

# Entellisys™ 4.0

## Low-Voltage Switchgear Integrator's Guide





# DEH-432

## Warnings, Cautions, and Notes as used in this publication

### Warnings

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**WARNING!** Warning notices are used in this publication to emphasize that hazardous voltages, currents, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

Warning notices are also used for situations in which inattention or lack of equipment knowledge could cause either personal injury or damage to equipment.

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### Cautions

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**CAUTION:** Caution notices are used for situations in which equipment might be damaged if care is not taken.

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### Notes

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**NOTE:** Notes call attention to information that is especially significant to understanding and operating the equipment.

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## 3 Modbus Memory Map

## 4 Modbus Memory Map Format Codes



# 1 Integrator's Guide

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## 1.1 PLC support

PLCs are supported by providing status of all FlexLogic operands and discrete inputs through the Modbus TCP interface.

PLCs have access to states of FlexLogic operands (protection elements, breaker control, status, contact inputs/outputs, and virtual inputs/outputs) through the Modbus communication. It shall be PLC's responsibility to figure out which CPU is running in the primary mode (Modbus register: "FlexLogic Active") and FlexLogic health status (Modbus register: "FlexLogic Status Message"). CPU does not initiate communication with PLC.

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### 1.1.1 PLC Input

PLC inputs provide the ability to manipulate FlexLogic execution. There are 256 PLC inputs, each of which have a corresponding operand that is accessible in FlexLogic.

**Writing to PLC inputs:** The PLC must be programmed to write to specific bits in the **PLC Input State** registers in the Modbus memory map. See [Modbus Memory Map on page 39](#)

**Events:**

If the "Events" parameter for the PLC Input is enabled and event will be logged in the Events screen when the state has changed. 'x' in the text of event is a placeholder for number from range 1 to 256. Source of the events is reported as (-1).

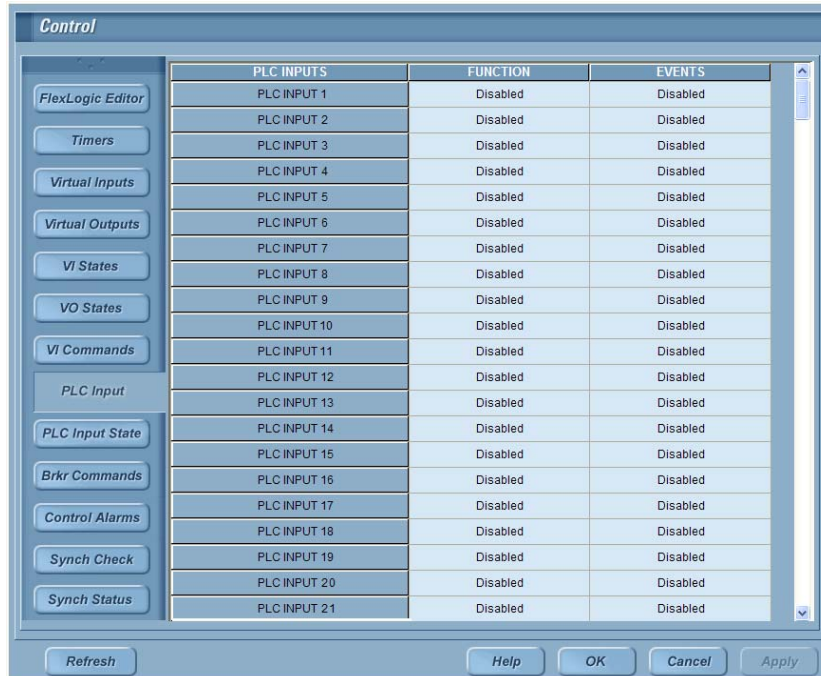
"PLC Input x On" - logged when PLC Input transitioned from low to high state.

"PLC Input x Off" - logged when PLC Input transitioned from high to low state.

### 1.1.1.1 Configuration

User must set the parameters for each PLC Input from the **PLC Input** screen (**Main Menu, User Settings, Control**).

**Figure 1-1** PLC Input configuration screen



**Function:** Controls whether the input is either enabled or disabled. When input is disabled, FlexLogic always reads its state as low. If input is enabled, FlexLogic reads the state from corresponding Modbus register.

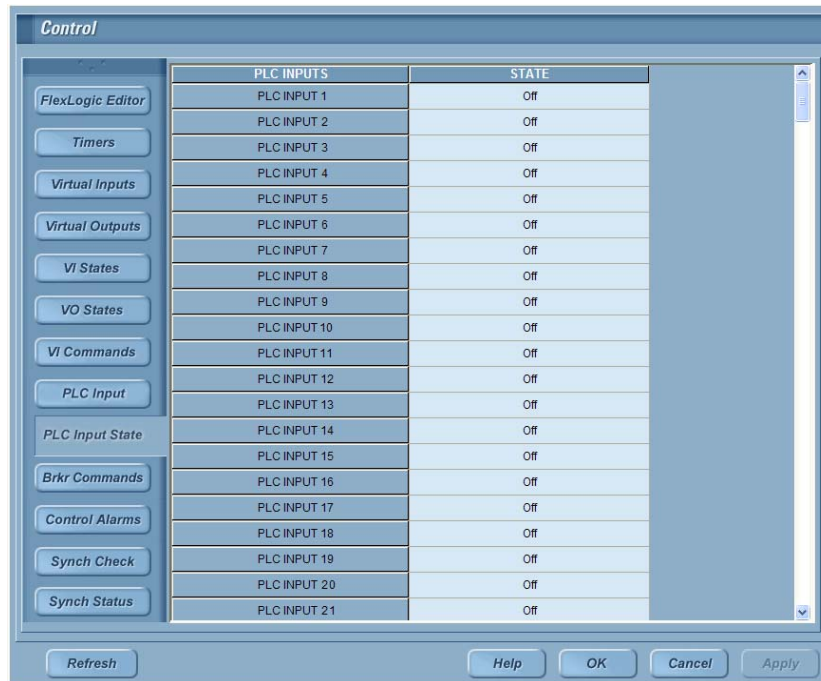
**Events:** When enabled, if there is transition of state, an event corresponding to the direction of the transition will be logged.



### 1.1.1.2 Status

To view a snapshot of the PLC input states from the HMI, open the **PLC Input State** screen (**Main Menu, User Settings, Control**). Click refresh if update the status.

**Figure 1-2** PLC Input States register format



### 1.1.1.3 PLC Input States

Each bit of the “PLC Input States” register represents one PLC input. Bit value 0 indicates the corresponding PLC input is in off state; and bit value is 1 indicating corresponding PLC input is in on state. See Table 1-1.

**Table 1-1** PLC Input States register format

PLC Input States register	PLC Input States bit field	PLC Input X
1	0	1
	1	2
	2	3
	...	...
	15	16
2	0	17
	1	18
	...	...
...		
16	0	241
	1	242
	...	...
	15	256

## 1.1.2 FlexLogic Operand States

After each protection pass, all the information regarding each operand's state is updated in corresponding Modbus register. The section [PLC Interface \(Read/Write\) on page 110](#) is the complete list of registers holding state information of corresponding operand.

### 1.1.2.1 Breaker Control Flex Operand States

Each breaker has 13 different states shown in Table 1-2. Each one of them corresponds to a different bit in the data item.

**Table 1-2** Breaker Control status bit field

Bit	Value	Notes
0	Breaker Opened	
1	Breaker Closed	
2	Breaker Locked Out	
3	Closing Spring Charged	
4	Primary Disconnect Connected	
5	Primary Disconnect Disconnected	
6	Secondary Disconnect Connected	
7	Breaker Ready	
8	Breaker Available	
9	Breaker Open Failed	
10	Breaker Close Failed	
11	Breaker Fault	
12	Breaker RELT State	Not used in this release. It shall be always set to 0.

The breaker states for all 30 breakers span across 25 consecutive modbus registers as shown in Table 1-3. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-3** Breaker status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	N/A
Breaker 2	0	13	This breaker's information spans over two adjacent registers
Breaker 3	1	10	This breaker's information spans over two adjacent registers
Breaker 4	2	7	This breaker's information spans over two adjacent registers
...	...	...	...

### 1.1.2.2 Bus Differential Flex Operand States

Each zone has 6 different states shown in Table 1-4. Each one of them corresponds to a different bit in the data item.

**Table 1-4** Bus Differential status bit field

Bit	Value
0	Trip Dropout
1	Alarm Dropout
2	Trip Pickup
3	Alarm Pickup
4	Trip Operated
5	Alarm Operated
6	Backup Trip Operated

The zone states for all 4 relay instances span across 2 consecutive modbus registers as shown in Table 1-3. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-5** Bus Differential status offsets

Zone Number	Register Offset	Bit Offset	Notes
Zone 1	0	0	
Zone 2	0	7	
Zone 3	0	14	This zone's information spans over two adjacent registers
Zone 4	1	5	
	1	12	Bits from 12 thru 15 are not used and shall always be set to 0

### 1.1.2.3 Ground Fault Flex Operand States

Each breaker has 5 different states shown in Table 1-6. Each one of them corresponds to a different bit in the data item.

**Table 1-6** Ground Fault status bit field

Bit	Value
0	Trip Pickup
1	Trip Operated
2	Trip Dropout
3	Alarm Pickup
4	Alarm Operated
5	Alarm Dropout

The breaker states for all 30 breakers span across 12 consecutive modbus registers as shown in Table 1-7. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-7** Ground Fault status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	6	
Breaker 3	0	12	This breaker's information spans over two adjacent registers
Breaker 4	1	2	
...	...	...	...

### 1.1.2.4 High Current and High Current Transient Flex Operand States

Each breaker has 3 different states shown in Table 1-8. Each one of them corresponds to a different bit in the data item.

**Table 1-8** High Current status bit field

Bit	Value
0	Alarm Pickup
1	Alarm Operated
2	Alarm Dropout

The breaker states for all 30 breakers span across 6 consecutive modbus registers as shown in Table 1-9. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-9** High Current status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	3	
Breaker 3	0	6	
Breaker 4	0	9	
...	...	...	...

### 1.1.2.5 HRGF Detection Flex Operand States

Each breaker has 3 different states shown in Table 1-10. Each one of them corresponds to a different bit in the data item.

**Table 1-10** HRGF Detection status bit field

Bit	Value
0	Alarm Dropout
1	Alarm Pickup
2	Alarm Operated

The breaker states for all 30 breakers span across 6 consecutive modbus registers as shown in Table 1-11. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-11** HRGF Detection status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	3	
Breaker 3	0	6	
Breaker 4	0	9	
...	...	...	...

### 1.1.2.6 HRGF Location Flex Operand States

Each zone has 2 different states shown in Table 1-12. Each one of them corresponds to a different bit in the data item.

**Table 1-12** HRGF Location status bit field

Bit	Value
0	Locator in On State
1	Locator in Off State

The zone states for all 4 location function instances are contained in a single modbus register as shown in Table 1-13. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-13** HRGF Location status offsets

Zone Number	Register Offset	Bit Offset	Notes
Zone 1	0	0	
Zone 2	0	2	
Zone 3	0	4	
Zone 4	0	6	
	0	8	Bits from 8 thru 15 are not used and shall always be set to 0

### 1.1.2.7 IOC Flex Operand States

Each breaker has 2 different states shown in Table 1-14. Each one of them corresponds to a different bit in the data item.

