculated meter factor (**5963**) is compared against this value to determine the current offset from the base curve of the new meter factor.



5998 **Spare**
to
6000 **Spare**

Chapter 6

32-Bit IEEE Floating Point Data (6001 - 8999)

6.1. Meter Factor Flow Linearization Curve 32-Bit IEEE Floating Point Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

6.1.1. Meter Factor

Product 1

6001	**Meter #1 - Meter Factor - Point #1**
to	
6012	**Meter #1 - Meter Factor - Point #12**
6013	**Meter #2 - Meter Factor - Point #1**
to	
6024	**Meter #2 - Meter Factor - Point #12**
6025	**Meter #3 - Meter Factor - Point #1**
to	
6036	**Meter #3 - Meter Factor - Point #12**
6037	**Meter #4 - Meter Factor - Point #1**
to	
6048	**Meter #4 - Meter Factor - Point #12**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Product #2

6049	Meter #1 - Meter Factor - Point #1
to	
6060	Meter #1 - Meter Factor - Point #12
6061	Meter #2 - Meter Factor - Point #1
to	
6072	Meter #2 - Meter Factor - Point #12
6073	Meter #3 - Meter Factor - Point #1
to	
6084	Meter #3 - Meter Factor - Point #12
6085	Meter #4 - Meter Factor - Point #1
to	
6096	Meter #4 - Meter Factor - Point #12

Product #3

6097	Meter #1 - Meter Factor - Point #1
to	
6108	Meter #1 - Meter Factor - Point #12
6109	Meter #2 - Meter Factor - Point #1
to	
6120	Meter #2 - Meter Factor - Point #12
6121	Meter #3 - Meter Factor - Point #1
to	
6132	Meter #3 - Meter Factor - Point #12
6133	Meter #4 - Meter Factor - Point #1
to	
6144	Meter #4 - Meter Factor - Point #12

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Product #4

6145 **Meter #1 - Meter Factor - Point #1**
to
6156 **Meter #1 - Meter Factor - Point #12**

6157 **Meter #2 - Meter Factor - Point #1**
to
6168 **Meter #2 - Meter Factor - Point #12**

6169 **Meter #3 - Meter Factor - Point #1**
to
6180 **Meter #3 - Meter Factor - Point #12**

6181 **Meter #4 - Meter Factor - Point #1**
to
6192 **Meter #4 - Meter Factor - Point #12**

Product #5

6193 **Meter #1 - Meter Factor - Point #1**
to
6204 **Meter #1 - Meter Factor - Point #12**

6205 **Meter #2 - Meter Factor - Point #1**
to
6216 **Meter #2 - Meter Factor - Point #12**

6217 **Meter #3 - Meter Factor - Point #1**
to
6228 **Meter #3 - Meter Factor - Point #12**

6229 **Meter #4 - Meter Factor - Point #1**
to
6240 **Meter #4 - Meter Factor - Point #12**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Product #6

6241	**Meter #1 - Meter Factor - Point #1**
to	
6252	**Meter #1 - Meter Factor - Point #12**
6253	**Meter #2 - Meter Factor - Point #1**
to	
6264	**M7eter #2 - Meter Factor - Point #12**
6265	**Meter #3 - Meter Factor - Point #1**
to	
6276	**Meter #3 - Meter Factor - Point #12**
6277	**Meter #4 - Meter Factor - Point #1**
to	
6288	**Meter #4 - Meter Factor - Point #12**

Product #7

6289	**Meter #1 - Meter Factor - Point #1**
to	
6300	**Meter #1 - Meter Factor - Point #12**
6301	**Meter #2 - Meter Factor - Point #1**
to	
6312	**Meter #2 - Meter Factor - Point #12**
6313	**Meter #3 - Meter Factor - Point #1**
to	
6324	**Meter #3 - Meter Factor - Point #12**
6325	**Meter #4 - Meter Factor - Point #1**
to	
6336	**Meter #4 - Meter Factor - Point #12**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Product #8

6337 Meter #1 - Meter Factor - Point #1
to
6348 Meter #1 - Meter Factor - Point #12

6349 Meter #2 - Meter Factor - Point #1
to
6360 Meter #2 - Meter Factor - Point #12

6361 Meter #3 - Meter Factor - Point #1
to
6372 Meter #3 - Meter Factor - Point #12

6373 Meter #4 - Meter Factor - Point #1
to
6384 Meter #4 - Meter Factor - Point #12

6385 Spare
to
6400 Spare

6.1.2. Flow Rate - Meter Factor Flow Linearization Curve

Product #1

6401 Meter #1 - Flow Rate - Point #1
to
6412 Meter #1 - Flow Rate - Point #12

6413 Meter #2 - Flow Rate - Point #1
to
6424 Meter #2 - Flow Rate - Point #12

6425 Meter #3 - Flow Rate - Point #1
to
6436 Meter #3 - Flow Rate - Point #12

6437 Meter #4 - Flow Rate - Point #1
to
6448 Meter #4 - Flow Rate - Point #12

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Product #2

6449	**Meter #1 - Flow Rate - Point #1**
to	
6460	**Meter #1 - Flow Rate - Point #12**
6461	**Meter #2 - Flow Rate - Point #1**
to	
6472	**Meter #2 - Flow Rate - Point #12**
6473	**Meter #3 - Flow Rate - Point #1**
to	
6484	**Meter #3 - Flow Rate - Point #12**
6485	**Meter #4 - Flow Rate - Point #1**
to	
6496	**Meter #4 - Flow Rate - Point #12**

Product #3

6497	**Meter #1 - Flow Rate - Point #1**
to	
6508	**Meter #1 - Flow Rate - Point #12**
6509	**Meter #2 - Flow Rate - Point #1**
to	
6520	**Meter #2 - Flow Rate - Point #12**
6521	**Meter #3 - Flow Rate - Point #1**
to	
6532	**Meter #3 - Flow Rate - Point #12**
6533	**Meter #4 - Flow Rate - Point #1**
to	
6544	**Meter #4 - Flow Rate - Point #12**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Product #4

6545	**Meter #1 - Flow Rate - Point #1**
to	
6556	**Meter #1 - Flow Rate - Point #12**
6557	**Meter #2 - Flow Rate - Point #1**
to	
6568	**Meter #2 - Flow Rate - Point #12**
6569	**Meter #3 - Flow Rate - Point #1**
to	
6580	**Meter #3 - Flow Rate - Point #12**
6581	**Meter #4 - Flow Rate - Point #1**
to	
6592	**Meter #4 - Flow Rate - Point #12**

Product #5

6593	**Meter #1 - Flow Rate - Point #1**
to	
6604	**Meter #1 - Flow Rate - Point #12**
6605	**Meter #2 - Flow Rate - Point #1**
to	
6616	**Meter #2 - Flow Rate - Point #12**
6617	**Meter #3 - Flow Rate - Point #1**
to	
6628	**Meter #3 - Flow Rate - Point #12**
6629	**Meter #4 - Flow Rate - Point #1**
to	
6640	**Meter #4 - Flow Rate - Point #12**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Product #6

6641	**Meter #1 - Flow Rate - Point #1**
to	
6652	**Meter #1 - Flow Rate - Point #12**
6653	**Meter #2 - Flow Rate - Point #1**
to	
6664	**Meter #2 - Flow Rate - Point #12**
6665	**Meter #3 - Flow Rate - Point #1**
to	
6676	**Meter #3 - Flow Rate - Point #12**
6677	**Meter #4 - Flow Rate - Point #1**
to	
6688	**Meter #4 - Flow Rate - Point #12**

Product #7

6689	**Meter #1 - Flow Rate - Point #1**
to	
6700	**Meter #1 - Flow Rate - Point #12**
6701	**Meter #2 - Flow Rate - Point #1**
to	
6712	**Meter #2 - Flow Rate - Point #12**
6713	**Meter #3 - Flow Rate - Point #1**
to	
6724	**Meter #3 - Flow Rate - Point #12**
6725	**Meter #4 - Flow Rate - Point #1**
to	
6736	**Meter #4 - Flow Rate - Point #12**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Product #8

6737 **Meter #1 - Flow Rate - Point #1**
to
6748 **Meter #1 - Flow Rate - Point #12**

6749 **Meter #2 - Flow Rate - Point #1**
to
6760 **Meter #2 - Flow Rate - Point #12**

6761 **Meter #3 - Flow Rate - Point #1**
to
6772 **Meter #3 - Flow Rate - Point #12**

6773 **Meter #4 - Flow Rate - Point #1**
to
6784 **Meter #4 - Flow Rate - Point #12**

6.1.3. Meter Factor Deviation - Meter Factor Flow Linearization Curve

Meter Run #1

6785 **Meter #1 - Product '*n*' - Last Meter Factor**
6786 **Meter #1 - Product '*n*' - Last Deviation %**
6787 **Meter #1 - Product '*n*' - 2nd Last Meter Factor**
6788 **Meter #1 - Product '*n*' - 2nd Last Deviation %**
6789 **Meter #1 - Product '*n*' - 3rd Last Meter Factor**
6790 **Meter #1 - Product '*n*' - 3rd Last Deviation %**
6791 **Meter #1 - Product '*n*' - 4th Last Meter Factor**
6792 **Meter #1 - Product '*n*' - 4th Last Deviation %**
6793 **Meter #1 - Product '*n*' - 5th Last Meter Factor**
6794 **Meter #1 - Product '*n*' - 5th Last Deviation %**
6795 **Meter #1 - Product '*n*' - 6th Last Meter Factor**
6796 **Meter #1 - Product '*n*' - 6th Last Deviation %**
6797 **Meter #1 - Product '*n*' - 7th Last Meter Factor**
6798 **Meter #1 - Product '*n*' - 7th Last Deviation %**
6799 **Meter #1 - Product '*n*' - 8th Last Meter Factor**
6800 **Meter #1 - Product '*n*' - 8th Last Deviation %**
6801 **Meter #1 - Product '*n*' - 9th Last Meter Factor**
6802 **Meter #1 - Product '*n*' - 9th Last Deviation %**
6803 **Meter #1 - Product '*n*' - 10th Last Meter Factor**
6804 **Meter #1 - Product '*n*' - 10th Last Deviation %**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Meter Run #2

6805 Meter #2 - Product '*n*' - Last Meter Factor
6806 Meter #2 - Product '*n*' - Last Deviation %
to
6823 Meter #2 - Product '*n*' - 10th Last Meter Factor
6824 Meter #2 - Product '*n*' - 10th Last Deviation %

Meter Run #3

6825 Meter #3 - Product '*n*' - Last Meter Factor
6826 Meter #3 - Product '*n*' - Last Deviation %
to
6843 Meter #3 - Product '*n*' - 10th Last Meter Factor
6844 Meter #3 - Product '*n*' - 10th Last Deviation %

Meter Run #4

6845 Meter #4 - Product '*n*' - Last Meter Factor
6846 Meter #4 - Product '*n*' - Last Deviation %
to
6863 Meter #4 - Product '*n*' - 10th Last Meter Factor
6864 Meter #4 - Product '*n*' - 10th Last Deviation %

6865 Not Used
to
7000 Not Used

6.2. Digital-to-Analog Outputs 32-Bit IEEE Floating Point Data

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Any analog output point which physically exists can be read via these point numbers. Data returned is expressed as a percentage of the output value.

Only those points which physically exist and have been assigned to Modbus control by assigning zero (0) at 'D/A Out Assign' (see **Volume 3**) should be written to. Outputs which are not assigned to Modbus control will be overwritten every 500 msec by the flow computer. Data written should be within the range of -5.00 to 110.00.

7001	**Analog Output #1**
to	
7012	**Analog Output #12**
7013	**Spare**
to	
7024	**Spare**

6.3. User Variables 32-Bit IEEE Floating Point Data

Database points 7025 through 7088 have been assigned as user variables (see **Volume 3**). The value contained in the variable depends on the associated program statement which is evaluated every 500 msec. You may read these variables at any time. You may also write to these variables but anything you write may be overwritten by the flow computer depending on the evaluation of the statement. Leave the statement blank or simply put a comment or prompt into it to avoid having the flow computer overwrite it.

7025 **User-Programmable Variable #1**

to

7088 **User-Programmable Variable #64**

6.4. Programmable Accumulator 32-Bit IEEE Floating Point Variables

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Points **7089** through **7099** are paired with Boolean Point Variables **1089** through **1099**. Numeric data placed in **7089**, for example, can be output as pulses by assigning a digital I/O point to **1089**.

7089 **Programmable Accumulator #1**
Data placed into **7089** is pulsed out using **1089**.

to

7099 **Programmable Accumulator #11**
Data placed into **7099** is pulsed out using **1099**.

7n00 **Spare**

6.5. Meter Run 32-Bit IEEE Floating Point Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - The second digit of the index number defines the number of the meter run.

INFO - Calculated averages are 'flow weighted'.

Notes:
- **<** Current live values which are updated every 500msec.
- ***** Current values in use now.

The second digit of the index number defines the meter run number. For example: **7105** is the 'Temperature' variable for Meter Run #1. The same point for Meter Run #4 would be **7405**.

< **7n01** **Flow Rate - Gross (IV)**
Bbls/hr or m^3/hr.

< **7n02** **Flow Rate - Net (GSV)**
Bbls/hr or m^3/hr.

< **7n03** **Flow Rate - Mass**
Klbs or ton/hr.

< **7n04** **Flow Rate - Net (NSV)**
Bbls/hr or m^3/hr.

* **7n05** **Temperature**

* **7n06** **Pressure**

7n07 **Spare**

* **7n08** **Flowing Transducer Density Before Factoring**
Temperature and pressure corrected.

* **7n09** **Flowing Transducer Density After Factoring**
7n09=7n08 x **7n43**.

* **7n10** **Density Transducer Temperature**
Corrects for transducer expansion effects.

* **7n11** **Density Transducer Pressure**
Corrects for transducer expansion effects.

* **7n12** **API Flowing**

* **7n13** **API @ 60 °F / API @ Reference Temperature**

* **7n14** **Relative Density (Specific Gravity) Flowing**

* **7n15** **Relative Density (Specific Gravity) @ 60 °F / Density @ 15 °C**

* **7n16** **Volume Correction Factor (VCF)**

* **7n17** **Correction Factor for Pressure on Liquids (CPL)**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Notes:

* Current values in use now.

~ The data in these variables may be calculated real time or the same data as entered elsewhere depending on the fluid type selected or the equation of state selected.