**Table 1-14** IOC status bit field

Bit	Value
0	Trip Operated
1	Trip Dropout

The breaker states for all 30 breakers span across 4 consecutive modbus registers as shown in Table 1-15. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-15** IOC status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	2	
Breaker 3	0	4	
Breaker 4	0	6	
Breaker 5	0	8	
Breaker 6	0	10	
Breaker 7	0	12	
Breaker 8	0	14	
Breaker 9	1	0	
...	...	...	



### 1.1.2.8 LT Overcurrent Flex Operand States

Each breaker has 3 different states shown in Table 1-16. Each one of them corresponds to a different bit in the data item.

**Table 1-16** LT Overcurrent status bit field

Bit	Value
0	Alarm Pickup
1	Alarm Operated
2	Alarm Dropout

The breaker states for all 30 breakers span across 6 consecutive modbus registers as shown in Table 1-17. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-17** LT Overcurrent status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	3	
Breaker 3	0	6	
Breaker 4	0	9	
Breaker 5	0	12	
Breaker 6	0	15	This breaker's information spans over two adjacent registers
...	...	...	

### 1.1.2.9 MSGF Overcurrent Flex Operand States

Each zone has 7 different states shown in Table 1-18. Each one of them corresponds to a different bit in the data item.

**Table 1-18** MSGF Overcurrent status bit field

Bit	Value
0	Trip Dropout
1	Alarm Dropout
2	Trip Pickup
3	Alarm Pickup
4	Trip Operated
5	Alarm Operated
6	Backup Trip Operated

The zone states for all 4 instances span across 2 consecutive modbus registers as shown in Table 1-19. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-19** MSGF Overcurrent status offsets

Zone Number	Register Offset	Bit Offset	Notes
Zone 1	0	0	
Zone 2	0	7	
Zone 3	0	14	This zone's information spans over two adjacent registers
Zone 4	1	5	
	1	12	Bits from 12 thru 15 are not used and shall always be set to 0

### 1.1.2.10 Multi Point RELT Flex Operand States

This relay has 1 state shown in Table 1-20.

**Table 1-20** Multi Point RELT status bit field

Bit	Value
0	Multipoint Reduced Let-Thru Mode On

The relay state uses one modbus register as shown in Table 1-21. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-21** Multi Point RELT status offsets

Zone Number	Register Offset	Bit Offset	Notes
RELT State	0	0	
	0	1	Bits from 1 thru 15 are not used and shall always be set to 0

### 1.1.2.11 Over (and Under) Frequency Flex Operand States

Each breaker has 6 different states shown in Table 1-22. Each one of them corresponds to a different bit in the data item.

**Table 1-22** Over Frequency status bit field

Bit	Value
0	Alarm Pickup
1	Alarm Operated
2	Alarm Dropout
3	Trip Pickup
4	Trip Operated
5	Trip Dropout

The breaker states for all 30 breakers span across 12 consecutive modbus registers as shown in Table 1-23. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-23** Over Frequency status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	6	
Breaker 3	0	12	This breaker's information spans over two adjacent registers
Breaker 4	1	2	
...	...	...	

### 1.1.2.12 Over (and Under) Voltage Flex Operand States

Each breaker has 6 different states shown in Table 1-24. Each one of them corresponds to a different bit in the data item.

**Table 1-24** Over Voltage status bit field

Bit	Value
0	Alarm Pickup
1	Alarm Operated
2	Alarm Dropout
3	Trip Pickup
4	Trip Operated
5	Trip Dropout

The breaker states for all 30 breakers span across 12 consecutive modbus registers as shown in Table 1-25. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-25** Over Voltage status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	6	
Breaker 3	0	12	This breaker's information spans over two adjacent registers
Breaker 4	1	2	
...	...	...	

### 1.1.2.13 Phase Loss Flex Operand States

Each breaker has 6 different states shown in Table 1-26. Each one of them corresponds to a different bit in the data item.

**Table 1-26** Phase Loss status bit field

Bit	Value
0	Alarm Pickup
1	Alarm Operated
2	Alarm Dropout
3	Trip Pickup
4	Trip Operated
5	Trip Dropout

The breaker states for all 30 breakers span across 12 consecutive modbus registers as shown in Table 1-27. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-27** Phase Loss status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	6	
Breaker 3	0	12	This breaker's information spans over two adjacent registers
Breaker 4	1	2	
...	...	...	

### 1.1.2.14 Power Reversal Flex Operand States

Each breaker has 6 different states shown in Table 1-28. Each one of them corresponds to a different bit in the data item.

**Table 1-28** Power Reversal status bit field

Bit	Value
0	Alarm Pickup
1	Alarm Operated
2	Alarm Dropout
3	Trip Pickup
4	Trip Operated
5	Trip Dropout

The breaker states for all 30 breakers span across 12 consecutive modbus registers as shown in Table 1-29. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-29** Power Reversal status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	6	
Breaker 3	0	12	This breaker's information spans over two adjacent registers
Breaker 4	1	2	
...	...	...	

### 1.1.2.15 ST Overcurrent Flex Operand States

Each breaker has 3 different states shown in Table 1-30. Each one of them corresponds to a different bit in the data item.

**Table 1-30** ST Overcurrent status bit field

Bit	Value
0	Trip Pickup
1	Trip Operated
2	Trip Dropout

The breaker states for all 30 breakers span across 6 consecutive modbus registers as shown in Table 1-31. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-31** ST Overcurrent status offsets

Breaker Number	Register Offset	Bit Offset	Notes
Breaker 1	0	0	
Breaker 2	0	3	
Breaker 3	0	6	
Breaker 4	0	9	
Breaker 5	0	12	
Breaker 6	0	15	This breaker's information spans over two adjacent registers
Breaker 7	1	2	
...	...	...	



### 1.1.2.16 Summation MSGF Zone Flex Operand States

Each zone has 7 different states shown in Table 1-32. Each one of them corresponds to a different bit in the data item.

**Table 1-32** Summation MSGF Zone status bit field

Bit	Value
0	Trip Dropout
1	Alarm Dropout
2	Trip Pickup
3	Alarm Pickup
4	Trip Operated
5	Alarm Operated
6	Trip Restrained

The zone states for both zones reside in a single modbus register as shown in Table 1-33. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-33** Summation MSGF Zone status offsets

Zone Number	Register Offset	Bit Offset	Notes
Zone 1	0	0	
Zone 2	0	8	

### 1.1.2.17 Synch Check Flex Operand States

Each relay has 10 different states shown in Table 1-34. Each one of them corresponds to a different bit in the data item.

**Table 1-34** Synch Check status bit field

Bit	Value
0	Dead Source Operated
1	Dead Source Dropout
2	Synch Operated
3	Synch Dropout
4	Close Operated
5	Close Dropout
6	V1 Above Minimum
7	V2 Above Minimum
8	V1 Below Maximum
9	V2 Below Maximum

The relay states for all 12 relays span across 8 consecutive modbus registers as shown in Table 1-35. See [PLC Interface \(Read/Write\) on page 110](#) for memory locations.

**Table 1-35** Synch Check status offsets

Zone Number	Register Offset	Bit Offset	Notes
Relay 1	0	0	
Relay 2	0	10	This relay's information spans over two adjacent registers
Relay 3	1	4	
Relay 4	1	14	This relay's information spans over two adjacent registers
Relay 5	2	8	This relay's information spans over two adjacent registers
Relay 6	3	2	
Relay 7	3	12	
Relay 8	4	6	
Relay 9	5	0	
Relay 10	5	10	
Relay 11	6	4	
Relay 12	6	14	
	7	8	Bits from 8 thru 15 are not used and shall always be set to 0

---

## 2.1 Introduction

The CPU supports a number of communications protocols to allow connection to the HMI computer, as well as other equipment which includes personal computers, RTUs, SCADA masters, and programmable logic controllers. The Modicon Modbus® RTU protocol is the most basic protocol supported. Modbus is available via ethernet as specified by the Modbus/TCP specification. Note that:

- The CPU always acts as a slave device, meaning that it never initiates communications; it only listens and responds to requests issued by a master computer.
- For Modbus, a subset of the Remote Terminal Unit (RTU) protocol format is supported that allows extensive monitoring, programming, and control functions using read and write register commands.
- The CPU will support a maximum of 8 concurrent Modbus sessions. Four sessions are reserved for use by HMI computers. A remote device that attempts to connect when all sessions are in use will receive a response message indicating the number of maximum connections has been exceeded. If a remote device does not make a request within 30 seconds, the session will be timed out and made available to the next device that establishes a session.

---

## 2.2 Physical layer

The Modbus RTU protocol is hardware-independent so that the physical layer can be any of a variety of standard hardware configurations. The CPU includes a faceplate (front panel) 100BaseT Ethernet port. Data flow is auto-configuring full or half-duplex. Each data byte is transmitted in an asynchronous format consisting of 1 start bit, 8 data bits, 1 stop bit, and possibly 1 parity bit. This produces a 10 or 11 bit data frame. The master device in any system must know the address of the slave device with which it is to communicate. In the case of ModbusTCP communications, the CPU will not act on a request from a master if the address in the request does not match the CPU's slave address. A single setting selects the slave address used for ModbusTCP. The default slave address for a CPU is 1.

## 2.3 Data link layer

2

Communications takes place in packets, which are groups of asynchronously framed byte data. The master transmits a packet to the slave and the slave responds with a packet. The end of a packet is marked by 'dead-time' on the communications line. The following describes general format for both transmit and receive packets. For exact details on packet formatting, see the subsequent sections describing each function code.

### MODBUS PACKET FORMAT

DESCRIPTION	SIZE
SLAVE ADDRESS	1 byte
FUNCTION CODE	1 byte
DATA	N bytes
CRC	2 bytes
DEAD TIME	3.5 bytes transmission time

### SLAVE ADDRESS

This is the address of the slave device that is intended to receive the packet sent by the master and perform the desired action. Only the addressed slave will respond to a packet that starts with its address. Note that since Modbus/TCP also relies on a correct IP address to receive the packet, and each CPU responds as a single device, it is generally not necessary to change the Modbus address of the device.

### FUNCTION CODE

This is one of the supported function codes of the unit which tells the slave what action to perform. See [Supported function codes on page 30](#) for complete details. An exception response from the slave is indicated by setting the high order bit of the function code in the response packet. See [Exception responses on page 35](#) for further details.

### DATA

This will be a variable number of bytes depending on the function code. This may include actual values, settings, or addresses sent by the master to the slave or by the slave to the master.

### CRC

This is a two byte error checking code. The RTU version of Modbus includes a 16-bit cyclic redundancy check (CRC-16) with every packet which is an industry standard method used for error detection. If a Modbus slave device receives a packet in which an error is indicated by the CRC, the slave device will not act upon or respond to the packet thus preventing any erroneous operations. See [CRC-16 Algorithm on page 29](#) for a description of how to calculate the CRC.

## 2.4 CRC-16 Algorithm

The CRC-16 algorithm essentially treats the entire data stream (data bits only; start, stop and parity ignored) as one continuous binary number. This number is first shifted left 16 bits and then divided by a characteristic polynomial (1100000000000101B). The 16-bit remainder of the division is appended to the end of the packet, most significant byte first. The resulting packet including CRC, when divided by the same polynomial at the receiver, will give a zero remainder if no transmission errors have occurred. This algorithm requires the characteristic polynomial to be reverse bit ordered. The most significant bit of the characteristic polynomial is dropped, since it does not affect the value of the remainder.

### CRC-16 ALGORITHM

<b>SYMBOLS</b>	-->	data transfer
A		16-bit working register
Alow		low order byte of A
Ahigh		high order byte of A
CRC		16-bit CRC-16 result
i,j		loop counters
(+)		logical EXCLUSIVE-OR operator
N		total number of data bytes
Di		i-th data byte (i = 0 to N-1)
G		16-bit characteristic polynomial = 101000000000001 (binary) with MSbit dropped and bit order reversed
shr (x)		right shift operator (th LSbit of x is shifted into a carry flag, a '0' is shifted into the MSbit of x, all other bits are shifted right one location)

#### ALGORITHM:

1. FFFF (hex) --> A
2. 0 --> i
3. 0 --> j
4. Di (+) Alow --> Alow
5. j + 1 --> j
6. shr (A)
7. Is there a carry? No: go to 8 Yes: G (+) A --> A and continue.
8. Is j = 8? No: go to 5 Yes: continue
9. i + 1 --> i
10. Is i = N? No: go to 3 Yes: continue
11. A --> CRC

## 2.5 Supported function codes

Modbus officially defines function codes from 1 to 127 though only a small subset is generally needed. The CPU supports some of these functions, as summarized in the following table. Subsequent sections describe each function code in detail.

### 2.5.1 Function Code 03H/04H – Read Actual Values or Settings

This function code allows the master to read one or more consecutive data registers (actual values or settings) from a relay. Data registers are always 16 bit (two byte) values transmitted with high order byte first. The maximum number of registers that can be read in a single packet is 125. See the MODBUS MEMORY MAP table on page 17 for exact details on the data registers. Since some PLC implementations of Modbus only support one of function codes 03h and 04h, the CPU interpretation allows either function code to be used for reading one or more consecutive data registers. The data starting address will determine the type of data being read. Function codes 03h and 04h are therefore identical. The following table shows the format of the master and slave packets. The example shows a master device requesting 3 register values starting at address 4050h from slave device 11h (17 decimal); the slave device responds with the values 40, 300, and 0 from registers 4050h, 4051h, and 4052h, respectively.

FUNCTION CODE		MODBUS DEFINITION	CPU DEFINITION
HEX	DEC		
03	3	Read Holding Registers	Read Actual Values or Settings
04	4	Read Holding Registers	Read Actual Values or Settings
05	5	Force Single Coil	Execute Operation
06	6	Preset Single Register	Store Single Setting
10	16	Preset Multiple Registers	Store Multiple Settings

## **Master and Slave Device Packet Transmission Example**

### **MASTER TRANSMISSION**

<b>PACKET FORMAT</b>	<b>EXAMPLE (HEX)</b>
SLAVE ADDRESS	11
FUNCTION CODE	04
DATA STARTING ADDR - hi	40
DATA STARTING ADDR - lo	50
NUMBER OF REGISTERS - hi	00
NUMBER OF REGISTERS - lo	03
CRC - lo A7 DATA #2 - lo	A7
CRC - hi 4A DATA #3 - hi	4A

### **SLAVE RESPONSE**

<b>PACKET FORMAT</b>	<b>EXAMPLE (HEX)</b>
SLAVE ADDRESS	11
FUNCTION CODE	04
BYTE COUNT	06
DATA #1 - hi	00
DATA #1 - lo	28
DATA #2 - hi	01
DATA #2 - lo	2C
DATA #3 - hi	00
DATA #3 - lo	00
CRC - lo	0D
CRC - hi	60

## 2.5.2 Function Code 05H – Execute Operation

This function code allows the master to perform various operations in the CPU.

The following table shows the format of the master and slave packets. The example shows a master device requesting the slave device 11H (17 dec) to perform a reset. The hi and lo CODE VALUE bytes always have the values 'FF' and '00' respectively and are a remnant of the original Modbus definition of this function code.

### Master and Slave Device Packet Transmission Example

#### MASTER TRANSMISSION

PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	05
OPERATION CODE - hi	00
OPERATION CODE - lo	01
CODE VALUE - hi	FF
CODE VALUE - lo	00
CRC - lo	DF
CRC - hi	6A

#### SLAVE RESPONSE

PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	05
OPERATION CODE - hi	00
OPERATION CODE - lo	01
CODE VALUE - hi	FF
CODE VALUE - lo	00
CRC - lo	DF
CRC - hi	6A



## 2.5.3 Function Code 06H – Store Single Setting

This function code allows the master to modify the contents of a single setting register in a CPU. Setting registers are always 16-bit (two byte) values transmitted high-order byte first. The following table shows the format of the master and slave packets. The example shows a master device storing the value 200 at memory map address 4051h to slave device 11h (17 dec).

### Master and Slave Device Packet Transmission Example

#### MASTER TRANSMISSION

PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	06
DATA STARTING ADDR - hi	40
DATA STARTING ADDR - lo	51
DATA - hi	00
DATA - lo	C8
CRC - lo	CE
CRC - hi	DD

#### SLAVE RESPONSE

PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	06
DATA STARTING ADDR - hi	40
DATA STARTING ADDR - lo	51
DATA - hi	00
DATA - lo	C8
CRC - lo	CE
CRC - hi	DD

## 2.5.4 Function Code 10H – Store Multiple Settings

This function code allows the master to modify the contents of a one or more consecutive setting registers in a CPU. Setting registers are 16-bit (two byte) values transmitted high-order byte first. The maximum number of setting registers that can be stored in a single packet is 60. The following table shows the format of the master and slave packets. The example shows a master device storing the value 200 at memory map address 4051h, and the value 1 at memory map address 4052h to slave device 11h (17 dec).

### Master and Slave Device Packet Transmission Example

#### MASTER TRANSMISSION

PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	10
DATA STARTING ADDR-hi	40
DATA STARTING ADDR-lo	51
NUMBER OF SETTINGS-hi	00
NUMBER OF SETTINGS-lo	02
BYTE COUNT	04
DATA #1 - hi	00
DATA #1 - lo	C8
DATA #2 - hi	00
DATA #2 - lo	01
CRC - lo	12
CRC - hi	62

SLAVE RESPONSE	
PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	10
DATA STARTING ADDR - hi	40
DATA STARTING ADDR - lo	51
NUMBER OF SETTINGS - hi	00
NUMBER OF SETTINGS - lo	02
CRC - lo	07
CRC - hi	64

## 2.5.5 Exception responses

Programming or operation errors usually happen because of illegal data in a packet. These errors result in an exception response from the slave. The slave detecting one of these errors sends a response packet to the master with the high order bit of the function code set to 1. The following table shows the format of the master and slave packets. The example shows a master device sending the unsupported function code 39h to slave device 11.

### Master and Slave Device Packet Transmission Example

MASTER TRANSMISSION	
PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	39
CRC - low order byte	CD
CRC - high order byte	F2

SLAVE RESPONSE	
PACKET FORMAT	EXAMPLE (HEX)
SLAVE ADDRESS	11
FUNCTION CODE	B9
ERROR CODE	01

**SLAVE RESPONSE**

CRC - low order byte	93
CRC - high order byte	95

## 2.5.6 File transfers

### 2.5.6.1 Obtaining CPU files using Modbus protocol

The CPU has a generic file transfer facility, meaning that you use the same method to obtain all of the different types of files from the unit. The Modbus registers that implement file transfer are found in the “Modbus File Transfer (Read/Write)” and “Modbus File Transfer (Read Only)” modules, starting at address 030Eh in the Modbus Memory Map. To read a file from the CPU, use the following steps:

1. Write the filename to the “Name of file to read” register using a write multiple registers command. If the name is shorter than 80 characters, you may write only enough registers to include all the text of the filename. Filenames are not case sensitive.
2. Repeatedly read all the registers in “Modbus File Transfer (Read Only)” using a read multiple registers command. It is not necessary to read the entire data block, since the CPU will remember which was the last register read. The “position” register is initially zero and thereafter indicates how many bytes (2 times the number of registers) you have read so far. The “size of...” register indicates the number of bytes of data remaining to read, to a maximum of 244.
3. Keep reading until the “size of...” register is smaller than the number of bytes you are transferring. This condition indicates end of file. Discard any bytes you have read beyond the indicated block size.
4. If you need to re-try a block, read only the “size of...” and “block of data”, without reading the position. The file pointer is only incremented when you read the position register, so the same data block will be returned as was read in the previous operation. On the next read, check to see if the position is where you expect it to be, and discard the previous block if it is not (this condition would indicate that the CPU did not process your original read request). The CPU retains connection-specific file transfer information, so files may be read simultaneously on multiple Modbus connections.

- a. Obtaining files from the CPU using other protocols

All the files available via Modbus may also be retrieved using the standard file transfer mechanisms in other protocols (for example, TFTP).

- b. Reading event recorder files

To read the entire event recorder contents in ASCII format (the only available format), use the following filename:

- EVT.TXT

- c. Reading fault report files

The file name for fault report data is **faultReport#####.txt**. The ##### refers to the fault report record number. This number is identical to the event record number associated with the fault report. A request for a non-existent fault report file will yield file with no data below the header.

d. Reading waveform capture files

Waveform records comply with COMTRADE 1999 format (IEEE Std C37.111-1999). The file names as required by the standard for waveform capture data are **wfc#####.dat** and **wfc#####.cfg**. The ##### refers to the waveform record number. Note that this number is not the same as the event number cited in the case of the fault report above. If an event has a waveform capture associated with it, the waveform number will be shown in the WF Number field as indicated in the header of the event log.

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## 2.5.7 Modbus password operation

The COMMAND password is set up at memory location 0458h. Storing a value of "0" removes COMMAND password protection. When reading the password setting, the encrypted value (zero if no password is set) is returned. COMMAND security is required to change the COMMAND password.

Similarly, the SETTING password is set up at memory location 045Ah. To gain COMMAND level security access, the COMMAND password must be entered at memory location 045Ch. To gain SETTING level security access, the SETTING password must be entered at memory location 045Eh. The entered SETTING password must match the current SETTING password setting, or must be zero, to change settings or download firmware.

COMMAND and SETTING passwords each have a 30-minute timer. Each timer starts when you enter the particular password, and is restarted whenever you "use" it. For example, writing a setting restarts the SETTING password timer and writing a command register or forcing a coil restarts the COMMAND password timer. The value read at memory location 0460h can be used to confirm whether a COMMAND password is enabled or disabled (0 for Disabled). The value read at memory location 0461h can be used to confirm whether a SETTING password is enabled or disabled.