	7n18	Batch In Progress - Average Meter Run Temperature
	7n19	Batch In Progress - Average Meter Run Pressure
	7n20	Batch In Progress - Average Flowing Density
	7n21	Batch In Progress - Average Density Transducer Temperature
	7n22	Batch In Progress - Average Density Transducer Pressure
	7n23	Batch In Progress - Average API Flowing
	7n24	Batch In Progress - Average API @ 60 °F / API @ Reference Temperature
	7n25	Batch In Progress - Average Flowing Relative Density (Specific Gravity)
	7n26	Batch In Progress - Average Relative Density (Specific Gravity) @ 60 °F / Density @ Reference Temperature
	7n27	Batch In Progress - Average Volume Correction Factor (VCF)
	7n28	Batch In Progress - Average Correction Factor for Pressure on Liquids (CPL)
	7n29	Day In Progress - Average Temperature
	7n30	Day In Progress - Average Pressure
	7n31	Day In Progress - Average Density Flowing
	7n32	Day In Progress - Average Density Transducer Temperature
	7n33	Day In Progress - Average Density Transducer Pressure
	7n34	Day In Progress - Average API Flowing
	7n35	Day In Progress - Average API @ 60 °F / API @ Reference Temperature
	7n36	Day In Progress - Average Relative Density (Specific Gravity) Flowing
	7n37	Day In Progress - Average Relative Density (Specific Gravity) @ 60 °F / Density @ Reference Temperature
* ~	7n38	Day In Progress - Average Volume Correction Factor (VCF)
* ~	7n39	Day In Progress - Average Correction Factor for Pressure on Liquids (CPL)
* ~	7n40	Current K Factor
	7n41	Batch Flow Weighted Average - K Factor
	7n42	Daily Flow Weighted Average - K Factor
	7n43	Density Transducer- Factor in Use
	7n44	Density Transducer - Correction Factor B
	7n45	Spare
	7n55	Meter #1 K Factor Pulses/Unit
	7n56	Meter #1 Prove Base Flowrate
	7n57 to 7n60	Spare
#	7n61	Meter Run Gross/Mass Flow Rate - Low Limit

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - The second digit of the index number defines the number of the meter run number.

Note:

# Indicates meter run gross or mass flow rate depending on which unit is selected

#	**7n62**	**Meter Run Gross/Mass Flow Rate - High Limit**
	7n63	**Meter Temperature - Low Limit**
	7n64	**Meter Temperature - High Limit**
	7n65	**Meter Temperature - Override**
	7n66	**Meter Temperature - @ 4mA**
	7n67	**Meter Temperature - @ 20mA**
	7n68	**Meter Pressure - Low Limit**
	to	
	7n72	**Meter Pressure - @ 20mA**
	7n73	**Relative Density (Gravity) / Density Transducer - Low Limit** Indicated at either flowing or reference conditions, depending on which is selected.
	to	
	7n77	**Relative Density (Gravity) / Density Transducer - @ 20mA**
	7n78	**Density Transducer Temperature - Low Limit**
	to	
	7n82	**Density Transducer Temperature - @ 20mA**
	7n83	**Density Transducer Pressure - Low Limit**
	to	
	7n87	**Density Transducer Pressure - @ 20mA**
	7n88	**Density Transducer - Correction Factor B** Used to correct densitometer.

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Note:

* Various factors used by various vendors of digital densitometers.

* **7n89** **Densitometer - Constant #1**
K_0/D_0.

* **7n90** **Densitometer - Constant #2**
K_1/T_0.

* **7n91** **Densitometer - Constant #3**
K_2/T_{coef}.

* **7n92** **Densitometer - Constant #4**
$K_{18}/T_{cal}/T_c$.

* **7n93** **Densitometer - Constant #5**
$K_{19}/P_{coef}/K_{t1}$.

* **7n94** **Densitometer - Constant #6**
$K_{20A}/P_{cal}/K_{t2}$.

* **7n95** **Densitometer - Constant #7**
K_{20B}/K_{t3}.

* **7n96** **Densitometer - Constant #8**
K_{21A}/P_c.

* **7n97** **Densitometer - Constant #9**
K_{21B}/K_{p1}.

* **7n98** **Densitometer - Constant #10**
K_r. (For UGC densitometers: K_r/K_{P2}.)

* **7n99** **Densitometer - Constant #11**
K_j. (For UGC densitometers: K_j/K_{P3}.)

6.6. Scratchpad 32-Bit IEEE Floating Point Data

Ninety-nine IEEE 32-bit floating point registers are provided for user scratch pad. These registers are typically used to store and group data that will be moved via peer-to-peer operations or similar uses.

7500 **Not Used**

7501 **Scratchpad - IEEE Float #1**
to
7599 **Scratchpad - IEEE Float #99**

7600 **Not Used**

6.7. PID Control 32-Bit IEEE Floating Point Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Notes:

Do not write to these variables. They are provided for read only information.

***** Writing to these variables will have no effect as the flow computer overwrites these values with either the remote or local primary Setpoint value depending on the operating mode of the control loop.

~ Only writes made while in the 'Remote' mode will be meaningful. These variables are overwritten with the current value of the primary controlled variable when in all other modes.

^ Only writes made while in the 'Manual' mode will be meaningful. These variables are overwritten by the flow computer in all other operating modes.

< Writes to these variables are always accepted.

#	7601	PID Control #1 - Local Primary Variable Setpoint Value
*	7602	PID Control #1 - Primary Setpoint Value in Use
~	7603	PID Control #1 - Remote Primary Setpoint Value
^	7604	PID Control #1 - Control Output Percent
<	7605	PID Control #1 - Secondary Variable Setpoint
#	7606	PID Control #2 - Local Primary Variable Setpoint Value
*	7607	PID Control #2 - Primary Setpoint Value in Use
~	7608	PID Control #2 - Remote Primary Setpoint Value
^	7609	PID Control #2 - Control Output Percent
<	7610	PID Control #2 - Secondary Variable Setpoint
#	7611	PID Control #3 - Local Primary Variable Setpoint Value
*	7612	PID Control #3 - Primary Setpoint Value in Use
~	7613	PID Control #3 - Remote Primary Setpoint Value
^	7614	PID Control #3 - Control Output Percent
<	7615	PID Control #3 - Secondary Variable Setpoint
#	7616	PID Control #4 - Local Primary Variable Setpoint Value
*	7617	PID Control #4 - Primary Setpoint Value in Use
~	7618	PID Control #4 - Remote Primary Setpoint Value
^	7619	PID Control #4 - Control Output Percent
<	7620	PID Control #4 - Secondary Variable Setpoint
	7621	Spare
	to	
	7623	Spare

6.8. Miscellaneous Meter Run 32-Bit IEEE Floating Point Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

INFO - See **7n01** through **7n99** for more meter run related data.

7624 **Equilibrium Pressure - Meter Run #1**
PSIg/kPa (current live values).

7625 **Equilibrium Pressure - Meter Run #2**
PSIg or kPa.

7626 **Equilibrium Pressure - Meter Run #3**
PSIg or kPa.

7627 **Equilibrium Pressure - Meter Run #4**
PSIg or kPa.

7628 **Equilibrium Pressure - Prover**
PSIg or kPa.

7629 **Vapor Pressure @ 100 °F - Meter Run #1**
Current live values.

7630 **Vapor Pressure @ 100 °F - Meter Run #2**

7631 **Vapor Pressure @ 100 °F - Meter Run #3**

7632 **Vapor Pressure @ 100 °F - Meter Run #4**

7633 **Vapor Pressure @ 100 °F - Prover**

 # 7634 **Meter Run #1 - Temperature @ Leak Detection Freeze Command**
See **1760** command.

 # 7635 **Meter Run #1 - Pressure @ Leak Detection Freeze Command**

 # 7636 **Meter Run #1 - Density / Relative Density (Gravity) @ Leak Detection Freeze Command**

7637 **Spare**
to
7639 **Spare**

*** 7640** **Meter Run #1 - Gross (IV) Volume Increment**

*** 7641** **Meter Run #1 - Net (GSV) Increment Volume**

*** 7642** **Meter Run #1 - Mass Increment**

*** 7643** **Meter Run #1 - Net (NSV) Increment**

 # 7644 **Meter Run #2 - Temperature @ Leak Detection Freeze Command**

 # 7645 **Meter Run #2 - Pressure @ Leak Detection Freeze Command**

 # 7646 **Meter Run #2 - Density / Relative Density (Gravity) @ Leak Detection Freeze Command**

7647 **Spare**
to
7649 **Spare**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

INFO - See **7n01** through **7n99** for more meter run related data.

Notes:

* These variables represent the incremental flow which is accumulated each 500 msec. calculation cycle in float format (also see points **5n70** for integer format).

Flowing variables are snapshot and stored here when the Leak Detection Freeze command (**1760**) is received (also see points **5n66**).

*	**7650**	**Meter Run #2 - Gross (IV) Volume Increment**
*	**7651**	**Meter Run #2 - Net (GSV) Volume Increment**
*	**7652**	**Meter Run #2 - Mass Increment**
*	**7653**	**Meter Run #2 - Net (NSV) Increment**
#	**7654**	**Meter Run #3 - Temperature @ Leak Detection Freeze Command**
#	**7655**	**Meter Run #3 - Pressure @ Leak Detection Freeze Command**
#	**7656**	**Meter Run #3 - Density / Relative Density (Gravity) @ Leak Detection Freeze Command**
	7657	**Spare**
	to	
	7659	**Spare**
*	**7660**	**Meter Run #3 - Gross (IV) Volume Increment**
*	**7661**	**Meter Run #3 - Net (GSV) Volume Increment**
*	**7662**	**Meter Run #3 - Mass Increment**
*	**7663**	**Meter Run #3 - Net (NSV) Increment**
#	**7664**	**Meter Run #4 - Temperature @ Leak Detection Freeze Command**
#	**7665**	**Meter Run #4 - Pressure @ Leak Detection Freeze Command**
#	**7666**	**Meter Run #4 - Density / Relative Density (Gravity) @ Leak Detection Freeze Command**
	7667	**Spare**
	to	
	7669	**Spare**
*	**7670**	**Meter Run #4 - Gross (IV) Volume Increment**
*	**7671**	**Meter Run #4 - Net (GSV) Volume Increment**
*	**7672**	**Meter Run #4 - Mass Increment**
*	**7673**	**Meter Run #4 - Net (NSV) Increment**
#	**7674**	**Station - Temperature @ Leak Detection Freeze Command**
#	**7675**	**Station - Pressure @ Leak Detection Freeze Command**
#	**7676**	**Station - Density / Relative Density (Gravity) @ Leak Detection Freeze Command**
	7677	**Spare**
	to	
	7679	**Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Notes:

* These variables represent the incremental flow which is accumulated each 500 msec. calculation cycle in float format (also see points **5n70** for integer format).

* **7680** **Station - Gross (IV) Volume Increment**
* **7681** **Station - Net (GSV) Volume Increment**
* **7682** **Station - Mass Volume Increment**
* **7683** **Station - Net (NSV) Volume Increment**

7684 **Spare**
to
7698 **Spare**

7699 **2nd Reference Temperature**
Other than 60°F or 15°C.

6.9. Miscellaneous Variables 32-Bit IEEE Floating Point Data

The percentage of span for each of the 24 process input channels is available as a floating point variable point.

7701 **Process Analog Input - Channel # 1**
to
7724 **Process Analog Input - Channel # 24**

INFO - The data is only meaningful when the input channel is used as an analog input or a Honeywell digital transducer input. For pulse type input channels see data points located at **15131** through **15154**.

7725 **Spare**
to
7782 **Spare**

7783 **Sequence #2 Batch Size - Meter #1**
7784 **Sequence #2 Batch Size - Meter #2**
7785 **Sequence #2 Batch Size - Meter #3**
7786 **Sequence #2 Batch Size - Meter #4**

7787 **Sequence #1 Batch Size - Meter #1**
7788 **Sequence #1 Batch Size - Meter #2**
7789 **Sequence #1 Batch Size - Meter #3**
7790 **Sequence #1 Batch Size - Meter #4**

7791 **Batch Preset Warning - Meter #1**
7792 **Batch Preset Warning - Meter #2**
7793 **Batch Preset Warning - Meter #3**
7794 **Batch Preset Warning - Meter #4**
7795 **Batch Preset Warning – Station**

7796 **Spare**
to
7800 **Spare**

6.10. Meter Station 32-Bit IEEE Floating Point Data

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

7801 **Station - Gross Indicated Volume (IV) Flow Rate**
Bbls/hr or m^3/hr.

7802 **Station - Net Gross Standard Volume (GSV) Flow Rate**
Bbls/hr or m^3/hr.

7803 **Station - Mass Flow Rate**
Klbs/hr.

7804 **Station - Net Standard Volume (NSV) Flow Rate**
Bbls/hr or m^3/hr.

7805 **Station - Relative Density (Gravity) / Density**

7806 **Station - Density Temperature**

7807 **Station - Density Pressure**

7808 **Spare**

7809 **Station - Auxiliary Input #1**
Points **7809**-**7812** represent miscellaneous live input signals provided for user-defined functions.

7810 **Station - Auxiliary Input #2**

7811 **Station - Auxiliary Input #3**

7812 **Station - Auxiliary Input #4**

7813 **Station - Time - hh/mm/ss**
Read only (e.g.: the number 103125 represents 10:31:25).

7814 **Station - Date - yy/mm/dd**
Read only (e.g.: the number 990527 represents May 27, 1999; the date format used here does not follow the US/European format selection).

7815 **Spare**
to
7820 **Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

7821 **Station - Product #1 - API Override / Thermal Expansion Coefficient**

7822 **Station - Product #1 - Relative Density (Specific Gravity) Override / Reference Density**

7823 **Station - Product #2 - API Override / Thermal Expansion Coefficient**

7824 **Station - Product #2 - Relative Density (Specific Gravity) Override / Reference Density**

7825 **Station - Product #3 - API Override / Thermal Expansion Coefficient**

7826 **Station - Product #3 - Relative Density (Specific Gravity) Override / Reference Density**

7827 **Station - Product #4 - API Override / Thermal Expansion Coefficient**

7828 **Station - Product #4 - Relative Density (Specific Gravity) Override / Reference Density**

7829 **Station - Product #5 - API Override / Thermal Expansion Coefficient**

7830 **Station - Product #5 - Relative Density (Specific Gravity) Override / Reference Density**

7831 **Station - Product #6 - API Override / Thermal Expansion Coefficient**

7832 **Station - Product #6 - Relative Density (Specific Gravity) Override / Reference Density**

7833 **Station - Product #7 - API Override / Thermal Expansion Coefficient**

7834 **Station - Product #7 - Relative Density (Specific Gravity) Override / Reference Density**

7835 **Station - Product #8 - API Override / Thermal Expansion Coefficient**

7836 **Station - Product #8 - Relative Density (Specific Gravity) Override / Reference Density**

7837 **Spare**

to

7852 **Spare**

7853 **Station - Gross/Mass Flow Rate - Low Limit**
Indicates flow rate low limit in gross or mass units, depending on which unit is selected.

7854 **Station - Gross/Mass Flow Rate - High Limit**
Indicates flow rate high limit in gross or mass units, depending on which unit is selected.

7855 **Station - Flow Threshold - Run Switch Flag #1 - Decreasing Flow**
See **1824**.