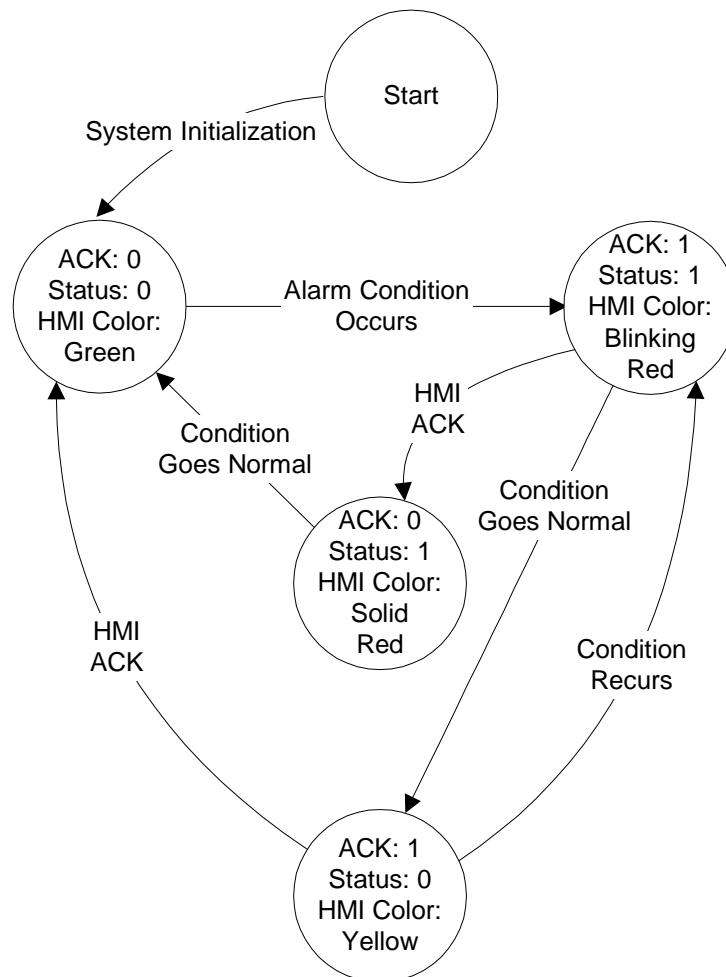
COMMAND or SETTING password security access is restricted to the particular port or particular TCP/IP connection on which the entry was made. Passwords must be entered when accessing the relay through other ports or connections, and the passwords must be reentered after disconnecting and reconnecting on TCP/IP.

## 2.6 Interfacing to the Alarm Handler

The set of registers beginning at 0648h provides the means to interface to each CPU's Alarm Handler functionality. Each pair of 32-bit values represent the current state (read only) and the acknowledge setting (read/write) for each alarm type. Each value represents the states for all of the circuit breakers in the system as denoted in Format Code F722, one bit for each. A 1 in the bit field position for a given circuit breaker in the state register indicates that the alarm condition is currently active, while a 0 indicates the condition is not currently active.

When a condition passes from inactive to active, the corresponding ACK bit in the next register will be set to 1. At this point an external program may acknowledge the alarm by writing a 0 to that bit location. It is important for the external program to first read the ACK register and mask the new value such that the states represented by the other bits remain intact. The following state table describes how the HMI interfaces with the CPU to update its indicators.

**Figure 2-3** Alarm state transition diagram



**Alarm State Transition Diagram**

NOTE: A multiplier factor may be necessary in cases where an integer value is returned but the Range and/or Step imply a greater precision. In these cases, it is necessary to divide the returned value by 10 for a step of "0.1" or "0.5"; by 100 for a step of ".01"; and so on. Similarly, it is necessary to multiply by these factors prior to writing a settings value. This note does not apply to any step value greater than 1 (a step of "10" does not require a multiplier, for example). This note also does not apply to values returned in floating point format. See the format codes at the end of the map for more information.

NOTE: Discrete I/O output state registers (Contact Output x State - register range from x9180 to x91FF and Contact Output States - register range from xB256 to 0xB25D) contain correct information only when FlexLogic Active register (x0034) contains value 1 (yes).

Addr	Register Name	Range	Units	Step	Format	Factory Default
<b>Product Information (Read Only)</b>						
0000	FBW Product Type	0 to 2	---	1	F716	0 (Low Voltage Switchgear)
0001	Serial Number	---	---	---	F203	"0"
0009	External Ethernet MAC Address	---	---	---	F072	0
000C	Reserved (3 items)	---	---	---	F001	0
000F	CPU Hardware Version	0 to 655.35	---	0.01	F001	100
0010	CPU Firmware Version	0 to 655.35	---	0.01	F001	100
0011	CPU Firmware Boot Code Version	0 to 655.35	---	0.01	F001	100
0012	Build Date	---	---	---	F200	"0"
0026	Synchronizer Board Status	0 to 1	---	1	F102	0 (Disabled)
0027	Synchronizer Board Frequency Setting	50 to 60	Hz	10	F001	60
0028	Last Energy Clear Date	0 to 4294967295	---	1	F050	0
002A	Last CPU Commissioned Date	0 to 4294967295	---	1	F050	0
002C	Expected Node Protocol Version	0 to 655.35	---	0.01	F001	0
002D	Summary Number	---	---	---	F205	"0"
0033	Line Up	0 to 99	---	1	F001	1
0034	System Frequency Detected	0 to 65535	Hz	1	F001	0
0035	CPU Modbus Map Version	0 to 655.35	---	0.01	F001	450

0036	Reserved	---	---	---	F001	0
<b>Installation (Read/Write Setting)</b>						
0080	CPU ID	0 to 1	---	1	F717	0 (CCPU A)
0081	CPU Commissioned	0 to 1	---	1	F102	0 (Disabled)
0082	CPU Name	---	---	---	F200	"UNNAMED"
0096	System Frequency	50 to 60	Hz	10	F001	60
0097	Phase Rotation	0 to 1	---	1	F106	0 (ABC)
<b>Clock (Read/Write Setting)</b>						
00E0	RTC Set Time	0 to 4294967295	---	1	F050	0
	<b>Clock (Read Only)</b>					
00E2	Date Time Changed	0 to 4294967295	---	1	F050	0
<b>Communications (Read/Write Setting)</b>						
00EC	External Ethernet IP Address	0 to 4294967295	---	1	F003	3232235876
00EE	External Ethernet IP Subnet Mask	0 to 4294963200	---	1	F003	4294967040
00F0	External Ethernet Gateway IP Address	0 to 4294967295	---	1	F003	0
00F2	Reserved (5 items)	---	---	---	F001	0
<b>Event Recorder (Read Only)</b>						
0150	Events Since Last Clear	0 to 4294967295	---	1	F003	0
0152	Number of Available Events	0 to 4294967295	---	1	F003	0
0154	Event Recorder Last Cleared Date	0 to 4294967295	---	1	F050	0
<b>Modbus File Transfer (Read/Write)</b>						
0156	Name of file to read	---	---	---	F204	(none)
	<b>Modbus File Transfer (Read Only)</b>					
017E	Character position of current block within file	0 to 4294967295	---	1	F003	0
0180	Size of currently-available data block	0 to 65535	---	1	F001	0
0181	Block of data from requested file (122 items)	0 to 65535	---	1	F001	0
	<b>Modbus File Transfer Area 2 (Read/Write)</b>					
01FB	Name of file to read	---	---	---	F204	(none)
	<b>Modbus File Transfer Area 2 (Read Only)</b>					
0223	Character position of current block within file	0 to 4294967295	---	1	F003	0
0225	Size of currently-available data block	0 to 65535	---	1	F001	0



0226	Block of data from requested file (122 items)	0 to 65535	---	1	F001	0
<b>Passwords (Read/Write)</b>						
02A0	Reserved (4 items)	---	---	---	F001	0
02A4	Command Password Entry	0 to 4294967295	---	1	F003	0
02A6	Setting Password Entry	0 to 4294967295	---	1	F003	0
<b>Passwords (Read Only)</b>						
02A8	Command Password Status	0 to 1	---	1	F102	0 (Disabled)
02A9	Setting Password Status	0 to 1	---	1	F102	0 (Disabled)
02AA	Reserved (128 items)	---	---	---	F001	0
<b>Zone Manager (Read Only)</b>						
032A	Current Topology State	0 to 255	---	1	F001	0
032B	Current Zone1 Topology	0 to 255	---	1	F001	1
032C	Current Zone2 Topology	0 to 255	---	1	F001	1
032D	Current Zone3 Topology	0 to 255	---	1	F001	1
032E	Current Zone4 Topology	0 to 255	---	1	F001	1
032F	Current Zone1 Topology PT Throwover	0 to 255	---	1	F001	1
0330	Current Zone2 Topology PT Throwover	0 to 255	---	1	F001	1
0331	Current Zone3 Topology PT Throwover	0 to 255	---	1	F001	1
0332	Current Zone4 Topology PT Throwover	0 to 255	---	1	F001	1
<b>Zone Manager (Read/Write Command)</b>						
0333	Multipoint Relay Reduced Let Thru Enable	0 to 1	---	1	F126	0 (No)
0334	Multipoint Relay Reduced Let Thru Reset	0 to 1	---	1	F126	0 (No)
<b>Zone Manager (Read Only)</b>						
0335	Multipoint Relay Reduced Let Thru State	0 to 1	---	1	F108	0 (Off)
<b>Zone Manager (Read/Write Setting)</b>						
0336	Multipoint Reduced Let Thru FlexLogic Trigger	0 to 65535	---	1	F300	0
<b>Zone Manager (Read Only)</b>						
0337	Multipoint Reduced Let Thru Enable Count	0 to 65535	---	1	F001	0
<b>Event Recorder Commands (Read/Write Command)</b>						
0346	Event Recorder Clear Command	0 to 1	---	1	F126	0 (No)
<b>Energy Commands (Read/Write Command)</b>						

0347	Energy Clear Command	0 to 1	---	1	F126	0 (No)
<b>Fault And Event Test Trigger (Read/Write Command)</b>						
0348	Fault Trigger Command	0 to 1	---	1	F126	0 (No)
<b>Demand (Read/Write Setting)</b>						
0349	Demand Subinterval Length	1 to 60	---	1	F001	1
034A	Demand Subintervals Per Interval	1 to 15	---	1	F001	1
<b>Demand (Read/Write Command)</b>						
034B	Demand Reset All Command	0 to 1	---	1	F126	0 (No)
<b>Demand (Read Only)</b>						
034C	Number Of Demand Resets All	0 to 4294963200	---	1	F003	0
034E	Last Demand Reset All DateTime	0 to 4294967295	---	1	F050	0
<b>Demand (Read/Write Command)</b>						
0350	Demand Log Clear All Command	0 to 1	---	1	F126	0 (No)
<b>Demand (Read Only)</b>						
0351	Demand Log Last Cleared All Date	0 to 4294967295	---	1	F050	0
<b>Waveform Capture (Read Only)</b>						
035D	Number WF Records Available	0 to 65535	---	1	F001	0
<b>Waveform Capture (Read/Write Command)</b>						
035E	Waveform Clear Command	0 to 1	---	1	F126	0 (No)
<b>Waveform Capture (Read Only)</b>						
035F	Waveform Last Clear Date	0 to 4294967295	---	1	F050	0
<b>Waveform Capture (Read/Write Command)</b>						
0361	Waveform Trigger Command	0 to 1	---	1	F126	0 (No)
<b>Waveform Capture (Read/Write Setting)</b>						
0362	Waveform Trigger Mode	0 to 1	---	1	F118	0 (Automatic Overwrite)
0363	Waveform Trigger Position	0 to 119	Half Cycles	1	F001	60
<b>Waveform Capture (Read Only)</b>						
0364	Waveforms Since Last Clear	0 to 4294967295	---	1	F003	0
0366	Reserved (2 items)	---	---	---	F001	0
<b>Waveform Capture (Read/Write Setting)</b>						

0368	Waveform Trigger Thru FlexLogic	0 to 65535	---	1	F300	0
<b>Preventive Maintenance (Read/Write Setting)</b>						
0370	Load Life Rating 800A	0 to 65535	---	1	F001	2800
0371	Load Life Rating 1600A	0 to 65535	---	1	F001	1200
0372	Load Life Rating 2000A	0 to 65535	---	1	F001	1000
0373	Load Life Rating 3200A	0 to 65535	---	1	F001	600
0374	Load Life Rating 4000A	0 to 65535	---	1	F001	500
0375	Load Life Rating 5000A	0 to 65535	---	1	F001	400
0376	Mechanical Life Rating 800A	0 to 65535	---	1	F001	12500
0377	Mechanical Life Rating 1600A	0 to 65535	---	1	F001	4000
0378	Mechanical Life Rating 2000A	0 to 65535	---	1	F001	4000
0379	Mechanical Life Rating 3200A	0 to 65535	---	1	F001	1500
037A	Mechanical Life Rating 4000A	0 to 65535	---	1	F001	1500
037B	Mechanical Life Rating 5000A	0 to 65535	---	1	F001	1500
037C	Load Life Max Current 800A	1 to 50	---	1	F001	15
037D	Load Life Max Current 1600A	1 to 50	---	1	F001	15
037E	Load Life Max Current 2000A	1 to 50	---	1	F001	15
037F	Load Life Max Current 3200A	1 to 50	---	1	F001	13
0380	Load Life Max Current 4000A	1 to 50	---	1	F001	9
0381	Load Life Max Current 5000A	1 to 50	---	1	F001	7
<b>Hardware Information (Read Only)</b>						
03A0	Flash Lifetime	1 to 10	---	1	F001	1
<b>Source Vectors (Read/Write Setting)</b>						
0408	Reserved (2 items)	---	---	---	F001	0
040A	Expected Nodes X State	0 to 4294967295	---	1	F722	0
040C	Source Node Identifier LED X State	0 to 4294967295	---	1	F722	0
040E	Node Setting Changed X State	0 to 4294967295	---	1	F722	0
<b>Source Vectors (Read Only)</b>						
0410	Nodes Communicating X State	0 to 4294967295	---	1	F722	0
0412	Nodes Commissioned X State	0 to 4294967295	---	1	F722	0
0414	Duplicate Nodes X State	0 to 4294967295	---	1	F722	0
0416	Node Internal Diagnostics X State	0 to 4294967295	---	1	F722	0
0418	Node System Diagnostics X State	0 to 4294967295	---	1	F722	0

041A	Node Hardware Diagnostics X State	0 to 4294967295	---	1	F722	0
041C	Node Reflected CPU Diagnostics X State	0 to 4294967295	---	1	F722	0
041E	Breaker Contact Position X State	0 to 4294967295	---	1	F722	0
0420	Breaker Primary Connection X State	0 to 4294967295	---	1	F722	0
0422	Breaker Lockout X State	0 to 4294967295	---	1	F722	0
0424	Summations Suspended X State	0 to 4294967295	---	1	F722	0
0426	Breaker Tripped X State	0 to 4294967295	---	1	F722	0
<b>Source Vectors (All Ack Vectors are Read/Write Setting; All State Vectors are Read Only)</b>						
0428	Undervoltage Trip Alarm State	0 to 4294967295	---	1	F722	0
042A	Undervoltage Trip Alarm Ack	0 to 4294967295	---	1	F722	0
042C	Undervoltage Alarm State	0 to 4294967295	---	1	F722	0
042E	Undervoltage Alarm Ack	0 to 4294967295	---	1	F722	0
0430	Overvoltage Trip Alarm State	0 to 4294967295	---	1	F722	0
0432	Overvoltage Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0434	Overvoltage Alarm State	0 to 4294967295	---	1	F722	0
0436	Overvoltage Alarm Ack	0 to 4294967295	---	1	F722	0
0438	Phase Loss Trip Alarm State	0 to 4294967295	---	1	F722	0
043A	Phase Loss Trip Alarm Ack	0 to 4294967295	---	1	F722	0
043C	Phase Loss Alarm State	0 to 4294967295	---	1	F722	0
043E	Phase Loss Alarm Ack	0 to 4294967295	---	1	F722	0
0440	Reverse Power Trip Alarm State	0 to 4294967295	---	1	F722	0
0442	Reverse Power Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0444	Reverse Power Alarm State	0 to 4294967295	---	1	F722	0
0446	Reverse Power Alarm Ack	0 to 4294967295	---	1	F722	0
0448	High Current Alarm State	0 to 4294967295	---	1	F722	0
044A	High Current Alarm Ack	0 to 4294967295	---	1	F722	0
044C	Underfrequency Trip Alarm State	0 to 4294967295	---	1	F722	0
044E	Underfrequency Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0450	Underfrequency Alarm State	0 to 4294967295	---	1	F722	0
0452	Underfrequency Alarm Ack	0 to 4294967295	---	1	F722	0
0454	Overfrequency Trip Alarm State	0 to 4294967295	---	1	F722	0
0456	Overfrequency Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0458	Overfrequency Alarm State	0 to 4294967295	---	1	F722	0

045A	Overfrequency Alarm Ack	0 to 4294967295	---	1	F722	0
045C	High Resistance Ground Fault Alarm State	0 to 4294967295	---	1	F722	0
045E	High Resistance Ground Fault Alarm Ack	0 to 4294967295	---	1	F722	0
0460	Breaker Open Failed Alarm State	0 to 4294967295	---	1	F722	0
0462	Breaker Open Failed Alarm Ack	0 to 4294967295	---	1	F722	0
0464	Long Time Overcurrent Trip Alarm State	0 to 4294967295	---	1	F722	0
0466	Long Time Overcurrent Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0468	Short Time Overcurrent Trip Alarm State	0 to 4294967295	---	1	F722	0
046A	Short Time Overcurrent Trip Alarm Ack	0 to 4294967295	---	1	F722	0
046C	Ground Fault Trip Alarm State	0 to 4294967295	---	1	F722	0
046E	Ground Fault Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0470	Ground Fault Alarm State	0 to 4294967295	---	1	F722	0
0472	Ground Fault Alarm Ack	0 to 4294967295	---	1	F722	0
0474	Analog IOC Trip Alarm State	0 to 4294967295	---	1	F722	0
0476	Analog IOC Trip Alarm Ack	0 to 4294967295	---	1	F722	0
0478	IOC Trip Alarm State	0 to 4294967295	---	1	F722	0
047A	IOC Trip Alarm Ack	0 to 4294967295	---	1	F722	0
047C	Node Control Power Lost State	0 to 4294967295	---	1	F722	0
047E	Node Control Power Lost Ack	0 to 4294967295	---	1	F722	0
0480	Node Communication Lost State	0 to 4294967295	---	1	F722	0
0482	Node Communication Lost Ack	0 to 4294967295	---	1	F722	0
0484	Breaker Load Life 50 State	0 to 4294967295	---	1	F722	0
0486	Breaker Load Life 50 Ack	0 to 4294967295	---	1	F722	0
0488	Breaker Load Life 75 State	0 to 4294967295	---	1	F722	0
048A	Breaker Load Life 75 Ack	0 to 4294967295	---	1	F722	0
048C	Breaker Load Life 90 State	0 to 4294967295	---	1	F722	0
048E	Breaker Load Life 90 Ack	0 to 4294967295	---	1	F722	0
0490	Breaker Accum Service Alarm State	0 to 4294967295	---	1	F722	0
0492	Breaker Accum Service Alarm Ack	0 to 4294967295	---	1	F722	0
0494	Breaker Mechanical Life 12 5 State	0 to 4294967295	---	1	F722	0
0496	Breaker Mechanical Life 12 5 Ack	0 to 4294967295	---	1	F722	0
0498	Breaker Mechanical Life 25 State	0 to 4294967295	---	1	F722	0
049A	Breaker Mechanical Life 25 Ack	0 to 4294967295	---	1	F722	0

049C	Breaker Mechanical Life 37 5 State	0 to 4294967295	---	1	F722	0
049E	Breaker Mechanical Life 37 5 Ack	0 to 4294967295	---	1	F722	0
04A0	Breaker Mechanical Life 50 State	0 to 4294967295	---	1	F722	0
04A2	Breaker Mechanical Life 50 Ack	0 to 4294967295	---	1	F722	0
04A4	Breaker Mechanical Life 62 5 State	0 to 4294967295	---	1	F722	0
04A6	Breaker Mechanical Life 62 5 Ack	0 to 4294967295	---	1	F722	0
04A8	Breaker Mechanical Life 75 State	0 to 4294967295	---	1	F722	0
04AA	Breaker Mechanical Life 75 Ack	0 to 4294967295	---	1	F722	0
04AC	Breaker Mechanical Life 87 5 State	0 to 4294967295	---	1	F722	0
04AE	Breaker Mechanical Life 87 5 Ack	0 to 4294967295	---	1	F722	0
04B0	Breaker Mechanical Life 100 State	0 to 4294967295	---	1	F722	0
04B2	Breaker Mechanical Life 100 Ack	0 to 4294967295	---	1	F722	0
04B4	Bus Differential Trip Alarm State	0 to 4294967295	---	1	F722	0
04B6	Bus Differential Trip Alarm Ack	0 to 4294967295	---	1	F722	0
04B8	Bus Differential Alarm State	0 to 4294967295	---	1	F722	0
04BA	Bus Differential Alarm Ack	0 to 4294967295	---	1	F722	0
04BC	Multi Source Ground Fault Trip Alarm State	0 to 4294967295	---	1	F722	0
04BE	Multi Source Ground Fault Trip Alarm Ack	0 to 4294967295	---	1	F722	0
04C0	Multi Source Ground Fault Alarm State	0 to 4294967295	---	1	F722	0
04C2	Multi Source Ground Fault Alarm Ack	0 to 4294967295	---	1	F722	0
04C4	Hardware Synch Card Lost State	0 to 4294967295	---	1	F722	0
04C6	Hardware Synch Card Lost Ack	0 to 4294967295	---	1	F722	0
04CA	Compartment ID Button Missing Alarm State	0 to 4294967295	---	1	F722	0
04CE	Compartment ID Button Missing Alarm Ack	0 to 4294967295	---	1	F722	0
04D0	Control Alarm State	0 to 4294967295	---	1	F722	0
04D2	Control Alarm Ack	0 to 4294967295	---	1	F722	0
04D4	Redundant CPU Node Comm Loss State	0 to 4294967295	---	1	F722	0
04D6	Redundant CPU Node Comm Loss Ack	0 to 4294967295	---	1	F722	0
04D8	Redundant CPU Hardware Synch Loss State	0 to 4294967295	---	1	F722	0
04DA	Redundant CPU Hardware Synch Loss Ack	0 to 4294967295	---	1	F722	0
04DC	Discrete IO Misconfigured State	0 to 4294967295	---	1	F722	0
04DE	Discrete IO Misconfigured Ack	0 to 4294967295	---	1	F722	0
04E0	Reserved (8 items)	---	---	---	F001	0