7856 **Station - Flow Threshold - Run Switch Flag #1 - Increasing Flow**

7857 **Station - Flow Threshold - Run Switch Flag #2 - Decreasing Flow**
See **1825**.

7858 **Station - Flow Threshold - Run Switch Flag #2 - Increasing Flow**

7859 **Station - Flow Threshold - Run Switch Flag #3 - Decreasing Flow**
See **1826**.

7860 **Station - Flow Threshold - Run Switch Flag #3 - Increasing Flow**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Notes:

* Various factors used by various vendors of digital densitometers.

7861 Station - Density Pressure - Low Limit
Points **7861**-**7865** are configuration settings used when the pressure is a live 4-20 mA.

7862 Station - Density Pressure - High Limit

7863 Station - Density Pressure - Override

7864 Station - Density Pressure - @ 4mA

7865 Station - Density Pressure - @ 20mA

7866 Station - Relative Density (Gravity) / Density - Low Limit
Points **7866**-**7870** are configuration settings used when the gravity/density is a live 4-20 mA.

7867 Station - Relative Density (Gravity) / Density - High Limit

7868 Station - Relative Density (Gravity) / Density - Override

7869 Station - Relative Density (Gravity) / Density - @ 4mA

7870 Station - Relative Density (Gravity) / Density - @ 20mA

7871 Station - Density Temperature - Low Limit
Points **7871**-**7875** are configuration settings used when the relative density (gravity)/density is a live 4-20 mA.

7872 Station - Density Temperature - High Limit

7873 Station - Density Temperature - Override

7874 Station - Density Temperature - @ 4mA

7875 Station - Density Temperature - @ 20mA

7876 Station - Density Correction Factor

* **7877 Station - Densitometer - Constant #1**
K_0/D_0.

* **7878 Station - Densitometer - Constant #2**
K_1/T_0.

* **7879 Station - Densitometer - Constant #3**
K_2/T_{coef}.

* **7880 Station - Densitometer - Constant #4**
$K_{18}/T_{cal}/T_c$.

* **7881 Station - Densitometer - Constant #5**
$K_{19}/P_{coef}/K_{t1}$.

* **7882 Station - Densitometer - Constant #6**
$K_{20A}/P_{cal}/K_{t2}$.

* **7883 Station - Densitometer - Constant #7**
K_{20B}/K_{t3}.

* **7884 Station - Densitometer - Constant #8**
K_{21A}/P_c.

* **7885 Station - Densitometer - Constant #9**
K_{21B}/K_{P1}.

* **7886 Station - Densitometer - Constant #10**
K_r. (For UGC densitometers: K_r/K_{P2}.)

* **7887 Station - Densitometer - Constant #11**
K_j. (For UGC densitometers: K_j/K_{P3}.)

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Notes:

Miscellaneous conversion factors and constants.

#	7888	**Weight of Water** Lbm/Bbl or Kg/m^3.
#	7889	**Relative Density (Gravity) Rate of Change**
#	7890	**Line Pack Delay** Net Bbls or m^3.
#	7891	**Local Atmospheric Pressure** Absolute pressure units.
	7892	**Base Temperature**
	7893	**Spare**
	7894	**Base Pressure**
	7895 to 7900	**Spare**

6.11. Prover 32-Bit IEEE Floating Point Data

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

7901 **Prover - Inlet (Left) Temperature**

7902 **Prover - Outlet (Right) Temperature**

7903 **Prover - Temperature in Use**

7904 **Prover - Inlet (Left) Pressure**

7905 **Prover - Outlet (Right) Pressure**

7906 **Prover - Pressure in Use**

7907 **Prover - Plenum Pressure**
Compact Prover.

7908 **Prover - Run Time**

7909 **Prove Volume - Master Prove**

7910 **Prove Volume - Test Meter**

7911 **Compact Prover - Calculated Plenum Pressure**

7912 **Spare**

to

7915 **Spare**

7916 **Prover Outside Diameter**

7917 **Compact Prover - Invar Rod Temperature**
Small Volume Prover.

7918 **Prove - Overtravel**
Bbls/m^3.

6.11.1. Configuration Data for Prover

7919 **Prover - Volume**
Bbls/m^3.

7920 **Prover - Diameter**
Inches/mm.

7921 **Prover - Wall Thickness**
Inches/mm.

7922 **Prover - Modulus of Elasticity**

7923 **Prover - Coefficient of Cubic Expansion**

7924 **Prover - Base Pressure**

7925 **Prover - Temperature Stability Limits**

7926 **Prove & Meter - Temperature Deviation**

7927 **Prove Run - Count Deviation %**
Counts or meter factor [(Maximum Deviation - Minimum Deviation) / Minimum Deviation] x 100%.

7928 **Prove Meter Factor - Deviation % from Average of Historical Meter Factors**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

7929 **Prover - Temperature Inlet (Left) - Low Limit**
7930 **Prover - Temperature Inlet (Left) - High Limit**
7931 **Prover - Temperature Inlet (Left) - Override**
7932 **Prover - Temperature Inlet (Left) - @ 4mA**
7933 **Prover - Temperature Inlet (Left) - @ 20mA**

7934 **Prover - Temperature Outlet (Right) - Low Limit**
to
7938 **Prover - Temperature Outlet (Right) - @ 20mA**

7939 **Prover - Pressure Inlet (Left) - Low Limit**
to
7943 **Prover - Pressure Inlet (Left) - @ 20mA**

7944 **Prover - Pressure Outlet (Right) - Low Limit**
to
7948 **Prover - Pressure Outlet (Right) - @ 20mA**

7949 **Prove Meter Factor - Deviation % from Base Curve**
7950 **Prover - Linear Thermal Coefficient**

7951 **Compact Prover - Plenum Pressure Constant**
7952 **Compact Prover - Plenum Deadband %**
7953 **Compact Prover - Plenum Pressure @ 4mA**
7954 **Compact Prover - Plenum Pressure @ 20mA**

7955 **Prover - Volume Upstream**
7956 **Prover - Relative Density (Specific Gravity) @ 60 °F / Density @ Reference Temperature**

7957 **Meter Temperature - @ Time of Last Implemented Meter Factor**
7958 **Meter Pressure - @ Time of Last Implemented Meter Factor**

6.11.2. Last Prove Data

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

7959 **Prover - Volume**

7960 **Prover - Diameter**
Inches/mm.

7961 **Prover - Wall Thickness**
Inches/mm.

7962 **Prover - Modulus of Elasticity**

7963 **Prover - Coefficient of Cubic Expansion**

7964 **Prover - K Factor**

7965 **Prover - Master Meter K Factor**

7966 **Prover – Previous Flowrate @ Previous Meter Factor**

6.11.3. Data Rejected During Prove

The following refers to the data rejected during Prove Run #3. The same data is available for the Last, 1st and 2nd Prove Runs at the following addresses:

7967 **Prove - 3rd Run - Meter Temperature**

7968 **Prove - 3rd Run - Meter Pressure**

7969 **Prove - 3rd Run - Prover Temperature**

7970 **Prove - 3rd Run - Prover Pressure**

7971 **Prove - 3rd Run - Prove Time**
Seconds.

7972 **Prove - 3rd Run - Meter Factor**

7973 **Prove - 2nd Run - Meter Temperature**
to
7978 **Prove - 2nd Run - Meter Factor**

7979 **Prove - 1st Run - Meter Temperature**
to
7984 **Prove - 1st Run - Meter Factor**

7985 **Prove - Last Run - Meter Temperature**
to
7990 **Prove - Last Run - Meter Factor**

6.11.4. Prove Run Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

The following data refers to Prove Run #1. The same data is available for all 10 prove runs at the following addresses:

7991 **Prove - 1st Run - Meter Temperature**
7992 **Prove - 1st Run - Meter Pressure**
7993 **Prove - 1st Run - Prover Temperature**
7994 **Prove - 1st Run - Prover Pressure**
7995 **Prove - 1st Run - Prove Time**
Seconds
7996 **Prove - 1st Run - Meter Factor**

7997 **Prove - 2nd Run - Meter Temperature**
to
8002 **Prove - 2nd Run - Meter Factor**

8003 **Prove - 3rd Run - Meter Temperature**
to
8008 **Prove - 3rd Run - Meter Factor**

8009 **Prove - 4th Run - Meter Temperature**
to
8014 **Prove - 4th Run - Meter Factor**

8015 **Prove - 5th Run - Meter Temperature**
to
8020 **Prove - 5th Run - Meter Factor**

8021 **Prove - 6th Run - Meter Temperature**
to
8026 **Prove - 6th Run - Meter Factor**

8027 **Prove - 7th Run - Meter Temperature**
to
8032 **Prove - 7th Run - Meter Factor**

8033 **Prove - 8th Run - Meter Temperature**
to
8038 **Prove - 8th Run - Meter Factor**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

8039 to 8044 **Prove - 9th Run - Meter Temperature to Prove - 9th Run - Meter Factor**

8045 to 8050 **Prove - 10th Run - Meter Temperature to Prove - 10th Run - Meter Factor**

6.11.5. Prove Average Data

8051 **Prove - Average Counts**

8052 **Prove - Average Meter Temperature**

8053 **Prove - Average Meter Pressure**

8054 **Prove - Average Prover Temperature**

8055 **Prove - Average Prover Pressure**

8056 **Prove - Average Relative Density (SG) @ 60°F / Density @ Reference Temperature**

8057 **Prove - Average Flow Rate**

8058 **Prove - % Deviation Between Runs**

8059 **Prove - CTSP**
Prover Correction Factor for the Effect of Temperature on Steel.

8060 **Prove - CPSP**
Prover Correction Factor for the Effect of Pressure on Steel.

8061 **Prove - CTLP**
Prover Correction Factor for the Effect of Temperature on Liquid.

8062 **Prove - CPLP**
Prover Correction Factor for the Effect of Pressure on Liquid.

8063 **Prove - CCFP**
Prover Combined Correction Factor.

8064 **Prove - Corrected Prover Volume**
Base Volume of Prover x [**8063**].

8065 **Prove - Metered Volume**

8066 **Prove - CTLM**
Meter Correction Factor for the Effect of Temperature on Liquid.

8067 **Prove - CPLM**
Meter Correction Factor for the Effect of Pressure on Liquid.

8068 **Prove - CCFM**
Meter Combined Correction Factor.

8069 **Prove - Corrected Meter Volume**
Meter Volume [**8065**] x [**8068**].

8070 **Prove - Meter Base Flow Rate**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

8071 **Prove - Out of Limits Meter Factor - Deviation % from Base Meter Factor Curve - Test 1**
Maximum percent of deviation allowed between the calculated meter factor normalized to the prove base flow rate and the meter factor obtained from the base meter factor curve.

8072 **Prove - Out of Limits Meter Factor - Deviation % from Average Historical Meter Factor - Test 2**
Maximum percent of deviation allowed between the calculated meter factor normalized to the prove base flow rate and the average of the historical meter factors.

8073 **Prove - Average Flowmeter Frequency**
Hertz.

8074 **Prove - Prover Compressibility F Factor**

8075 **Prove - Meter Compressibility F Factor**

8076 **Prove - Average Observed Density**

8077 **Prove - Average Relative Density (SG) @ 60°F / Density @ Reference Temperature**

8078 **Prove - Average Meter Factor of Runs**

8079 **Prove - Average Time for Runs**

6.11.6. Master Meter Prove Run Data

The following data refers to Master Meter Prove Run #1. The same data is available for all 10 prove runs at the following addresses:

8080 **Master Meter Prove - 1st Run - Volume -**

8081 **Master Meter Prove - 1st Run - Meter Factor**

8082 **Master Meter Prove - 1st Run - CTL**
Correction Factor for the Effect of Temperature on Liquid.

8083 **Master Meter Prove - 1st Run - CPL**
Correction Factor for the Effect of Pressure on Liquid.

8084 **Master Meter Prove - 1st Run - CCF**
Combined Correction Factor.

8085 **Master Meter Prove - 1st Run - Corrected Volume**

8086 **Master Meter Prove - 1st Run - Proved Meter - Volume**

8087 **Master Meter Prove - 1st Run - Proved Meter - CTL**
Correction Factor for the Effect of Temperature on Liquid.

8088 **Master Meter Prove - 1st Run - Proved Meter - CPL**
Correction Factor for the Effect of Pressure on Liquid.

8089 **Master Meter Prove - 1st Run - Proved Meter - CCF**
Combined Correction Factor.

8090 **Master Meter Prove - 1st Run - Corrected Meter Volume**

8091 **Master Meter Prove - 1st Run - Meter Factor**

8092 **Master Meter Prove - 2nd Run - Volume**

to

8103 **Master Meter Prove - 2nd Run - Meter Factor**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

8104 Master Meter Prove - 3rd Run - Volume
to
8115 Master Meter Prove - 3rd Run - Meter Factor

8116 Master Meter Prove - 4th Run - Volume
to
8127 Master Meter Prove - 4th Run - Meter Factor

8128 Master Meter Prove - 5th Run - Volume
to
8139 Master Meter Prove - 5th Run - Meter Factor

8140 Master Meter Prove - 6th Run - Volume
to
8151 Master Meter Prove - 6th Run - Meter Factor

8152 Master Meter Prove - 7th Run - Volume
to
8163 Master Meter Prove - 7th Run - Meter Factor

8164 Master Meter Prove - 8th Run - Volume
to
8175 Master Meter Prove - 8th Run - Meter Factor

8176 Master Meter Prove - 9th Run - Volume
to
8187 Master Meter Prove - 9th Run - Meter Factor

8188 Master Meter Prove - 10th Run - Volume
to
8199 1 Master Meter Prove - 0th Run - Meter Factor

6.11.7. Proving Series Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

This data applies when 'Two-Series Bi-directional Pipe Prover' (Prover Type = 5) is selected (see **2.13.2. Prover Settings** in **Volume 3**). A completed prove is the result of two consecutive prove sequences. The resultant meter factor is the average of the meter factor obtained from the first series and the meter factor obtained from the second series.

8200 **Proving Series #1 - Average Counts**

8201 **Proving Series #1 - Average Meter Temperature**

8202 **Proving Series #1 - Average Meter Pressure**

8203 **Proving Series #1 - Average Prover Temperature**

8204 **Proving Series #1 - Average Prover pressure**

8205 **Proving Series #1 - Average Relative Density (Gravity) @ 60 °F or Reference Temperature**

8206 **Proving Series #1 - Average Flow Rate**

8207 **Proving Series #1 - CTSP**
Prover Correction Factor for the Effect of Temperature on Steel.

8208 **Proving Series #1 - CPSP**
Prover Correction Factor for the Effect of Pressure on Steel.

8209 **Proving Series #1 - CTLP**
Prover Correction Factor for the Effect of Temperature on Liquid.

8210 **Proving Series #1 - CPLP**
Prover Correction Factor for the Effect of Pressure on Liquid.

8211 **Proving Series #1 - Average Net Prover Volume**

8212 **Proving Series #1 - CTLM**
Meter Correction Factor for the Effect of Temperature on Liquid.