04E8	HRGF Location Alarm State	0 to 4294967295	---	1	F722	0
04EA	HRGF Location Alarm Ack	0 to 4294967295	---	1	F722	0
04EC	Reserved (28 items)	---	---	---	F001	0
0508	SRC X Node Ground CT Connected	0 to 4294967295	---	1	F722	0
050A	High Current Trigger Alarm State	0 to 4294967295	---	1	F722	0
050C	High Current Trigger Alarm Ack	0 to 4294967295	---	1	F722	0
050E	Reduced Let Thru Over 8 Hours Alarm State	0 to 4294967295	---	1	F722	0
0510	Reduced Let Thru Over 8 Hours Alarm Ack	0 to 4294967295	---	1	F722	0
0512	HRGF Location Contactor Operating Alarm State	0 to 4294967295	---	1	F722	0
0514	HRGF Location Contactor Operating Alarm Ack	0 to 4294967295	---	1	F722	0
0516	HRGF Location Trip Alarm State	0 to 4294967295	---	1	F722	0
0518	HRGF Location Trip Alarm Ack	0 to 4294967295	---	1	F722	0
<b>Voltage (Read Only) (30 modules)</b>						
0542	Phase AG Voltage RMS	0 to 999999.999	V	0.001	F060	0
0544	Phase BG Voltage RMS	0 to 999999.999	V	0.001	F060	0
0546	Phase CG Voltage RMS	0 to 999999.999	V	0.001	F060	0
0548	Phase AB or AC Voltage RMS	0 to 999999.999	V	0.001	F060	0
054A	Phase BC or BA Voltage RMS	0 to 999999.999	V	0.001	F060	0
054C	Phase CA or CB Voltage RMS	0 to 999999.999	V	0.001	F060	0
054E	SRC X Voltage Reserved (30 items)	---	---	---	F001	0
056C	...Repeated for module number 2					
0596	...Repeated for module number 3					
05C0	...Repeated for module number 4					
05EA	...Repeated for module number 5					
0614	...Repeated for module number 6					
063E	...Repeated for module number 7					
0668	...Repeated for module number 8					
0692	...Repeated for module number 9					
06BC	...Repeated for module number 10					
06E6	...Repeated for module number 11					
0710	...Repeated for module number 12					

073A	...Repeated for module number 13					
0764	...Repeated for module number 14					
078E	...Repeated for module number 15					
07B8	...Repeated for module number 16					
0700	...Repeated for module number 17					
080C	...Repeated for module number 18					
0836	...Repeated for module number 19					
0860	...Repeated for module number 20					
088A	...Repeated for module number 21					
08B4	...Repeated for module number 22					
08DE	...Repeated for module number 23					
0908	...Repeated for module number 24					
0932	...Repeated for module number 25					
095C	...Repeated for module number 26					
0986	...Repeated for module number 27					
09B0	...Repeated for module number 28					
09DA	...Repeated for module number 29					
0A04	...Repeated for module number 30					
<b>Current (Read Only) (30 modules)</b>						
0A2E	Phase A Current RMS	0 to 999999.999	A	0.001	F060	0
0A30	Phase B Current RMS	0 to 999999.999	A	0.001	F060	0
0A32	Phase C Current RMS	0 to 999999.999	A	0.001	F060	0
0A34	Neutral Current RMS	0 to 999999.999	A	0.001	F060	0
0A36	Ground Current RMS	0 to 999999.999	A	0.001	F060	0
0A38	...Repeated for module number 2					
0A42	...Repeated for module number 3					
0A4C	...Repeated for module number 4					
0A56	...Repeated for module number 5					
0A60	...Repeated for module number 6					
0A6A	...Repeated for module number 7					
0A74	...Repeated for module number 8					
0A7E	...Repeated for module number 9					
0A88	...Repeated for module number 10					



0A92	...Repeated for module number 11					
0A9C	...Repeated for module number 12					
0AA6	...Repeated for module number 13					
0AB0	...Repeated for module number 14					
0ABA	...Repeated for module number 15					
0AC4	...Repeated for module number 16					
0ACE	...Repeated for module number 17					
0AD8	...Repeated for module number 18					
0AE2	...Repeated for module number 19					
0AEC	...Repeated for module number 20					
0AF6	...Repeated for module number 21					
0B00	...Repeated for module number 22					
0B0A	...Repeated for module number 23					
0B14	...Repeated for module number 24					
0B1E	...Repeated for module number 25					
0B28	...Repeated for module number 26					
0B32	...Repeated for module number 27					
0B3C	...Repeated for module number 28					
0B46	...Repeated for module number 29					
0B50	...Repeated for module number 30					
<b>Power (Read Only) (30 modules)</b>						
0EAE	Three Phase Real Power	-1000000000000to 1000000000000	W	0.001	F060	0
0EB0	Phase A Real Power	-1000000000000to 1000000000000	W	0.001	F060	0
0EB2	Phase B Real Power	-1000000000000to 1000000000000	W	0.001	F060	0
0EB4	Phase C Real Power	-1000000000000to 1000000000000	W	0.001	F060	0
0EB6	Three Phase Reactive Power	-1000000000000to 1000000000000	var	0.001	F060	0
0EB8	Phase A Reactive Power	-1000000000000to 1000000000000	var	0.001	F060	0
0EBA	Phase B Reactive Power	-1000000000000to 1000000000000	var	0.001	F060	0

0EBC	Phase C Reactive Power	-1000000000000to 1000000000000	var	0.001	F060	0
0EBE	Three Phase Apparent Power	-1000000000000to 1000000000000	VA	0.001	F060	0
0EC0	Phase A Apparent Power	-1000000000000to 1000000000000	VA	0.001	F060	0
0EC2	Phase B Apparent Power	-1000000000000to 1000000000000	VA	0.001	F060	0
0EC4	Phase C Apparent Power	-1000000000000to 1000000000000	VA	0.001	F060	0
0EC6	Three Phase Power Factor	-0.999 to 1	---	0.001	F013	0
0EC7	Phase A Power Factor	-0.999 to 1	---	0.001	F013	0
0EC8	Phase B Power Factor	-0.999 to 1	---	0.001	F013	0
0EC9	Phase C Power Factor	-0.999 to 1	---	0.001	F013	0
0ECA	SRC X Power Reserved (10 items)	---	---	---	F001	0
0ED4	...Repeated for module number 2					
0EFA	...Repeated for module number 3					
0F20	...Repeated for module number 4					
0F46	...Repeated for module number 5					
0F6C	...Repeated for module number 6					
0F92	...Repeated for module number 7					
0FB8	...Repeated for module number 8					
0FDE	...Repeated for module number 9					
1004	...Repeated for module number 10					
102A	...Repeated for module number 11					
1050	...Repeated for module number 12					
1076	...Repeated for module number 13					
109C	...Repeated for module number 14					
10C2	...Repeated for module number 15					
10E8	...Repeated for module number 16					
110E	...Repeated for module number 17					
1134	...Repeated for module number 18					
115A	...Repeated for module number 19					
1180	...Repeated for module number 20					

11A6	...Repeated for module number 21					
11CC	...Repeated for module number 22					
11F2	...Repeated for module number 23					
1218	...Repeated for module number 24					
123E	...Repeated for module number 25					
1264	...Repeated for module number 26					
128A	...Repeated for module number 27					
12B0	...Repeated for module number 28					
12D6	...Repeated for module number 29					
12FC	...Repeated for module number 30					
<b>Energy (Read Only Non-Volatile) (30 modules)</b>						
1322	Positive Watthour	0 to 1000000000000	Wh	0.001	F060	0
1324	Phase A Positive Watthour	0 to 1000000000000	Wh	0.001	F060	0
1326	Phase B Positive Watthour	0 to 1000000000000	Wh	0.001	F060	0
1328	Phase C Positive Watthour	0 to 1000000000000	Wh	0.001	F060	0
132A	Negative Watthour	0 to 1000000000000	Wh	0.001	F060	0
132C	Phase A Negative Watthour	0 to 1000000000000	Wh	0.001	F060	0
132E	Phase B Negative Watthour	0 to 1000000000000	Wh	0.001	F060	0
1330	Phase C Negative Watthour	0 to 1000000000000	Wh	0.001	F060	0
1332	Positive Varhour	0 to 1000000000000	varh	0.001	F060	0
1334	Phase A Positive Varhour	0 to 1000000000000	varh	0.001	F060	0
1336	Phase B Positive Varhour	0 to 1000000000000	varh	0.001	F060	0
1338	Phase C Positive Varhour	0 to 1000000000000	varh	0.001	F060	0

133A	Negative Varhour	0 to 1000000000000	varh	0.001	F060	0
133C	Phase A Negative Varhour	0 to 1000000000000	varh	0.001	F060	0
133E	Phase B Negative Varhour	0 to 1000000000000	varh	0.001	F060	0
1340	Phase C Negative Varhour	0 to 1000000000000	varh	0.001	F060	0
1342	Vahour	0 to 1000000000000	vah	0.001	F060	0
1344	Phase A Vahour	0 to 1000000000000	vah	0.001	F060	0
1346	Phase B Vahour	0 to 1000000000000	vah	0.001	F060	0
1348	Phase C Vahour	0 to 1000000000000	vah	0.001	F060	0
134A	SRC X Energy Reserved (10 items)	---	---	---	F001	0
1354	...Repeated for module number 2					
1386	...Repeated for module number 3					
13B8	...Repeated for module number 4					
13EA	...Repeated for module number 5					
141C	...Repeated for module number 6					
144E	...Repeated for module number 7					
1480	...Repeated for module number 8					
14B2	...Repeated for module number 9					
14E4	...Repeated for module number 10					
1516	...Repeated for module number 11					
1548	...Repeated for module number 12					
157A	...Repeated for module number 13					
15AC	...Repeated for module number 14					
15DE	...Repeated for module number 15					
1610	...Repeated for module number 16					
1642	...Repeated for module number 17					
1674	...Repeated for module number 18					
16A6	...Repeated for module number 19					

16D8	...Repeated for module number 20					
170A	...Repeated for module number 21					
173C	...Repeated for module number 22					
176E	...Repeated for module number 23					
17A0	...Repeated for module number 24					
17D2	...Repeated for module number 25					
1804	...Repeated for module number 26					
1836	...Repeated for module number 27					
1868	...Repeated for module number 28					
189A	...Repeated for module number 29					
18CC	...Repeated for module number 30					
<b>Source Harmonic Analysis (Read Only) (30 modules)</b>						
18FE	SRC X Phase A Voltage THD	0 to 1	---	0.001	F001	0
18FF	SRC X Phase B Voltage THD	0 to 1	---	0.001	F001	0
1900	SRC X Phase C Voltage THD	0 to 1	---	0.001	F001	0
1901	SRC X Phase A Current THD	0 to 1	---	0.001	F001	0
1902	SRC X Phase B Current THD	0 to 1	---	0.001	F001	0
1903	SRC X Phase C Current THD	0 to 1	---	0.001	F001	0
1904	SRC X Phase N Current THD	0 to 1	---	0.001	F001	0
1905	SRC X Phase A K Factor	0 to 6553.5	---	0.1	F001	10
1906	SRC X Phase B K Factor	0 to 6553.5	---	0.1	F001	10
1907	SRC X Phase C K Factor	0 to 6553.5	---	0.1	F001	10
1908	SRC X Phase N K Factor	0 to 6553.5	---	0.1	F001	10
1909	SRC X Harmonic Analysis Reserved (10 items)	---	---	---	F001	0
1913	...Repeated for module number 2					
1928	...Repeated for module number 3					
193D	...Repeated for module number 4					
1952	...Repeated for module number 5					
1967	...Repeated for module number 6					
197C	...Repeated for module number 7					
1991	...Repeated for module number 8					
19A6	...Repeated for module number 9					

19BB	...Repeated for module number 10					
19D0	...Repeated for module number 11					
19E5	...Repeated for module number 12					
19FA	...Repeated for module number 13					
1A0F	...Repeated for module number 14					
1A24	...Repeated for module number 15					
1A39	...Repeated for module number 16					
1A4E	...Repeated for module number 17					
1A63	...Repeated for module number 18					
1A78	...Repeated for module number 19					
1A8D	...Repeated for module number 20					
1AA2	...Repeated for module number 21					
1AB7	...Repeated for module number 22					
1ACC	...Repeated for module number 23					
1AE1	...Repeated for module number 24					
1AF6	...Repeated for module number 25					
1B0B	...Repeated for module number 26					
1B20	...Repeated for module number 27					
1B35	...Repeated for module number 28					
1B4A	...Repeated for module number 29					
1B5F	...Repeated for module number 30					
<b>Source Demand Peaks (Read Only Non-Volatile) (30 modules)</b>						
1B74	SRC X Maximum kW	-1000000000000to 1000000000000	W	0.001	F060	0
1B76	SRC X Maximum kW DateTime	0 to 4294967295	---	1	F050	0
1B78	SRC X Maximum kvar	-1000000000000to 1000000000000	var	0.001	F060	0
1B7A	SRC X Maximum kvar DateTime	0 to 4294967295	---	1	F050	0
1B7C	SRC X Maximum kVA	-1000000000000to 1000000000000	VA	0.001	F060	0
1B7E	SRC X Maximum kVA DateTime	0 to 4294967295	---	1	F050	0
1B80	SRC X Demand Peaks Reserved (8 items)	---	---	---	F001	0
1B88	...Repeated for module number 2					
1B9C	...Repeated for module number 3					

1BB0	...Repeated for module number 4					
1BC4	...Repeated for module number 5					
1BD8	...Repeated for module number 6					
1BEC	...Repeated for module number 7					
1C00	...Repeated for module number 8					
1C14	...Repeated for module number 9					
1C28	...Repeated for module number 10					
1C3C	...Repeated for module number 11					
1C50	...Repeated for module number 12					
1C64	...Repeated for module number 13					
1C78	...Repeated for module number 14					
1C8C	...Repeated for module number 15					
1CA0	...Repeated for module number 16					
1CB4	...Repeated for module number 17					
1CC8	...Repeated for module number 18					
1CDC	...Repeated for module number 19					
1CF0	...Repeated for module number 20					
1D04	...Repeated for module number 21					
1D18	...Repeated for module number 22					
1D2C	...Repeated for module number 23					
1D40	...Repeated for module number 24					
1D54	...Repeated for module number 25					
1D68	...Repeated for module number 26					
1D7C	...Repeated for module number 27					
1D90	...Repeated for module number 28					
1DA4	...Repeated for module number 29					
1DB8	...Repeated for module number 30					
<b>Power Peaks (Read Only Non-Volatile) (30 modules)</b>						
1DCC	SRC X Three Phase Power Factor Min	-0.999 to 1	---	0.001	F013	0
1DCD	SRC X Three Phase Power Factor Min Date	0 to 4294967295	---	1	F050	0
1DCF	SRC X Phase A Power Factor Min	-0.999 to 1	---	0.001	F013	0
1DD0	SRC X Phase A Power Factor Min Date	0 to 4294967295	---	1	F050	0
1DD2	SRC X Phase B Power Factor Min	-0.999 to 1	---	0.001	F013	0

1DD3	SRC X Phase B Power Factor Min Date	0 to 4294967295	---	1	F050	0
1DD5	SRC X Phase C Power Factor Min	-0.999 to 1	---	0.001	F013	0
1DD6	SRC X Phase C Power Factor Min Date	0 to 4294967295	---	1	F050	0
1DD8	SRC X Three Phase Power Factor Max	-0.999 to 1	---	0.001	F013	0
1DD9	SRC X Three Phase Power Factor Max Date	0 to 4294967295	---	1	F050	0
1ddb	SRC X Phase A Power Factor Max	-0.999 to 1	---	0.001	F013	0
1DDC	SRC X Phase A Power Factor Max Date	0 to 4294967295	---	1	F050	0
1DDE	SRC X Phase B Power Factor Max	-0.999 to 1	---	0.001	F013	0
1DDF	SRC X Phase B Power Factor Max Date	0 to 4294967295	---	1	F050	0
1DE1	SRC X Phase C Power Factor Max	-0.999 to 1	---	0.001	F013	0
1DE2	SRC X Phase C Power Factor Max Date	0 to 4294967295	---	1	F050	0
1DE4	SRC X Last Clear Energy Date	0 to 4294967295	---	1	F050	0
1DE6	SRC X Last Commissioned Date	0 to 4294967295	---	1	F050	0
1DE8	SRC X Power Peaks Reserved (47 items)	---	---	---	F001	0
1E17	...Repeated for module number 2					
1E62	...Repeated for module number 3					
1EAD	...Repeated for module number 4					
1EF8	...Repeated for module number 5					
1F43	...Repeated for module number 6					
1F8E	...Repeated for module number 7					
1FD9	...Repeated for module number 8					
2024	...Repeated for module number 9					
206F	...Repeated for module number 10					
20BA	...Repeated for module number 11					
2105	...Repeated for module number 12					
2150	...Repeated for module number 13					
219B	...Repeated for module number 14					
21E6	...Repeated for module number 15					
2231	...Repeated for module number 16					
227C	...Repeated for module number 17					
22C7	...Repeated for module number 18					
2312	...Repeated for module number 19					
235D	...Repeated for module number 20					



23A8	...Repeated for module number 21					
23F3	...Repeated for module number 22					
243E	...Repeated for module number 23					
2489	...Repeated for module number 24					
24D4	...Repeated for module number 25					
251F	...Repeated for module number 26					
256A	...Repeated for module number 27					
25B5	...Repeated for module number 28					
2600	...Repeated for module number 29					
264B	...Repeated for module number 30					
<b>Setting Enable (Read/Write Setting)</b>						
2696	GF Tripping Priority Enable	0 to 1	---	1	F102	0 (Disabled)
2697	Reserved (4 items)	---	---	---	F001	0
<b>Source Demand (Read Only) (30 modules)</b>						
26A2	SRC X Previous Internal kW	-1000000000000to 1000000000000	W	0.001	F060	0
26A4	SRC X Previous Interval kvar	-1000000000000to 1000000000000	var	0.001	F060	0
26A6	SRC X Previous Interval kVA	-1000000000000to 1000000000000	VA	0.001	F060	0
<b>Source Demand (Read Only Non-Volatile) (30 modules)</b>						
26A8	SRC X Last Reset DateTime	0 to 4294967295	---	1	F050	0
26AA	SRC X Number Of Demand Resets	0 to 4294967295	---	1	F003	0
<b>Source Demand (Read/Write Command) (30 modules)</b>						
26AC	SRC X Demand Reset	0 to 1	---	1	F126	0 (No)
26AD	SRC X Demand Log Clear Command	0 to 1	---	1	F126	0 (No)
<b>Source Demand (Read Only Non-Volatile) (30 modules)</b>						
26AE	SRC X Demand Log Last Cleared Date	0 to 4294967295	---	1	F050	0
<b>Source Demand (Read Only) (30 modules)</b>						
26B0	SRC X Demand Log Records Since Last Clear	0 to 4294967295	---	1	F003	0
26B2	SRC X Demand Log Interval Records Available	0 to 4294967295	---	1	F003	0
26B4	SRC X Demand Reserved (20 items)	---	---	---	F001	0

26C8	...Repeated for module number 2					
26EE	...Repeated for module number 3					
2714	...Repeated for module number 4					
273A	...Repeated for module number 5					
2760	...Repeated for module number 6					
2786	...Repeated for module number 7					
27AC	...Repeated for module number 8					
27D2	...Repeated for module number 9					
27F8	...Repeated for module number 10					
281E	...Repeated for module number 11					
2844	...Repeated for module number 12					
286A	...Repeated for module number 13					
2890	...Repeated for module number 14					
28B6	...Repeated for module number 15					
28DC	...Repeated for module number 16					
2902	...Repeated for module number 17					
2928	...Repeated for module number 18					
294E	...Repeated for module number 19					
2974	...Repeated for module number 20					
299A	...Repeated for module number 21					
29C0	...Repeated for module number 22					
29E6	...Repeated for module number 23					
2A0C	...Repeated for module number 24					
2A32	...Repeated for module number 25					
2A58	...Repeated for module number 26					
2A7E	...Repeated for module number 27					
2AA4	...Repeated for module number 28					
2ACA	...Repeated for module number 29					
2AF0	...Repeated for module number 30					
<b>Source Status (Read Only) (30 modules)</b>						
2B16	SRC X Node ID	0 to 29	---	1	F001	0
2B17	Reserved (3 items)	---	---	---	F001	0
2B1A	SRC X Frame Rating	0 to 65535	---	1	F001	0

2B1B	SRC X CT Rating	0 to 65535	---	1	F001	0
2B1C	SRC X Breaker Type	0 to 1	---	1	F715	0 (UL)
2B1D	SRC X NodeProt Protection Config	0 to 65535	---	1	F705	0
2B1E	SRC X Node Firmware Version	0 to 655.35	---	0.01	F001	0
2B1F	SRC X Hardware Version	0 to 255	---	1	F001	0
2B20	SRC X Message Protocol Version	0 to 655.35	---	0.01	F001	0
2B21	SRC X Product Type	0 to 2	---	1	F716	0 (Low Voltage Switchgear)
2B22	SRC X NodeProt Rating Switch	0 to 65535	---	1	F001	0
2B23	SRC X NodeProt LT Setting	0 to 655.35	---	0.01	F001	0
2B24	SRC X NodeProt IOC Threshold Setting	0 to 655.35	---	0.01	F001	0
2B25	SRC X NodeProt Ground Fault Setting	0 to 1	---	1	F001	0
2B26	SRC X NodeProt Short Time Setting	0 to 1	---	1	F001	0
2B27	SRC X Node Internal Diagnostics	0 to 65535	---	1	F701	0
2B28	SRC X Node System Diagnostics 1	0 to 65535	---	1	F702	0
2B29	SRC X Node System Diagnostics 2	0 to 65535	---	1	F703	0
2B2A	SRC X Node Hardware Diagnostics	0 to 65535	---	1	F704	0
2B2B	SRC X Node Physical Status	0 to 65535	---	1	F708	0
2B2C	SRC X Node Logic and Trip Status	0 to 65535	---	1	F709	0
2B2D	SRC X Node Last Trip Sequence Number	0 to 4294967295	---	1	F003	0
2B2F	SRC X Reflected CPU Diagnostics	0 to 65535	---	1	F706	0
2B30	SRC X Reflected CPU 0 Command	0 to 65535	---	1	F707	0
2B31	SRC X Reflected CPU 1 Command	0 to 65535	---	1	F707	0
2B32	SRC X Fan Status	0 to 1	---	1	F108	0 (Off)
2B33	SRC X CT Rating Node Report	0 to 65535	---	1	F001	0
2B34	SRC X Node Serial Number	---	---	---	F205	(none)
2B3A	SRC X Phase A Frequency	0 to 655.35	Hz	0.01	F001	0
2B3B	SRC X Phase B Frequency	0 to 655.35	Hz	0.01	F001	0
2B3C	SRC X Phase C Frequency	0 to 655.35	Hz	0.01	F001	0
2B3D	SRC X Topology	0 to 15	---	1	F001	1
2B3E	Reserved (2 items)	---	---	---	F001	0
2B40	SRC X Node Status Reserved (38 items)	---	---	---	F001	0
2B66	...Repeated for module number 2					