8213 **Proving Series #1 - CPLM**
Meter Correction Factor for the Effect of Pressure on Liquid.

8214 **Proving Series #1 - Average Gross Meter Volume**

8215 **Proving Series #1 - Net Meter Volume**

8216 **Proving Series #1 - Prover Volume @ Prover Pressure**

8217 **Proving Series #2 - Prover Volume @ Prover Pressure**

8218 **Proving Series #1 - Meter Factor**

8219 **Proving Series #2 - Meter Factor**

6.11.8. Proving Meter Data

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

8220 Proving Meter - Relative Density (Specific Gravity)
8221 Proving Meter - Density Temperature
8222 Proving Meter - API Relative Density (SG) @ 60 °F / API Relative Density (SG) @ Reference Temperature
8223 Proving Meter - Relative Density (Specific Gravity) @ 60 °F

8224 Proving Meter - Temperature
8225 Proving Meter - Pressure
8226 Proving Meter - Flow Rate
8227 Proving Meter - Transducer Density
8228 Proving Meter - Relative Density (Specific Gravity) @ 60 °F / Density @ Reference Temperature
8229 Proving Meter - API Relative Density (SG) @ 60 °F / API Relative Density (SG) @ Reference Temperature
8230 Proving Meter - Gross Flow Rate

8231 Proving Meter - Meter Factor - Last
8232 Proving Meter - Meter Factor - Last Deviation
8233 Proving Meter - Meter Factor – 1st Last
8234 Proving Meter - Meter Factor – 1st Last Deviation
8235 Proving Meter - Meter Factor – 2nd Last
8236 Proving Meter - Meter Factor – 2nd Last Deviation
8237 Proving Meter - Meter Factor – 3rd Last
8238 Proving Meter - Meter Factor – 3rd Last Deviation
8239 Proving Meter - Meter Factor - 4th Last
8240 Proving Meter - Meter Factor - 4th Last Deviation
8241 Proving Meter - Meter Factor - 5th Last
8242 Proving Meter - Meter Factor - 5th Last Deviation
8243 Proving Meter - Meter Factor - 6th Last
8244 Proving Meter - Meter Factor - 6th Last Deviation
8245 Proving Meter - Meter Factor - 7th Last
8246 Proving Meter - Meter Factor - 7th Last Deviation
8247 Proving Meter - Meter Factor - 8th Last
8248 Proving Meter - Meter Factor - 8th Last Deviation
8249 Proving Meter - Meter Factor - 9th Last
8250 Proving Meter - Meter Factor - 9th Last Deviation

6.11.9. Master Meter Proving Meter Data

8251	Master Meter Proving – SG@60/Density@15C - 1st Run
8252	Master Meter Proving – Gross Flowrate - 1st Run
8253	Master Meter Proving – SG@60/Density@15C - 2nd Run
8254	Master Meter Proving – Gross Flowrate - 2nd t Run
8255	Master Meter Proving – SG@60/Density@15C - 3rd Run
8256	Master Meter Proving – Gross Flowrate - 3rd Run
8257	Master Meter Proving – SG@60/Density@15C - 4th Run
8258	Master Meter Proving – Gross Flowrate - 4th Run
8259	Master Meter Proving – SG@60/Density@15C - 5th Run
8260	Master Meter Proving – Gross Flowrate - 5th Run
8261	Master Meter Proving – SG@60/Density@15C 6th Run
8262	Master Meter Proving – Gross Flowrate - 6th Run
8263	Master Meter Proving – SG@60/Density@15C - 7th Run
8264	Master Meter Proving – Gross Flowrate - 7th Run
8265	Master Meter Proving – SG@60/Density@15C - 8th Run
8266	Master Meter Proving – Gross Flowrate - 8th Run
8267	Master Meter Proving – SG@60/Density@15C - 9th Run
8268	Master Meter Proving – Gross Flowrate - 9th Run
8269	Master Meter Proving – SG@60/Density@15C - 10th Run
8270	Master Meter Proving – Gross Flowrate - 10th Run
8271	CTLP of Prover
8272	CTLP of Proving Meter
8273 to 8500	Spare

6.12. Miscellaneous Meter Run 32-Bit IEEE Floating Point Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

The following data refers to Meter Run #1. The same data is available for all meter runs at the following addresses:

- ❑ **Meter Run #1 @ 8501** through **8599**
- ❑ **Meter Run #2 @ 8601** through **8699**
- ❑ **Meter Run #3 @ 8701** through **8799**
- ❑ **Meter Run #4 @ 8801** through **8899**

Note: See **5n50** and **5850** for matching totalizer data.

6.12.1. Meter Run #1 - Previous Batch Averages

Previous Batch Average - Refers to data stored at the time of the last Batch End command. It will remain valid until the next batch end. This is the data that should be used by SCADA or MMIs to build Monthly or Batch Reports.

Note: See **3n34** and out of order points at **8586**.

Allow Modbus function code 6 to write a single floating point number with the Modbus index range within 85xx,86xx,87xx and 88xx.

8501 **Previous Batch '*n*' - Average Temperature**

8502 **Previous Batch '*n*' - Average Pressure**

8503 **Previous Batch '*n*' - Average Density**

8504 **Previous Batch '*n*' - Average Volume Correction Factor**

8505 **Previous Batch '*n*' - Average Correction Factor for Pressure on Liquid**

8506 **Previous Batch '*n*' - Average Meter factor**

8507 **Previous Batch '*n*' - Average Relative Density (Specific Gravity)**

8508 **Previous Batch '*n*' - Average Relative Density (SG) @ 60 °F / Density @ Reference Temperature**

8509 **Previous Batch '*n*' - Average Density Temperature**

8510 **Previous Batch '*n*' - Average Density Pressure**

8511 **Previous Batch '*n*' - Average Density Correction Factor**

8512 **Previous Batch '*n*' - Average Unfactored Density**

8513 **Previous Batch '*n*' - Average K Factor**
Percent of Brine, Sediment and Water (%BS&W)

8515 **Previous Batch '*n*' - Average API_{60}**

8516 **Previous Batch '*n*' - Average Gross Flow Rate**

8517 **Previous Batch *'n'* – Average API** *(Revision 22)*
Previous Batch 'n' – Average Density in kg/Liter *(Revision 26)*

8518 **Spare**
to
8519 **Spare**

6.12.2. Meter Run #1 - Previous Hour's Averages

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Previous Hour's Average - Refers to data stored at the end of the last hour. It is valid for one hour and is then overwritten. This is the data that should be used by SCADA or MMIs which need hourly averages.

Previous Day's Average - Refers to data stored at the end of the contract day. It is valid for 24 hours and overwritten at the 'day start hour'. This is the data that should be used by SCADA or MMIs to build daily reports.

8520 **Previous Hour's - Average Temperature**

8521 **Previous Hour's - Average Pressure**

8522 **Previous Hour's - Average Density**

8523 **Previous Hour's - Average Relative Density (Specific Gravity) @ 60°F / Density @ Reference Temperature**

8524 **Previous Hour's - Average K Factor**

8525 **Previous Hour's - Average Meter Factor**

8526 **Previous Hour's - Average %S&W**
Percent of Sediment and Water (%S&W)

8527 **Meter #1 Previous 'n' Batch CTPL**

8528 **Meter #1 Current Batch Average CTPL**

8529 **Spare**

8530 **Spare**

6.12.3. Meter Run #1 - Previous Day's Averages

8531 **Previous Day's - Average Temperature**

8532 **Previous Day's - Average Pressure**

8533 **Previous Day's - Average Density**

8534 **Previous Day's - Average Volume Correction Factor**

8535 **Previous Day's - Average Correction Factor for Pressure on Liquid**

8536 **Previous Day's - Average Meter Factor**

8537 **Previous Day's - Average Relative Density (Specific Gravity)**

8538 **Previous Day's - Average Relative Density (SG) 60 °F / Density @ Reference Temperature**

8539 **Previous Day's - Average Density Temperature**

8540 **Previous Day's - Average Density Pressures**

8541 **Previous Day's - Average Density Correction Factor**

8542 **Previous Day's - Average Unfactored density**

8543 **Previous Day's - Average K Factor**

8544 **Spare**

8545 **Spare**

8546 **Previous Day's - Average Gross Flow Rate**

8547 **Previous Day's – Flow Weighted Average – BS&W**

8548 **Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - The indicated data (**8501-8599**) refers to Meter Run #1. The same data is available for all meter runs at the following addresses:

Meter Run #1:
8501 through **8599**
Meter Run #2:
8601 through **8699**
Meter Run #3:
8701 through **8799**
Meter Run #4:
8801 through **8899**

Note: See **5n50** and **5850** for matching totalizer data.

8549 **Previous Day's - Gross (IV) in Float Format**
Bbls/m^3.

8550 **Previous Day's - Net (GSV) in Float Format**
Bbls/m^3.

8551 **Previous Day's - Mass in Float Format**
Klbs/ton.

8552 **Previous Day's - Net (NSV) in Float Format**
Bbls/m^3.

8553 **Previous Day's - Net @ 2nd Reference Temperature in Float Format**

8554 **Meter #1 Previous Daily Average CTPL**

8555 **Meter #1 Current Daily Average CTPL**

6.12.4. Meter Run #1 - Statistical Moving Window Averages of Transducer Inputs

8556 **Moving Hour - Transducer Input - Average Temperature**

8557 **Moving Hour - Transducer Input - Average Pressure**

8558 **Moving Hour - Transducer Input - Average Density**

8559 **Moving Hour - Transducer Input - Average Density Temperature**

8560 **Moving Hour - Transducer Input - Average Density Pressure**

6.12.5. Meter Run #1 - Miscellaneous In Progress Averages

8561 **In Progress - Density Correction Factor - Batch Average**

8562 **In Progress - Density Correction Factor - Daily Average**

8563 **In Progress - Unfactored Density - Batch Average**

8564 **In Progress - Unfactored Density - Daily Average**

8565 **Meter #1 Density @ 2nd Reference Temperature**

8566 **Meter #1 VCF of Flowing Temperature to 2nd Reference Temperature**

8567 **Meter #1 Current VCF @ 15 Degree C**

8568 **Meter #1 Current VCF @ Reference Temperature**

8569 **Meter #1 Density @ Reference Temperature**

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

8570 **In Progress - Hourly Average - Temperature**

8571 **In Progress - Hourly Average - Pressure**

8572 **In Progress - Hourly Average - Density**

8573 **In Progress - Hourly Average - Relative Density (Specific Gravity) @ 60°F / Density @ Reference Temperature**

8574 **In Progress - Hourly Average - K Factor**

8575 **In Progress - Hourly Average - Meter Factor**

8576 **In Progress - Hourly Average - %S&W**
Percent of Sediment and Water content in product (%S&W)

8577 **Spare**

8578 **Spare**

8579 **In Progress - Batch Average - Gross Flow Rate**

8580 **Meter #1 API 11.1 Density kg/m3 @ Reference Condition**

8581 **Meter #1 API 11.1 Density kg/m3 @ Alternate T & P**

8582 **In Progress - Daily Average - Gross Flow Rate**

8583 **In Progress - Daily Average - %S&W**
Percent of Sediment and Water content in product (%S&W)

8584 **In Progress - Batch Average - %S&W**
Percent of Sediment and Water content in product (%S&W)

8585 **Meter #1 API 11.1 CTPL**

6.12.6. Meter Run #1 - Previous Batch Quantities

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

INFO - The indicated data (**8501-8599**) refers to Meter Run #1. The same data is available for all meter runs at the following addresses:

Meter Run #1:
8501 through **8599**
Meter Run #2:
8601 through **8699**
Meter Run #3:
8701 through **8799**
Meter Run #4:
8801 through **8899**

Previous Batch Quantities - Refers to data stored at the time of the last 'Batch End' command. It will remain valid until the next batch end. These variables are floating point duplicates of integer data at 5n50 area. These points are for MMI or SCADA retrieval, not for Batch Recalculation.

Note: See **8501** area for other Previous Batch data.

8586 **Previous Batch '*n*' - Gross (IV) in Float Format**

8587 **Previous Batch '*n*' - Net (GSV) in Float Format**

8588 **Previous Batch '*n*' - Mass in Float Format**

8589 **Previous Batch '*n*' - Net (NSV) in Float Format**

8590 **Previous Batch '*n*' - Net @ 2nd Reference Temperature**

8591 **Previous Batch '*n*' - Correction Factor for Percent of Sediment and Water Content (CSW)**

8592 **Previous Batch '*n*' - Flowing Time**

8593 **Previous Batch '*n*' - Average Flow Rate**

8594 **Current Density @ Meter Conditions**
This point corresponds to '**Miscellaneous Live or Calculated Data**' (see below). See point **7n09** for density at densitometer conditions.

8595 **Previous Batch '*n*' - Combined Correction Factor (CCF)** *(Revision 22)*

8596 **Meter #1 Batch Ticket Idle Time**

6.12.7. Miscellaneous Live or Calculated Data

8597 **Meter - Current Percent of Sediment and Water Content (%S&W)**

8598 **Meter - Current Correction Factor for Percent of Sediment and Water Content (CSW)**

8599 **Meter - Current Volume Correction Factor (VCF) @ 2nd Reference Temperature**

8600 **Spare**
to
8948 **Spare**

6.12.8. Station - Previous Batch Average Data

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

8949	**Station - Previous Daily - Gross (IV) in Float Format**
8950	**Station - Previous Daily - Net (GSV) in Float Format**
8951	**Station - Previous Daily - Mass in Float Format**
8952	**Station - Previous Daily - Net (NSV) in Float Format**
8953	**Station - Previous Daily - 2nd Net @ Reference Temperature in Float Format**
8954	**Spare**
to	
8985	**Spare**
8986	**Station - Previous Batch - Gross (IV) in Float Format**
8987	**Station - Previous Batch - Net (GSV) in Float Format**
8988	**Station - Previous Batch - Mass in Float Format**
8989	**Station - Previous Batch - Net (NSV) in Float Format**
8990	**Station - Previous Batch - Net @ 2nd Reference Temperature**
8991	**Spare**
to	
9000	**Spare**

Chapter 7

ASCII Text Data Buffers (9001 - 9499)

INFO - These ASCII text buffers are accessed using Modbus function codes 65 for reads and 66 for writes.

The index number for each **9000** type variable refers to the complete text buffer which may be as big as 8192 bytes. Data is transmitted or received as multiple transmissions of 128 byte packets (see **Volume 3**, **Chapter 4**)

7.1. Custom Report Templates

These are ASCII text files which serve as a format template for certain printed reports.

9001	**Report Template - Snapshot / Interval**
9002	**Report Template - Batch**
9003	**Report Template - Daily**
9004	**Report Template - Prove**
9005	**Spare**
to	
9100	**Spare**

7.2. Previous Batch Reports

Copies of the last 8 Batch Reports are stored.

9101	**Batch Report - Last**
9102	**Batch Report - 2nd Last**
9103	**Batch Report - 3rd Last**
9104	**Batch Report - 4th Last**
9105	**Batch Report - 5th Last**
9106	**Batch Report - 6th Last**
9107	**Batch Report - 7th Last**
9108	**Batch Report - 8th Last**
9109	**Spare**
to	
9200	**Spare**

7.3. Previous Prove Reports

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Copies of the last 8 Prove Reports are stored.

9201	**Prove Report - Last**
9202	**Prove Report - 2nd Last**
9203	**Prove Report - 3rd Last**
9204	**Prove Report - 4th Last**
9205	**Prove Report - 5th Last**
9206	**Prove Report - 6th Last**
9207	**Prove Report - 7th Last**
9208	**Prove Report - 8th Last**
9209	**Spare**
to	
9300	**Spare**

7.4. Previous Daily Reports

Copies of the last 8 Daily Reports are stores

9301	**Previous Day's Report - Last**
9302	**Previous Day's Report - 2nd Last**
9303	**Previous Day's Report - 3rd Last**
9304	**Previous Day's Report - 4th Last**
9305	**Previous Day's Report - 5th Last**
9306	**Previous Day's Report - 6th Last**
9307	**Previous Day's Report - 7th Last**
9308	**Previous Day's Report - 8th Last**
9309	**Spare**
to	
9400	**Spare**

7.5. Last Snapshot Report

9401	**Last Local Snapshot / Interval Report**

7.6. Miscellaneous Report Buffer

INFO - These ASCII text buffers are accessed using Modbus function codes 65 for reads and 66 for writes.

The index number for each **9000** type variable refers to the complete text buffer which may be as big as 8192 bytes. Data is transmitted or received as multiple transmissions of 128 byte packets (see **Volume 3**, **Chapter 4**)

The following buffer is used to retrieve miscellaneous reports. Report data is loaded into this buffer depending on which bit is written to integer point **15129**. Reports which are retrieved using this buffer are:

- ❑ Current Snapshot Report
- ❑ Alarm Report
- ❑ Audit Trail Report
- ❑ Status Report
- ❑ Product File Report

Text Archive Data defined by integers **15127** and **15128** is also retrieved using this buffer.

9402	**Miscellaneous Report Buffer**
9403	**Spare**
to	
9900	**Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

9901	**SE-1 Ethernet Configuration Data**
9902	**SE-2 Ethernet Configuration Data**
9903	**SE-3 Ethernet Configuration Data**

Chapter 8

Flow Computer Configuration Data (13001 - 18999)

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

The following data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI before manipulating configuration data directly via a serial port or programmable variable statements.

Flow Computer Configuration 16-Bit Integer Data

8.1.1. Meter Run Configuration 16-Bit Integer Data

13001 Meter Run #1 - Flow I/O Point

13002 Meter Run #1 - Temperature I/O Point

13003 Meter Run #1 - Temperature Type
0=DIN RTD; 1=Amer RTD; 2=4-20mA/Honeywell.

13004 Meter Run #1 - Pressure I/O Point

13005 Meter Run #1 - Density I/O Point

13006 Meter Run #1 - Density Type
1=API Relative Density (SG); 2=Relative Density (SG); 3=gr/cc; 4=Solartron; 5=Sarasota; 6=UGC.

13007 Meter Run #1 - Density Temperature I/O Point

13008 Meter Run #1 - Density Temperature Type
0=DIN RTD; 1=Amer RTD; 2=4-20mA/Honeywell.

13009 Meter Run #1 - Density Press I/O Point

13010 Meter Run #1 - Density
0=Flowing; 1=Reference.

13011 Spare

13012 Spare

13013 Meter Run #1 - Flowmeter Dual Pulse Fidelity
0=No; 1=Yes.

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13014 Meter Run #2 - Flow I/O Point
to
13023 Meter Run #2 - Density

13024 Spare
13025 Spare

13026 Meter Run #2 - Flowmeter Dual Pulse Fidelity

13027 Meter Run #3 - Flow I/O Point
to
13036 Meter Run #3 - Density

13037 Spare
13038 Spare

13039 Meter Run #3 - Flowmeter Dual Pulse Fidelity

13040 Meter Run #4 - Flow I/O Point
to
13049 Meter Run #4 - Density

13050 Spare
13051 Spare

13052 Meter Run #4 - Flowmeter Dual Pulse Fidelity

8.1.2. Prover Configuration 16-Bit Integer Data

13053 **Prover - Inlet (Left) Temperature - I/O Point**

13054 **Prover - Inlet (Left) Temperature - Type**
0=DIN RTD; 1=Amer RTD; 2=4-20mA/Honeywell.

13055 **Prover - Outlet (Right) Temperature - I/O Point**

13056 **Prover - Outlet (Right) Temperature - Type**
0=DIN RTD; 1=Amer RTD; 2=4-20mA/Honeywell.

13057 **Prover - Inlet (Left) Pressure - I/O Point**

13058 **Prover - Outlet (Right) Pressure - I/O Point**

13059 **Compact Prover - Plenum Pressure - I/O Point**

13060 **Spare**
to
13062 **Spare**

13063 **Relative Density (Gravity) Sample Time**
Seconds.

13064 **Station - Pressure - I/O Point**

13065 **Station - Density - I/O Point**

13066 **Station - Density - Type**
1=API Relative Density (SG); 2=Relative Density (SG); 3=grams/cc; 4=Solartron; 5=Sarasota; 6=UGC.

13067 **Station - Density Temperature - I/O Point**

13068 **Station - Density Temperature - Type**
0=DIN RTD; 1=Amer RTD; 2=4-20mA/Honeywell.

13069 **Spare**
to
13070 **Spare**

13071 **Pressure Unit Selection (0=kPa, 1=Bar, 2= kg/cm2)**

13072 **Spare**

13703 **Number of SE Modules**

8.1.3. General Flow Computer Configuration 16-Bit Integer Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

13074 Flow Computer Type
0=3000; 1=6000.

13075 Number of A Combo Modules Installed

13076 Number of B Combo Modules Installed

13077 Number of C Combo Modules Installed

13078 Number of Digital Modules Installed

13079 Number of Serial Modules Installed

13080 Number of E Combo Modules Installed

13081 Number of H Combo Modules Installed

13082 Number of ED Combo Modules Installed

13083 Spare

13084 Spare

8.1.4. Serial Port Configuration 16-Bit Integer Data

13085 Serial Port #1 - Port Type
0=Printer; 1=Modbus.

13086 Serial Port #1 - ID
Read only point which reports back the number of the port you are connected to.

13087 Serial Port #1 - Baud Rate
300-38400 bps.

13088 Serial Port #1 - Data Bits
7 or 8.

13089 Serial Port #1 - Stop Bits
0, 1 or 2.

13090 Serial Port #1 - Parity
O, E, N.

13091 Serial Port #1 - Transmit Key Delay
0=Ohms; 1=50 msec; 2=100 msec; 3=150 msec.

13092 Serial Port #1 - Modbus ID
0-247.

13093 Serial Port #1 - Protocol Type
0=RTU; 1=ASCII; 2=RTU Modem.

13094 Serial Port #1 - Enable CRC Checking
0=No CRC, 1=CRC check.

13095 Serial Port #1 - Modicon Compatible
0=OMNI Normal Mode; 1=Modicon 984 Mode.

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13096 Serial Port #2 - Baud Rate

13097 Serial Port #2 - Data Bits

13098 Serial Port #2 - Stop Bits

13099 Serial Port #2 - Parity

13100 Serial Port #2 - Transmit Key Delay

13101 Serial Port #2 - Modbus ID

13102 Serial Port #2 - Protocol Type
0=Modbus RTU; 1=Modbus ASCII; 2=Modbus RTU Modem (Relaxed Timing).

13103 Serial Port #2 - Enable CRC Checking

13104 Serial Port #2 - Modicon Compatible
0=OMNI Normal Mode; 1=Modicon 984 Mode.

13105 Spare

13106 Number of Decimal Places on Prove Report for Factors

13107 Number of Decimal Places on Batch Report for Factors

13108 Serial Port #3 - Baud Rate

13109 Serial Port #3 - Data Bits

13110 Serial Port #3 - Stop Bits

13111 Serial Port #3 - Parity

13112 Serial Port #3 - Transmit Delay

13113 Serial Port #3 - Modbus or Node ID

13114 Serial Port #3 - Protocol Type
0=Modbus RTU; 1=Modbus ASCII; 2=Modbus RTU Modem (Relaxed Timing).

13115 Serial Port #3 - Enable CRC Checking

13116 Serial Port #3 - Modicon™ Compatible
0=OMNI Normal Mode; 1=Modicon 984 Mode.

13117 Spare
to
13119 Spare

13120 Serial Port #4 - Baud Rate

13121 Serial Port #4 - Data Bits

13122 Serial Port #4 - Stop Bits

13123 Serial Port #4 - Parity

13124 Serial Port #4 - Transmit Delay

13125 Serial Port #4 - Enable CRC Checking

13126 Serial Port #4 - Modbus or Node ID

13127 Serial Port #4 - Protocol Type
0=Modbus RTU; 1=Modbus ASCII; 2=Modbus RTU Modem (Relaxed Timing); 3=Allen-Bradley Full Duplex DF1; 4=Allen-Bradley Half Duplex.

13128 Serial Port #4 - Modicon Compatible
0=OMNI, 1=984 compatible.

or

13128 Serial Port #4 – Allen Bradley Error Check Type
If Allen-Bradley Protocol selected above as protocol type: 0=CRC; 1=BCC error checking.

8.1.5. Proportional Integral Derivative (PID) Configuration 16-Bit Integer Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

13129 **PID Loop #1 - I/O Point Assignment - Remote Setpoint**

13130 **PID Loop #1 - I/O Point Assignment - Primary Variable**

13131 **PID Loop #1 - I/O Point Assignment - Secondary Variable**

13132 **PID Loop #1 - Primary Action**
0=Forward; 1=Reverse.

13133 **PID Loop #1 - Secondary Action**
0=Forward; 1=Reverse.

13134 **PID Loop #1 - Error Select**
0=Low; 1=High.

13135 **PID Loop #1 - Startup Mode**
0=Last state; 1=Manual.

13136 **PID Loop #2 - I/O Point Assignment - Remote Setpoint**
to
13142 **PID Loop #2 - Startup Mode**

13143 **PID Loop #3 - I/O Point Assignment - Remote Setpoint**
to
13149 **PID Loop #3 - Startup Mode**

13150 **PID Loop #4 - I/O Point Assignment - Remote Setpoint**
to
13156 **PID Loop #4 - Startup Mode**

8.1.6. Auxiliary Input I/O Point Assignment Configuration 16-Bit Integer Data

13157 **Auxiliary Input #1 - I/O Point Assignment**

13158 **Auxiliary Input #2 - I/O Point Assignment**

13159 **Auxiliary Input #3 - I/O Point Assignment**

13160 **Auxiliary Input #4 - I/O Point Assignment**

8.1.7. Programmable Logic Controller Configuration 16-Bit Integer Data

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13161 PLC Group #1 - Starting Address
Allen-Bradley PLC-2 Translation Tables.
13162 PLC Group #1 - Index 1
13163 PLC Group #1 - Number of Points 1
13164 PLC Group #1 - Index 2
13165 PLC Group #1 - Number of Points 2
13166 PLC Group #1 - Index 3
13167 PLC Group #1 - Number of Points 3
13168 PLC Group #1 - Index 4
13169 PLC Group #1 - Number of Points 4
13170 PLC Group #1 - Index 5
13171 PLC Group #1 - Number of Points 5
13172 PLC Group #1 - Index 6
13173 PLC Group #1 - Number of Points 6
13174 PLC Group #1 - Index 7
13175 PLC Group #1 - Number of Points 7
13176 PLC Group #1 - Index 8
13177 PLC Group #1 - Number of Points 8
13178 PLC Group #1 - Index 9
13179 PLC Group #1 - Number of Points 9
13180 PLC Group #1 - Index 10
13181 PLC Group #1 - Number of Points 10
13182 PLC Group #1 - Index 11
13183 PLC Group #1 - Number of Points 11
13184 PLC Group #1 - Index 12
13185 PLC Group #1 - Number of Points 12
13186 PLC Group #1 - Index 13
13187 PLC Group #1 - Number of Points 13
13188 PLC Group #1 - Index 14
13189 PLC Group #1 - Number of Points 14
13190 PLC Group #1 - Index 15
13191 PLC Group #1 - Number of Points 15
13192 PLC Group #1 - Index 16
13193 PLC Group #1 - Number of Points 16

13194 PLC Group #2 - Starting Address
13195 PLC Group #2 - Index 1
to
13225 PLC Group #2 - Index 16
13226 PLC Group #2 - Number of Points 16

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

13227 PLC Group #3 - Starting Address
13228 PLC Group #3 - Index 1
to
13258 PLC Group #3 - Index 16
13259 PLC Group #3 - Number of Points 16

13260 PLC Group #4 - Starting Address
13261 PLC Group #4 - Index 1
to
13271 PLC Group #4 - Index 6
13272 PLC Group #4 - Number of Points 6

13273 PLC Group #5 - Starting Address
13274 PLC Group #5 - Index 1
to
13284 PLC Group #5 - Index 6
13285 PLC Group #5 - Number of Points 6

13286 Spare
to
13292 Spare

8.1.8. Auxiliary Input Type Configuration 16-Bit Integer Data

13293 Auxiliary Input #1 - Input Type
For points **13293**-**13296**: 0=DIN; 1=Amer; 2=4-20mA.
13294 Auxiliary Input #2 - Input Type
13295 Auxiliary Input #3 - Input Type
13296 Auxiliary Input #4 - Input Type

13297 Spare
to
13299 Spare

8.1.9. Peer-to-Peer Setup Entries 16-Bit Integer Data

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13300 Peer-to-Peer - Current Master ID
Real-time. Shows current peer-to-peer master.

13301 Reserved
Used for debugging only.

13302 Peer-to-Peer - Transaction #1 - Slave ID
13303 Peer-to-Peer - Transaction #1 - Read / Write
13304 Peer-to-Peer - Transaction #1 - Source Index
13305 Peer-to-Peer - Transaction #1 - Number of Points
13306 Peer-to-Peer - Transaction #1 - Destination Index

13307 Peer-to-Peer - Transaction #2 - Slave ID
to
13311 Peer-to-Peer - Transaction #2 - Destination Index

13312 Peer-to-Peer - Transaction #3 - Slave ID
to
13316 Peer-to-Peer - Transaction #3 - Destination Index

13317 Peer-to-Peer - Transaction #4 - Slave ID
to
13321 Peer-to-Peer - Transaction #4 - Destination Index

13322 Peer-to-Peer - Transaction #5 - Slave ID
to
13326 Peer-to-Peer - Transaction #5 - Destination Index

13327 Peer-to-Peer - Transaction #6 - Slave ID
to
13331 Peer-to-Peer - Transaction #6 - Destination Index

13332 Peer-to-Peer - Transaction #7 - Slave ID
to
13336 Peer-to-Peer - Transaction #7 - Destination Index

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

13337 Peer-to-Peer - Transaction #8 - Slave ID
to
13341 Peer-to-Peer - Transaction #8 - Destination Index

13342 Peer-to-Peer - Transaction #9 - Slave ID
to
13346 Peer-to-Peer - Transaction #9 - Destination Index

13347 Peer-to-Peer - Transaction #10 - Slave ID
to
13351 Peer-to-Peer - Transaction #10 - Destination Index

13352 Peer-to-Peer - Transaction #11 - Slave ID
to
13356 Peer-to-Peer - Transaction #11 - Destination Index

13357 Peer-to-Peer - Transaction #12 - Slave ID
to
13361 Peer-to-Peer - Transaction #12 - Destination Index

13362 Peer-to-Peer - Transaction #13 - Slave ID
to
13366 Peer-to-Peer - Transaction #13 - Destination Index

13367 Peer-to-Peer - Transaction #14 - Slave ID
to
13371 Peer-to-Peer - Transaction #14 - Destination Index

13372 Peer-to-Peer - Transaction #15 - Slave ID
to
13376 Peer-to-Peer - Transaction #15 - Destination Index

13377 Peer-to-Peer - Transaction #16 - Slave ID
to
13381 Peer-to-Peer - Transaction #16 - Destination Index

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13382 Peer-to-Peer - Next Master ID
A non zero entry here turns on peer-to-peer mode.

13383 Peer-to-Peer - Last Master In Sequence ID
Highest Modbus ID of the peer-to-peer masters, which represents the maximum number of interlinked units.

13384 Peer-to-Peer - Retry Timer
Number of 50 msec ticks between retries; default=3.

13385 Redundancy Mode Active
0=No; 1=Yes.

13386 Number of Decimal Places for Gross Totalizer
13387 Number of Decimal Places for Net Totalizer
13388 Number of Decimal Places for Mass Totalizer
13389 Spare

13390 Number of Decimal Places for Factors for Batch Report
13391 Number of Decimal Places for Meter Factor for Batch Report
13392 Number of Decimal Places for Factors for Prove Report
13393 Number of Decimal Places for Meter Factor for Prove Report

13394 Spare
to
13395 Spare

8.1.10. Auxiliary Input Override Code Entries 16-Bit Integer Data

13396 Auxiliary Input #1 - Override Code
13397 Auxiliary Input #2 - Override Code
13398 Auxiliary Input #3 - Override Code
13399 Auxiliary Input #4 - Override Code

13400 Spare
13401 Spare

8.1.11. Damping Factor Configuration 16-Bit Integer Data

13402 Damping Factor - Meter Run #1 - Temperature
13403 Damping Factor - Meter Run #1 - Pressure
13404 Damping Factor - Meter Run #1 - Density Temperature
13405 Damping Factor - Meter Run #1 - Density Pressure

13406 Spare

13407 Spare

13408 Damping Factor - Meter Run #2 - Temperature
13409 Damping Factor - Meter Run #2 - Pressure
13410 Damping Factor - Meter Run #2 - Density Temperature
13411 Damping Factor - Meter Run #2 - Density Pressure

13412 Spare
13413 Spare

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

13414 Damping Factor - Meter Run #3 - Temperature
13415 Damping Factor - Meter Run #3 - Pressure
13416 Damping Factor - Meter Run #3 - Density Temperature
13417 Damping Factor - Meter Run #3 - Density Pressure

13418 Spare
13419 Spare

13420 Damping Factor - Meter Run #4 - Temperature
13421 Damping Factor - Meter Run #4 - Pressure
13422 Damping Factor - Meter Run #4 - Density Temperature
13423 Damping Factor - Meter Run #4 - Density Pressure

13424 Damping Factor - Station - Density Temperature
13425 Damping Factor - Station - Density Pressure

13426 Damping Factor - Prover - Inlet (Left) Temperature
13427 Damping Factor - Prover - Outlet (Right) Temperature
13428 Damping Factor - Prover - Inlet (Left) Pressure
13429 Damping Factor - Prover - Outlet (Right) Pressure
13430 Damping Factor - Compact Prover - Plenum Pressure

13431 Spare
13432 Spare

13433 Damping Factor - Auxiliary Input #1
13434 Damping Factor - Auxiliary Input #2
13435 Damping Factor - Auxiliary Input #3
13436 Damping Factor - Auxiliary Input #4

13437 Spare
to
13438 Spare

13449 Default Status Screen (0=No, 1=Yes)

8.1.12. Insert/Delete Batch Stack 16-Bit Integer Data

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

13450 Insert Batch Stack - Meter #1
13451 Insert Batch Stack - Meter #2
13452 Insert Batch Stack - Meter #3
13453 Insert Batch Stack - Meter #4
13454 Insert Batch Stack - Station

13455 Delete Batch Stack - Meter #1
13456 Delete Batch Stack - Meter #2
13457 Delete Batch Stack - Meter #3
13458 Delete Batch Stack - Meter #4
13459 Delete Batch Stack - Station

8.1.13. Miscellaneous Configuration 16-Bit Integer Data

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13460 Remote Key Press
13461 Beep Counts

8.1.14. Proportional Integral Derivative (PID) Redundancy Configuration 16-Bit Integer Data

13462 Redundancy - Master PID #1 - Valve Mode
Slave keeps copy of primary unit's settings in points **13462**-**13469** in case it becomes master.
13463 Redundancy - Master PID #1 - Setpoint Mode
13464 Redundancy - Master PID #2 - Valve Mode
13465 Redundancy - Master PID #2 - Setpoint Mode
13466 Redundancy - Master PID #3 - Valve Mode
13467 Redundancy - Master PID #3 - Setpoint Mode
13468 Redundancy - Master PID #4 - Valve Mode
13469 Redundancy - Master PID #4 - Setpoint Mode

13470 Redundancy - Slave PID #1 - Valve Mode
13471 Redundancy - Slave PID #1 - Setpoint Mode
13472 Redundancy - Slave PID #2 - Valve Mode
13473 Redundancy - Slave PID #2 - Setpoint Mode
13474 Redundancy - Slave PID #3 - Valve Mode
13475 Redundancy - Slave PID #3 - Setpoint Mode
13476 Redundancy - Slave PID #4 - Valve Mode
13477 Redundancy - Slave PID #4 - Setpoint Mode

13478 **Serial Port #5 - Baud Rate**

13479 **Serial Port #5 - Data Bits**

13480 **Serial Port #5 - Stop Bits**

13481 **Serial Port #5 - Parity**

13482 **Serial Port #5 - Transmit Key Delay**

13483 **Serial Port #5 - Modbus ID**

13484 **Serial Port #5 - Protocol Type**
0=Modbus RTU; 1=Modbus ASCII; 2=Modbus RTU Modem (Relaxed Timing).

13485 **Serial Port #5 - Enable CRC Checking**

13486 **Serial Port #5 - Modicon Compatible**
0=OMNI Normal Mode; 1=Modicon 984 Mode

13487 **Spare**

to

13488 **Spare**

13489 **Serial Port #6 - Baud Rate**

13490 **Serial Port #6 - Data Bits**

13491 **Serial Port #6 - Stop Bits**

13492 **Serial Port #6 - Parity**

13493 **Serial Port #6 - Transmit Key Delay**

13494 **Serial Port #6 - Modbus ID**

13495 **Serial Port #6 - Protocol Type**
0=Modbus RTU; 1=Modbus ASCII; 2=Modbus RTU Modem (Relaxed Timing).

13496 **Serial Port #6 - Enable CRC Checking**

13497 **Serial Port #6 - Modicon Compatible**
0=OMNI Normal Mode; 1=Modicon 984 Mode

13498 **Spare**

to

13499 **Spare**

8.1.15. Raw Data Archive Files 16-Bit Integer Data

The following entries are used to define the record structure of each **Raw Data Archive** file.

13500 Archive 701 #1 - Starting Index
13501 Archive 701 #1 - Number of Points
to
13530 Archive 701 #16 - Starting Index
13531 Archive 701 #16 - Number of points

13532 Product #1 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13533 Product #2 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13534 Product #3 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13535 Product #4 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13536 Product #5 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13537 Product #6 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13538 Product #7 API 11.1 Use CTPL Selection (0=No, 1=Yes)
13539 Product #8 API 11.1 Use CTPL Selection (0=No, 1=Yes)

13540 Archive 702 #1 - Starting Index
13541 Archive 702 #1 - Number of Points
to
13570 Archive 702 #16 - Starting Index
13571 Archive 702 #16 - Number of Points

13572 Spare
to
13579 Spare

13580 Archive 703 #1 - Starting Index
13581 Archive 703 #1 - Number of Points
to
13610 Archive 703 #16 - Starting Index
13611 Archive 703 #16 - Number of Points

13612 Decimal Place of Maintenance Gross Total
13613 Spare
13614 Decimal Places of Maintenance Mass Total
13615 Spare
13616 Decimal Places of Maintenance Gross Flowrate
13617 Spare
13618 Decimal Places of Maintenance Mass Flowrate
13619 Spare

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

13620 Archive 704 #1 - Starting Index
13621 Archive 704 #1 - Number of Points
to
13650 Archive 704 #16 - Starting Index
13651 Archive 704 #16 - Number of Points

13652 Spare
to
13659 Spare

13660 Archive 705 #1 - Starting Index
13661 Archive 705 #1 - Number of Points
to
13690 Archive 705 #16 - Starting Index
13691 Archive 705 #16 - Number of Points

13692 Spare
to
13699 Spare

13700 Archive 706 #1 - Starting Index
13701 Archive 706 #1 - Number of Points
to
13730 Archive 706 #16 - Starting Index
13731 Archive 706 #16 - Number of Points

13732 Spare
to
13739 Spare

13740 Archive 707 #1 - Starting Index
13741 Archive 707 #1 - Number of Points
to
13770 Archive 707 #16 - Starting Index
13771 Archive 707 #16 - Number of Points

13772 Spare
to
13779 Spare

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

13780 Archive 708 #1 - Starting Index
13781 Archive 708 #1 - Number of Points
to
13810 Archive 708 #16 - Starting Index
13811 Archive 708 #16 - Number of Points

13812 Spare
to
13819 Spare

13820 Archive 709 #1 - Starting Index
13821 Archive 709 #1 - Number of Points
to
13850 Archive 709 #16 - Starting Index
13851 Archive 709 #16 - Number of Points

13852 Spare
to
13859 Spare

13860 Archive 710 #1 - Starting Index
13861 Archive 710 #1 - Number of Points
to
13890 Archive 710 #16 - Starting Index
13891 Archive 710 #16 - Number of Points

13892 Spare
to
13899 Spare

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These short integers are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple register writes.

⚠* CAUTION! ⚠*

POTENTIAL FOR DATA LOSS! Read Archive documentation before manipulating points **13920** and **13921**.

13900 Archive 701 - Trigger Boolean
Points **13900**-**13909** contain the point numbers of the trigger points which cause the data to be stored when the trigger goes from low to high.

13901 Archive 702 - Trigger Boolean

13902 Archive 703 - Trigger Boolean

13903 Archive 704 - Trigger Boolean

13904 Archive 705 - Trigger Boolean

13905 Archive 706 - Trigger Boolean

13906 Archive 707 - Trigger Boolean

13907 Archive 708 - Trigger Boolean

13908 Archive 709 - Trigger Boolean

13909 Archive 710 - Trigger Boolean

13910 Spare
to
13919 Spare

⚠*13920 Archive Run ?
0=Stops archiving; 1=Starts archiving.

⚠*13921 Reconfigure Archive?
0=No configuration allowed; 1=Configuration changes allowed.

13922 Spare
to
13929 Spare

13930 Alarm Archive 711 - #1 Starting Index
Points **13930**-**13961** are dummy read-only points which show the structure of the Alarm Archive.

13931 Alarm Archive 711 - #1 Number of Points
to
13960 Alarm Archive 711 - #16 Starting Index

13961 Alarm Archive 711 - #16 Number of Points

13962 Audit Trail Archive 712 - #1 Starting Index
Points **13962**-**13993** are dummy read-only points which show the structure of the Audit Trail.

13963 Audit Trail Archive 712 - #1 Number of Points
to
13992 Audit Trail Archive 712 - #16 Starting Index

13993 Audit Trail Archive 712 - #16 Number of Points

13994 Spare
to
14000 Spare

8.2. Flow Computer Configuration 16-Character ASCII String Data

INFO - These ASCII string variables are accessed using Modbus function codes 03 for reads, and 16 for writes.

Note that the index number for each string refers to the complete string which occupies the space of eight 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each string counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purposes of point count only, each string counts as 8 registers. The starting address of the string still applies.

14001 Boolean Statement #1025
to
14048 Boolean Statement #1072

14049 OmniCom - Download Serial Number & File Name
14050 OmniCom - Download PC ID

14051 Variable Statement #7025
to
14098 Variable Statement #7072

14099 Spare

14100 Station Total and Flow Rate Definition
14101 Comment String (Remarks) - Boolean Statement #1025
to
14148 Comment String (Remarks) - Boolean Statement #1072

14149 Printer Condense Mode String
Points 14149 & 14150 represent the hexadecimal ASCII version of what is actually sent to the printer.
14150 Printer Uncondensed Mode String

14151 Comment String - Variable Statement #7025
to
14198 Comment String - Variable Statement #7072

14199 Spare
to
14200 Spare

14201 Boolean Statement #1073
to
14216 Boolean Statement #1088

14217 Spare
To
14220 Spare

14221 Variable Statement #7073
to
14236 Variable Statement #7088
14237 Spare
to
14240 Spare

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These ASCII string variables are accessed using Modbus function codes 03 for reads, and 16 for writes.

Note that the index number for each string refers to the complete string which occupies the space of eight 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial string. Each string counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purposes of point count only, each string counts as 8 registers. The starting address of the string still applies.

14241 Comment String - Boolean Statement #1073
to
14256 Comment String - Boolean Statement #1088

14257 Spare
to
14260 Spare

14261 Comment String - Variable Statement #7073
to
14276 Comment String - Variable Statement #7088

14277 Spare
to
14300 Spare

14301 Comment String - Assign - Digital to Analog Output #1
to
14312 Comment String - Assign - Digital to Analog Output #12

14313 Spare
to
14320 Spare

14321 Comment String - Assign - Digital I/O Point #1
to
14344 Comment String - Assign - Digital I/O Point #24

14345 Spare
to
14359 Spare

14360 Comment String - Assign - PID #1 - Primary Variable
14361 Comment String - Assign - PID #1 - Secondary Variable

14362 Comment String - Assign - PID #2 - Primary Variable
14363 Comment String - Assign - PID #2 - Secondary Variable

14364 Comment String - Assign - PID #3 - Primary Variable
14365 Comment String - Assign - PID #3 - Secondary Variable

14366 Comment String - Assign - PID #4 - Primary Variable
14367 Comment String - Assign - PID #4 - Secondary Variable

14368 Spare
to
14379 Spare

14380 Comment String - Assign - Front Panel Counter A
14381 Comment String - Assign - Front Panel Counter B
14382 Comment String - Assign - Front Panel Counter C

14383 Spare
to
15000 Spare

8.3. Flow Computer Configuration 32-Bit Long Integer Data

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes.

Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

15001 Assign - Analog Output #1
to
15012 Assign - Analog Output #12

15013 Digital Point #1 - Assignment
15014 Digital Point #1 - Timer - Delay On
100 msec ticks.
15015 Digital Point #1 - Timer - Delay Off
100 msec ticks.
15016 Digital Point #1 - Timer - Pulse Width
10 msec ticks.

15017 Digital Point #2 - Assignment
to
15020 Digital Point #2 - Timer - Pulse Width

15021 Digital Point #3 - Assignment
to
15024 Digital Point #3 - Timer - Pulse Width

15025 Digital Point #4 – Assignment
to
15028 Digital Point #4 - Timer - Pulse Width

15029 Digital Point #5 - Assignment
to
15032 Digital Point #5 - Timer - Pulse Width

15033 Digital Point #6 - Assignment
to
15036 Digital Point #6 - Timer - Pulse Width

15037 Digital Point #7 - Assignment
to
15040 Digital Point #7 - Timer - Pulse Width

15041 Digital Point #8 - Assignment
to
15044 Digital Point #8 - Timer - Pulse Width

15045 Digital Point #9 - Assignment
to
15048 Digital Point #9 - Timer - Pulse Width

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

15049 Digital Point #10 - Assignment
to
15052 Digital Point #10 - Timer - Pulse Width
15053 Digital Point #11 - Assignment
to
15056 Digital Point #11 - Timer - Pulse Width

15057 Digital Point #12 - Assignment
to
15060 Digital Point #12 - Timer - Pulse Width

15061 Digital Point #13 - Assignment
to
15064 Digital Point #13 - Timer - Pulse Width

15065 Digital Point #14 - Assignment
to
15068 Digital Point #14 - Timer - Pulse Width

15069 Digital Point #15 - Assignment
to
15072 Digital Point #15 - Timer - Pulse Width

15073 Digital Point #16 - Assignment
to
15076 Digital Point #16 - Timer - Pulse Width

15077 Digital Point #17 - Assignment
to
15080 Digital Point #17 - Timer - Pulse Width

15081 Digital Point #18 - Assignment
to
15084 Digital Point #18 - Timer - Pulse Width

15085 Digital Point #19 - Assignment
to
15088 Digital Point #19 - Timer - Pulse Width

15089 Digital Point #20 - Assignment
to
15092 Digital Point #20 - Timer - Pulse Width

15093 Digital Point #21 - Assignment
to
15096 Digital Point #21 - Timer - Pulse Width

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes.

Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

15097 Digital Point #22 - Assignment
to
15100 Digital Point #22 - Timer - Pulse Width (10msec Ticks)

15101 Digital Point #23 - Assignment
to
15104 Digital Point #23 - Timer - Pulse Width

15105 Digital Point #24 - Assignment
to
15108 Digital Point #24 - Timer - Pulse Width

15109 Assign - Front Panel Counter A
15110 Assign - Front Panel Counter B
15111 Assign - Front Panel Counter C

15112 Spare

15113 Spare
15114 Spare
15115 Spare

15116 Spare
to
15119 Spare

15120 Input / Output Status of Digital Points
Real-time, read-only! Indicates which points are inputs (1) and which are outputs (0). Digital Point #1=Bit 0; Digital Point #24=Bit 23.

15121 Spare

15122 On/Off Status of Digital Points
Real-time, read-only! Digital Point #1=Bit 0; Digital Point #24=Bit 23: 0=Off, 1=On.

15123 Prove Run Number
15124 Proving Meter Number
15125 Prove Counts

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

15126 32-Bit Packed Status Word
Exclusively for OmniCom use (see Bit Layout below).

LSB			
B0	Not Proving	B16	Flow Rate Unstable
B1	Overtravel Forward	B17	No Prove Permissive
B2	Launch Forward	B18	Prover Seal Not OK
B3	1st Detector	B19	Meter Not Active
B4	In Flight Forward	B20	Piston Downstream
B5	2nd Detector	B21	Checking Plenum
B6	Overtravel Reverse	B22	Master Meter Proving
B7	Launch Reverse	B23	Check Stability Master Meter
B8	In Flight Reverse	B24	Spare
B9	Prove Aborted	B25	Spare
B10	Prove Complete	B26	Power Fail Flag
B11	Checking Stability	B27	End Batch #4
B12	Prover/Meter Temp/Press Limits	B28	End Batch #3
B13	Prover Inactivity	B29	End Batch #2
B14	Bad Repeatability	B30	End Batch #1
B15	Prove Temperature Unstable	B31	End Batch Station
		MSB	

15127 Text Archive Data - Number of Days to Retrieve
Exclusively for OmniCom use.

15128 Text Archive Data - Starting Date of Requested
Fixed date format (YYDDMM).

15129 32-Bit Command Word #1
Exclusively for OmniCom use (see Bit Layout below).

LSB			
B0	Prove Seal OK	B16	Trial Prove Meter #4
B1	End Batch Station	B17	Abort Prove in Progress
B2	End Batch Meter #1	B18	Send Snapshot to Printer
B3	End Batch Meter #2	B19	Load Snapshot to 9402
B4	End Batch Meter #3	B20	Load Alarms to 9402
B5	End Batch Meter #4	B21	Load Product File to 9402
B6	Spare	B22	Load Status to 9402
B7	Request Prove Meter #1	B23	Load Audit Trail to 9402
B8	Request Prove Meter #2	B24	End Batch Station –No Stack
B9	Request Prove Meter #3	B25	End Batch Meter #1-No Stack
B10	Request Prove Meter #4	B26	End Batch Meter #2 No Stack
B11	Alarm Acknowledge	B27	End Batch Meter #3 No Stack
B12	Reset Power Fail Flag	B28	End Batch Meter #4 No Stack
B13	Trial Prove Meter #1	B29	Spare
B14	Trial Prove Meter #2	B30	Spare
B15	Trial Prove Meter #3	B31	Spare
		MSB	

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These 32-bit long integer variables are accessed using Modbus function code 03 for reads, 06 for single writes and 16 for multiple writes.

Note that the index number for each variable refers to one complete long integer which occupies the space of two 16-bit registers. It must be accessed as a complete unit. You cannot read or write a partial 32-bit integer. Each 32-bit long integer counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each 32-bit integer counts as two registers. The starting address of the 32-bit integer still applies.

15130 32-Bit Command Word #2

Exclusively for OmniCom use (see Bit Layout below).

LSB			
B0	Decrease PID #1 Setpoint @ 1% Rate	B16	Decrease PID #1 Valve @ 1% Rate
B1	Increase PID #1 Setpoint @ 1% Rate	B17	Increase PID #1 Valve @ 1% Rate
B2	Decrease PID #1 Setpoint @ 0.1% Rate	B18	Decrease PID #1 Valve @ 0.1% Rate
B3	Increase PID #1 Setpoint @ 0.1% Rate	B19	Increase PID #1 Valve @ 0.1% Rate
B4	Decrease PID #2 Setpoint @ 1% Rate	B20	Decrease PID #2 Valve @ 1% Rate
B5	Increase PID #2 Setpoint @ 1% Rate	B21	Increase PID #2 Valve @ 1% Rate
B6	Decrease PID #2 Setpoint @ 0.1% Rate	B22	Decrease PID #2 Valve @ 0.1% Rate
B7	Increase PID #2 Setpoint @ 0.1% Rate	B23	Increase PID #2 Valve @ 0.1% Rate
B8	Decrease PID #3 Setpoint @ 1% Rate	B24	Decrease PID #3 Valve @ 1% Rate
B9	Increase PID #3 Setpoint @ 1% Rate	B25	Increase PID #3 Valve @ 1% Rate
B10	Decrease PID #3 Setpoint @ 0.1% Rate	B26	Decrease PID #3 Valve @ 0.1% Rate
B11	Increase PID #3 Setpoint @ 0.1% Rate	B27	Increase PID #3 Valve @ 0.1% Rate
B12	Decrease PID #4 Setpoint @ 1% Rate	B28	Decrease PID #4 Valve @ 1% Rate
B13	Increase PID #4 Setpoint @ 1% Rate	B29	Increase PID #4 Valve @ 1% Rate
B14	Decrease PID #4 Setpoint @ 0.1% Rate	B30	Decrease PID #4 Valve @ 0.1% Rate
B15	Increase PID #4 Setpoint @ 0.1% Rate	B31	Increase PID #4 Valve @ 0.1% Rate
		MSB	

15131 Raw Process Input - Input #1

Real-time, read-only! 1kHz~1mA.

to

15154 Raw Process Input - Input #24

15155 Spare

to

15175 Spare

15176	Ethernet Port #1 IP Address
15177	Ethernet Port #1 Gateway
15178	Ethernet Port #1 Netmask
15179	Ethernet Port #2 IP Address
15180	Ethernet Port #2 Gateway
15181	Ethernet Port #2 Netmask
15182	Ethernet Port #3 IP Address
15183	Ethernet Port #3 Gateway
15184	Ethernet Port #3 Netmask
15185	Ethernet Port #4 IP Address
15186	Ethernet Port #4 Gateway
15187	Ethernet Port #4 Netmask
15188	Ethernet Port #5 IP Address
15189	Ethernet Port #5 Gateway
15190	Ethernet Port #5 Netmask
15191	Ethernet Port #6 IP Address
15192	Ethernet Port #6 Gateway
15193	Ethernet Port #6 Netmask
15194	Wincom Scratch Pad #1
15195	Wincom Scratch Pad #2
15196	Wincom Scratch Pad #3
15197	Spare
to	
15199	Spare

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note:

* **Archive Data File Size -** These variables contain the number of bytes each archive file uses within memory. They are updated when the archiving process is started and memory is allocated. The maximum memory that can be allocated to this group of variables is a total of 229359 bytes.

Archive Data File Size

Information Only Data!

* **15200 Size of Text Archive File**
* **15201 Size of Archive - File 701**
* **15202 Size of Archive - File 702**
* **15203 Size of Archive - File 703**
* **15204 Size of Archive - File 704**
* **15205 Size of Archive - File 705**
* **15206 Size of Archive - File 706**
* **15207 Size of Archive - File 707**
* **15208 Size of Archive - File 708**
* **15209 Size of Archive - File 709**
* **15210 Size of Archive - File 710**

15211 Spare
15212 Spare

15213 Archive File '*n*' Failed
Indicates which archive file failed; e.g.: if archive files 1-4 occupy allocated memory, this point will read 5 (n=1-10). (See points **2623**, **15200**-**15210**, and **15214**.)

15214 Total Number of Archive Files Allocated

15215 Spare
to
15230 Spare

8.4. Batch and Prove Archive Modbus Data

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note:

* **Archive Data File Size -** These variables contain the number of bytes each archive file uses within memory. They are updated when the archiving process is started and memory is allocated. The maximum memory that can be allocated to this group of variables is a total of 229359 bytes.

15231 **Date YYMMDD of the Most Recent Batch**
15232 **Date YYMMDD of the 2nd Historical Batch**
15233 **Date YYMMDD of the 3rd Historical Batch**
15234 **Date YYMMDD of the 4th Historical Batch**
15235 **Date YYMMDD of the 5th Historical Batch**
15236 **Date YYMMDD of the 6th Historical Batch**
15237 **Date YYMMDD of the 7th Historical Batch**
15238 **Date YYMMDD of the 8th Historical Batch**

15239 **Spare**
to
15240 **Spare**

15241 **Time HHMMSS of the Most Recent Batch**
15242 **Time HHMMSS of the Previous Batch**
15243 **Time HHMMSS of the Previous -1st Batch**
15244 **Time HHMMSS of the Previous -2nd Batch**
15245 **Time HHMMSS of the Previous -3rd Batch**
15246 **Time HHMMSS of the Previous -4th Batch**
15247 **Time HHMMSS of the Previous -5th Batch**
15248 **Time HHMMSS of the Previous -6th Batch**

15249 **Spare**
to
15250 **Spare**

15251 **Meter of the Most Recent Batch**
Bit 0=Meter #1, Bit 1=Meter #2, Bit 2= Meter #3, Bit 3 =Meter #4
15252 **Meter of the Previous Batch**
15253 **Meter of the Previous -1st Batch**
15254 **Meter of the Previous -2nd Batch**
15255 **Meter of the Previous -3rd Batch**
15256 **Meter of the Previous -4th Batch**
15257 **Meter of the Previous -5th Batch**
15258 **Meter of the Previous -6th Batch**

15259 **Spare**
to
15260 **Spare**

15261 **Batch Number of the Most Recent Batch**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note:

* **Archive Data File Size -** These variables contain the number of bytes each archive file uses within memory. They are updated when the archiving process is started and memory is allocated. The maximum memory that can be allocated to this group of variables is a total of 229359 bytes.

15262 Batch Number of the 2nd Historical Batch Report
15263 Batch Number of the 3rd Historical Batch Report
15264 Batch Number of the 4th Historical Batch Report
15265 Batch Number of the 5th Historical Batch Report
15266 Batch Number of the 6th Historical Batch Report
15267 Batch Number of the 7th Historical Batch Report
15268 Batch Number of the 8th Historical Batch Report

15269 Spare
to
15270 Spare

15271 Date YYMMDD of the Most Recent Prove
15272 Date YYMMDD of the 2nd Historical Prove Report
15273 Date YYMMDD of the 3rd Historical Prove Report
15274 Date YYMMDD of the 4th Historical Prove Report
15275 Date YYMMDD of the 5th Historical Prove Report
15276 Date YYMMDD of the 6th Historical Prove Report
15277 Date YYMMDD of the 7th Historical Prove Report
15278 Date YYMMDD of the 8th Historical Prove Report

15279 Spare
to
15280 Spare

15281 Time HHMMSS of the Most Recent Prove
15282 Time HHMMSS of the 2nd Historical Prove Report
15283 Time HHMMSS of the 3rd Historical Prove Report
15284 Time HHMMSS of the 4th Historical Prove Report
15285 Time HHMMSS of the 5th Historical Prove Report
15286 Time HHMMSS of the 6th Historical Prove Report
15287 Time HHMMSS of the 7th Historical Prove Report
15288 Time HHMMSS of the 8th Historical Prove Report

15289 Spare
to
15290 Spare

15291 Proving Meter of the Most Recent Prove
bit 0=Meter #1, bit 1=Meter #2, bit 2=Meter #3, bit 3=Meter #4

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

Note:

* **Archive Data File Size -** These variables contain the number of bytes each archive file uses within memory. They are updated when the archiving process is started and memory is allocated. The maximum memory that can be allocated to this group of variables is a total of 229359 bytes.

15292 **Proving Meter of the 2nd Historical Prove**
15293 **Proving Meter of the 3rd Historical Prove**
15294 **Proving Meter of the 4th Historical Prove**
15295 **Proving Meter of the 5th Historical Prove**
15296 **Proving Meter of the 6th Historical Prove**
15297 **Proving Meter of the 7th Historical Prove**
15298 **Proving Meter of the 8th Historical Prove**

15299 **Spare**
to
15300 **Spare**

15301 **Status of the Most Recent Prove**
0=Meter Factor not implemented, 1=Meter Factor Implemented, 2=Prove Aborted

15302 **Status of the 2nd Historical Prove Report**
15303 **Status of the 3rd Historical Prove Report**
15304 **Status of the 4th Historical Prove Report**
15305 **Status of the 5th Historical Prove Report**
15306 **Status of the 6th Historical Prove Report**
15307 **Status of the 7th Historical Prove Report**
15308 **Status of the 8th Historical Prove Report**

15309 **Spare**
to
15310 **Spare**

15311 **Date DDYYMM of the Most Recent Day**
15312 **Date DDYYMM of the 2nd Historical Daily Report**
15313 **Date DDYYMM of the 3rd Historical Daily Report**
15314 **Date DDYYMM of the 4th Historical Daily Report**
15315 **Date DDYYMM of the 5th Historical Daily Report**
15316 **Date DDYYMM of the 6th Historical Daily Report**
15317 **Date DDYYMM of the 7th Historical Daily Report**
15318 **Date DDYYMM of the 8th Historical Daily Report**

15319 **Spare**
to
15320 **Spare**

15321 **Time DDYYMM of the Most Recent Day**
15322 **Time DDYYMM of the 2nd Historical Daily Report**
15323 **Time DDYYMM of the 3rd Historical Daily Report**
15324 **Time DDYYMM of the 4th Historical Daily Report**
15325 **Time DDYYMM of the 5th Historical Daily Report**
15326 **Time DDYYMM of the 6th Historical Daily Report**
15327 **Time DDYYMM of the 7th Historical Daily Report**
15328 **Time DDYYMM of the 8th Historical Daily Report**

15329 **Spare**
to

15330 Spare

15331 Running Meter of the Most Recent Day
15332 Running Meter of the 2nd Historical Daily Report
15333 Running Meter of the 3rd Historical Daily Report
15334 Running Meter of the 4th Historical Daily Report
15335 Running Meter of the 5th Historical Daily Report
15336 Running Meter of the 6th Historical Daily Report
15337 Running Meter of the 7th Historical Daily Report
15338 Running Meter of the 8th Historical Daily Report

15339 Spare
to
15340 Spare

15341 Day End Status of the Most Recent Day
15342 Day End Status of the 2nd Historical Daily Report
15343 Day End Status of the 3rd Historical Daily Report
15344 Day End Status of the 4th Historical Daily Report
15345 Day End Status of the 5th Historical Daily Report
15346 Day End Status of the 6th Historical Daily Report
15347 Day End Status of the 7th Historical Daily Report
15348 Day End Status of the 8th Historical Daily Report

15349 Spare
to
15350 Spare

15351 Batch End Status of the Most Recent Day
15352 Batch End Status of the 2nd Historical Batch Report
15353 Batch End Status of the 3rd Historical Batch Report
15354 Batch End Status of the 4th Historical Batch Report
15355 Batch End Status of the 5th Historical Batch Report
15356 Batch End Status of the 6th Historical Batch Report
15357 Batch End Status of the 7th Historical Batch Report
15358 Batch End Status of the 8th Historical Batch Report

15359 Spare
to
15508 Spare

15509 Meter #1 Previous Day Closing Gross Cumulative Total
15510 Meter #1 Previous Day Closing Net Cumulative Total
15511 Meter #1 Previous Day Closing Mass Cumulative Total
15512 Meter #1 Previous Day Closing Energy/NSV Cumulative Total
15513 Meter #1 Daily Closing Gross Cumulative Total
15514 Meter #1 Daily Closing Net Cumulative Total
15515 Meter #1 Daily Closing Mass Cumulative Total
15516 Meter #1 Daily Closing NSV Cumulative Total
15517 Spare
to
15535 Spare

15536 Meter #1 Maintenance Mode Gross Total
15537 Meter #1 Maintenance Mode Net Total
15538 Meter #1 Maintenance Mode Mass Total
15539 Meter #1 Maintenance Mode NSV Total

Meter #2 (Same as 15636 – 15639)

Meter #3 (Same as 15736 – 15739)

Meter #4 (Same as 15836 – 15839)

Station (Same as 15936 – 15939)

15540 Meter #1 Current Running Product Gross Total *(Revision 26)*
15541 Meter #1 Current Running Product Net Total *(Revision 26)*
15542 Meter #1 Current Running Product Mass Total *(Revision 26)*
15543 Meter #1 Current Running Product NSV Total *(Revision 26)*

17000 Spare

8.5. Flow Computer Configuration 32-Bit IEEE Floating Point Data

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

Note:
Input expected is engineering units.

17001 Analog Output #1 - @ 4mA
Engineering units which equal to 0%.

17002 Analog Output #1 - @ 20mA
Engineering units which equal to 100%.

to

17023 Analog Output #12 - @ 4mA

17024 Analog Output #12 - @ 20mA

17025 Pulses per Unit - Digital I/O #1

to

17048 Pulses per Unit - Digital I/O #24

17049 Pulses per Unit - Front Panel Counter A

17050 Pulses per Unit - Front Panel Counter B

17051 Pulses per Unit - Front Panel Counter C

 # 17052 PID #1 - Remote Setpoint - Low Limit
Setpoint download will be limited to this setting.

 # 17053 PID #1 - Remote Setpoint - High Limit
Setpoint download will be limited to this setting.

 # 17054 PID #1 - Remote Setpoint - @ 4mA
Sets the zero of the controller.

 # 17055 PID #1 - Remote Setpoint - @ 20mA
Sets the maximum span of the controller.

17056 PID #1 - Primary Gain

17057 PID #1 - Primary Repeats per Minute

 # 17058 PID #1 - Secondary Value - @ Zero

 # 17059 PID #1 - Secondary Value - @ Full Scale

17060 PID #1 - Secondary Gain

17061 PID #1 - Secondary Repeats per Minute

17062 PID #1 - Maximum Ramp Up Rate % - Per 500 msec
Limits rate of valve movement at startup only.

 # 17063 PID #1 - Secondary Setpoint

17064 PID #1 - Maximum Ramp Down Rate % - Per 500 msec
Limits the rate of valve movement at shutdown only.

17065 PID #1 - Minimum Output % - To Ramp To
Top-up valve % open.

17066 PID #1 - Deadband %
No change in output if the % error is less than this

17067 PID #2 - Remote Setpoint - Low Limit

to

17081 PID #2 - Deadband %

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

17082 PID #3 - Remote Setpoint - Low Limit
to
17096 PID #3 - Deadband %

17097 PID #4 - Remote Setpoint - Low Limit
to
17111 PID #4 - Deadband %

17112 Output in Percent - Digital to Analog #1
Read-only, Live Value.
to
17123 Output in Percent - Digital to Analog #12
Read-only, Live Value.

17124 Spare
to
17135 Spare

17136 PID #1 - Primary Controlled Variable Value
17137 PID #1 - Secondary Controlled Variable Value
17138 PID #1 - Control Output %
17139 PID #1 - Primary Setpoint Value
17140 PID #1 - Secondary Setpoint Value

17141 Spare
to
17145 Spare

17146 PID #2 - Primary Controlled Variable Value
to
17150 PID #2 - Secondary Setpoint Value

17151 Spare
to
17155 Spare

17156 PID #3 - Primary Controlled Variable Value
to
17160 PID #3 - Secondary Setpoint Value

17161 Spare
to
17165 Spare

17166 PID #4 - Primary Controlled Variable Value
to
17170 PID #4 - Secondary Setpoint Value

⚠ CAUTION! ⚠

Flow computer configuration data is especially critical to the correct operation of the flow computer. Any modifications to this data while operating the flow computer could cause unpredictable results which could cause measurement or control errors. Users are encouraged to consult with OMNI Flow Computers, Inc. before manipulating configuration data directly via a serial port or programmable variable statements.

INFO - These 32 Bit IEEE Floating Point variables are accessed using Modbus function code 03 for all reads, 06 for single writes or 16 for single or multiple writes. Note that the index number for each variable refers to the complete floating point variable which occupies the space of two 16- bit registers. It must be accessed as a complete unit. You cannot read or write a partial variable. Each floating point variable counts as one point in the normal OMNI Modbus mode.

Modicon Compatible Mode - For the purpose of point count only, each IEEE float point counts as 2 registers. The starting address of the variable still applies.

17171 Spare
to
17175 Spare

17176 Meter #1 - Full Scale - Gross Flow Rate
Used to scale integer volume flow rate variables **3140** & **3142**.

17177 Meter #1 - Full Scale - Mass Flow Rate
Used to scale integer mass flow rate variable **3144**.

17178 Spare
17179 Spare

17180 Meter #2 - Full Scale - Gross Flow Rate
17181 Meter #2 - Full Scale - Mass Flow Rate

17182 Spare
17183 Spare

17184 Meter #3 - Full Scale - Gross Flow Rate
17185 Meter #3 - Full Scale - Mass Flow Rate

17186 Spare
17187 Spare

17188 Meter #4 - Full Scale - Gross Flow Rate
17189 Meter #4 - Full Scale - Mass Flow Rate

17190 Spare
17191 Spare

17192 Station - Full Scale - Gross Flow Rate
(Used to scale integer volume flow rate variables **3802** & **3804**.

17193 Station - Full Scale - Mass Flow Rate
Used to scale integer mass flow rate variable **3806**.

17194 Spare
to
17202 Spare

17203 F Factor - Product #1
to
17210 F Factor - Product #8

17211 Spare
to
17218 Spare

17219 **Product #1 Reference Temperature**
17220 **Product #2 Reference Temperature**
17221 **Product #3 Reference Temperature**
17222 **Product #4 Reference Temperature**
17223 **Product #5 Reference Temperature**
17224 **Product #6 Reference Temperature**
17225 **Product #7 Reference Temperature**
17226 **Product #8 Reference Temperature**

17227 **Spare**
to
17287 **Spare**

Application Revision 22/26.70+ - This database corresponds to Application Revision 22/26.70+ for Turbine/Positive Displacement Liquid Flow Metering Systems, with Meter Factor Linearization. Both US and metric unit versions are considered.

17288 **Product #1 Base Pressure (Pe)**
17289 **Product #2 Base Pressure (Pe)**
17290 **Product #3 Base Pressure (Pe)**
17291 **Product #4 Base Pressure (Pe)**
17292 **Product #5 Base Pressure (Pe)**
17293 **Product #6 Base Pressure (Pe)**
17294 **Product #7 Base Pressure (Pe)**
17295 **Product #8 Base Pressure (Pe)**

17296 **Spare**
To
17379 **Spare**

17380 **Auxiliary Input #1 - Low limit**
17381 **Auxiliary Input #1 - High Limit**
17382 **Auxiliary Input #1 - Override Value**
17383 **Auxiliary Input #1 - @ 4mA**
17384 **Auxiliary Input #1 - @ 20mA**

17385 **Auxiliary Input #2 - Low limit**
to
17389 **Auxiliary Input #2 - @ 20mA**

17390 **Auxiliary Input #3 - Low limit**
to
17394 **Auxiliary Input #3 - @ 20mA**

17395 **Auxiliary Input #4 - Low limit**
to
17399 **Auxiliary Input #4 - @ 20mA**

17400 **Reserved**

17401 **Product #1 Meter #1 Density Correction Factor**

17402 Product #1 Meter #2 Density Correction Factor
17403 Product #1 Meter #3 Density Correction Factor
17404 Product #1 Meter #4 Density Correction Factor
17405 Product #1 Station Density Correction Factor

17406 Product #2 Meter #1 Density Correction Factor
17407 Product #2 Meter #2 Density Correction Factor
17408 Product #2 Meter #3 Density Correction Factor
17409 Product #2 Meter #4 Density Correction Factor
17410 Product #2 Station Density Correction Factor

17411 Product #3 Meter #1 Density Correction Factor
17412 Product #3 Meter #2 Density Correction Factor
17413 Product #3 Meter #3 Density Correction Factor
17414 Product #3 Meter #4 Density Correction Factor
17415 Product #3 Station Density Correction Factor

17416 Product #4 Meter #1 Density Correction Factor
17417 Product #4 Meter #2 Density Correction Factor
17418 Product #4 Meter #3 Density Correction Factor
17419 Product #4 Meter #4 Density Correction Factor
17420 Product #4 Station Density Correction Factor

17421 Product #5 Meter #1 Density Correction Factor
17422 Product #5 Meter #2 Density Correction Factor
17423 Product #5 Meter #3 Density Correction Factor
17424 Product #5 Meter #4 Density Correction Factor
17425 Product #5 Station Density Correction Factor

17426 Product #6 Meter #1 Density Correction Factor
17427 Product #6 Meter #2 Density Correction Factor
17428 Product #6 Meter #3 Density Correction Factor
17429 Product #6 Meter #4 Density Correction Factor
17430 Product #6 Station Density Correction Factor

17431 Product #7 Meter #1 Density Correction Factor
17432 Product #7 Meter #2 Density Correction Factor
17433 Product #7 Meter #3 Density Correction Factor
17434 Product #7 Meter #4 Density Correction Factor
17435 Product #7 Station Density Correction Factor

17436 Product #8 Meter #1 Density Correction Factor
17437 Product #8 Meter #2 Density Correction Factor
17438 Product #8 Meter #3 Density Correction Factor
17439 Product #8 Meter #4 Density Correction Factor
17440 Product #8 Station Density Correction Factor

17441 Spare

to
17585 Spare

17586 Meter #1 Maintenance Mode Gross Flowrate
17587 Meter #1 Maintenance Mode Net Flowrate
17588 Meter #1 Maintenance Mode Mass Flowrate
17589 Meter #1 Maintenance Mode NSV Flowrate

Meter #2 (Same as 17686 – 17689)

Meter #3 (Same as 17786 – 17789)

Meter #4 (Same as 17886 – 17889)

17590 Reserved
to
20000 Reserved

Note:
⇨ These addresses are reserved for product development.

⇨ **20001 Reserved**
to
⇨ **30000 Reserved**

⇨ **30001 Reserved**
to
⇨ **40000 Reserved**

⇨ **40001 Reserved**
to
⇨ **50000 Reserved**

Revision History:

The table below lists the revision history of the current Volume 4 database along with which version of firmware release and check sum release dates.

ECN #	Firmware Ver	Check Sum	Release Date	Manual release
ECD no 51	26.74.10	EC74	6-29-07	July 2007