2BB6	...Repeated for module number 3					
2C06	...Repeated for module number 4					
2C56	...Repeated for module number 5					
2CA6	...Repeated for module number 6					
2CF6	...Repeated for module number 7					
2D46	...Repeated for module number 8					
2D96	...Repeated for module number 9					
2DE6	...Repeated for module number 10					
2E36	...Repeated for module number 11					
2E86	...Repeated for module number 12					
2ED6	...Repeated for module number 13					
2F26	...Repeated for module number 14					
2F76	...Repeated for module number 15					
2FC6	...Repeated for module number 16					
3016	...Repeated for module number 17					
3066	...Repeated for module number 18					
30B6	...Repeated for module number 19					
3106	...Repeated for module number 20					
3156	...Repeated for module number 21					
31A6	...Repeated for module number 22					
31F6	...Repeated for module number 23					
3246	...Repeated for module number 24					
3296	...Repeated for module number 25					
32E6	...Repeated for module number 26					
3336	...Repeated for module number 27					
3386	...Repeated for module number 28					
33D6	...Repeated for module number 29					
3426	...Repeated for module number 30					
<b>Source Counters (Read/Write Setting) (30 modules)</b>						
3476	Reserved (840 items)	---	---	---	F001	0
<b>Source Settings (Read/Write Setting) (30 modules)</b>						
37BE	SRC X Node Commissioned	0 to 1	---	1	F102	0 (Disabled)
<b>Source Settings (Read Only) (30 modules)</b>						

37BF	SRC X PT Source Node Identifier	0 to 29	---	1	F001	0
<b>Source Settings (Read/Write Setting) (30 modules)</b>						
37C0	SRC X Breaker Connection	0 to 1	---	1	F712	0 (Forward)
37C1	Reserved (2 items)	---	---	---	F001	0
37C3	Source Settings Reserved (15 items)	---	---	---	F001	0
37D2	SRC X PT Rating	0 to 6	---	1	F719	0 (None)
37D3	SRC X UV Trip Enable	0 to 1	---	1	F102	0 (Disabled)
37D4	SRC X UV Trip Curve Type	0 to 1	---	1	F726	1 (Constant time curve)
37D5	SRC X UV Trip Pickup Setting	10 to 95	---	1	F001	50
37D6	SRC X UV Trip Time Delay	0.5 to 600	---	0.5	F001	300
37D7	SRC X UV Trip Phase Requirement	1 to 3	---	1	F001	1
37D8	SRC X UV Trip Block Volt Enable	0 to 1	---	1	F102	0 (Disabled)
37D9	SRC X UV Trip Block Volt Setting	5 to 75	---	1	F001	5
37DA	SRC X UV Trip Open or Trip Setting	0 to 1	---	1	F727	1 (Trip and activate lockout)
37DB	SRC X UV Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
37DC	SRC X UV Alarm Curve Type	0 to 1	---	1	F726	1 (Constant time curve)
37DD	SRC X UV Alarm Pickup Setting	10 to 95	---	1	F001	50
37DE	SRC X UV Alarm Time Delay	0.5 to 600	---	0.5	F001	150
37DF	SRC X UV Alarm Phase Requirement	1 to 3	---	1	F001	1
37E0	SRC X UV Alarm Block Volt Enable	0 to 1	---	1	F102	0 (Disabled)
37E1	SRC X UV Alarm Block Volt Setting	5 to 75	---	1	F001	5
37E2	SRC X OV Trip Enable	0 to 1	---	1	F102	0 (Disabled)
37E3	SRC X OV Trip Pickup Setting	105 to 125	---	1	F001	120
37E4	SRC X OV Trip Time Delay	0.5 to 600	---	0.5	F001	300
37E5	SRC X OV Trip Phase Requirement	1 to 3	---	1	F001	1
37E6	SRC X OV Trip Open or Trip Setting	0 to 1	---	1	F727	1 (Trip and activate lockout)
37E7	SRC X OV Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
37E8	SRC X OV Alarm Pickup Threshold	105 to 125	---	1	F001	120
37E9	SRC X OV Alarm Time Delay	0.5 to 600	---	0.5	F001	150
37EA	SRC X OV Alarm Phase Requirement	1 to 3	---	1	F001	1

37EB	Source Settings Reserved 2 (7 items)	---	---	---	F001	0
37F2	SRC X PL Trip Enable	0 to 1	---	1	F102	0 (Disabled)
37F3	SRC X PL Trip Pickup Setting	8 to 50	---	1	F001	8
37F4	SRC X PL Trip Time Delay	0.5 to 600	---	0.5	F001	300
37F5	SRC X PL Trip Block Volt Enable	0 to 1	---	1	F102	0 (Disabled)
37F6	SRC X PL Open or Trip Setting	0 to 1	---	1	F727	1 (Trip and activate lockout)
37F7	SRC X PL Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
37F8	SRC X PL Alarm Pickup Setting	8 to 50	---	1	F001	8
37F9	SRC X PL Alarm Time Delay	0.5 to 600	---	0.5	F001	150
37FA	SRC X PL Alarm Block Volt Enable	0 to 1	---	1	F102	0 (Disabled)
<b>Source Settings (Read Only) (30 modules)</b>						
37FB	SRC X PL Trip Voltage Setting	5 to 5	---	1	F001	5
37FC	SRC X PL Alarm Blocking Voltage Setting	5 to 5	---	1	F001	5
<b>Source Settings (Read/Write Setting) (30 modules)</b>						
37FD	Source Settings Reserved 3 (3 items)	---	---	---	F001	0
3800	SRC X Rev Power Trip Enable	0 to 1	---	1	F102	0 (Disabled)
3801	SRC X Rev Power Trip Pickup Setting	10 to 990	---	10	F001	990
3802	SRC X Rev Power Trip Time Delay	0.5 to 600	---	0.5	F001	300
3803	SRC X Rev Power Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
3804	SRC X Rev Power Alarm Pickup Setting	10 to 990	---	10	F001	990
3805	SRC X Rev Power Alarm Time Delay	0.5 to 600	---	0.5	F001	150
3806	SRC X Rev Power Trip or Open	0 to 1	---	1	F727	1 (Trip and activate lockout)
3807	Source Settings Reserved 4 (4 items)	---	---	---	F001	0
380B	SRC X High Curr Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
380C	SRC X High Curr Alarm Pickup Setting	50 to 200	---	5	F001	200
380D	SRC X High Curr Alarm Time Delay	1 to 15	---	1	F001	15
380E	Source Settings Reserved 5 (5 items)	---	---	---	F001	0
3813	SRC X Total Breaker Operations	0 to 65535	---	1	F001	0
3814	SRC X Total Breaker No Load Operations	0 to 65535	---	1	F001	0
3815	SRC X Total Breaker Load Operations	0 to 65535	---	1	F001	0
3816	SRC X Total Breaker Fault Operations	0 to 65535	---	1	F001	0

3817	SRC X Breaker Percent Load Life	0 to 655.35	---	0.01	F001	0
<b>Source Settings (Read Only) (30 modules)</b>						
3818	SRC X Percent Mechanical Life	0 to 655.35	---	0.01	F001	0
<b>Source Settings (Read/Write Setting) (30 modules)</b>						
3819	SRC X Time Date Last Breaker Operation	0 to 4294967295	---	1	F050	0
381B	SRC X Time Date Initial Energization	0 to 4294967295	---	1	F050	0
<b>Source Settings (Read Only) (30 modules)</b>						
381D	SRC X Breaker Service Hours	0 to 4294967295	---	1	F003	0
<b>Source Settings (Read/Write Setting) (30 modules)</b>						
381F	Source Settings Reserved 6 (5 items)	---	---	---	F001	0
3824	SRC X UF Trip Enable	0 to 1	---	1	F102	0 (Disabled)
3825	SRC X UF Trip Pickup Setting	45 to 60	---	0.1	F001	450
3826	SRC X UF Trip Time Delay	0.1 to 600	---	0.1	F001	300
3827	SRC X UF Trip Blocking Voltage Enable	0 to 1	---	1	F102	0 (Disabled)
3828	SRC X UF Trip or Open setting	0 to 1	---	1	F727	1 (Trip and activate lockout)
3829	SRC X UF Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
382A	SRC X UF Alarm Pickup Setting	45 to 60	---	0.1	F001	450
382B	SRC X UF Alarm Time Delay	0.1 to 600	---	0.1	F001	150
382C	SRC X UF Alarm Blocking Voltage Enable	0 to 1	---	1	F102	0 (Disabled)
382D	SRC X OF Trip Enable	0 to 1	---	1	F102	0 (Disabled)
382E	SRC X OF Trip Pickup Setting	50 to 70	---	0.1	F001	500
382F	SRC X OF Trip Time Delay	0.1 to 600	---	0.1	F001	300
3830	SRC X OF Trip Blocking Voltage Enable	0 to 1	---	1	F102	0 (Disabled)
3831	SRC X OF Trip or Open setting	0 to 1	---	1	F727	1 (Trip and activate lockout)
3832	SRC X OF Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
3833	SRC X OF Alarm Pickup Setting	50 to 70	---	0.1	F001	500
3834	SRC X OF Alarm Time Delay	0.1 to 600	---	0.1	F001	150
3835	SRC X OF Alarm Blocking Voltage Enable	0 to 1	---	1	F102	0 (Disabled)
3836	SRC X HRGF Enable	0 to 1	---	1	F102	0 (Disabled)
3837	SRC X HRGF Pickup	0.1 to 10	---	0.1	F001	20
3838	SRC X HRGF Delay	0.5 to 5	---	0.1	F001	5

3839	SRC X HRGF Ground Resistance	5 to 500	---	1	F001	5
383A	SRC X HRGF CT Rating	10 to 10	---	1	F001	10
383B	Reserved (8 items)	---	---	---	F001	0
3843	SRC X High Curr Trigger Alarm Enable	0 to 1	---	1	F102	0 (Disabled)
3844	SRC X High Curr Trigger Alarm Pickup Setting	0.1 to 9	---	0.1	F001	20
3845	SRC X High Curr Trigger Alarm Delay Setting	1 to 120	---	1	F001	12
3846	SRC X High Curr Trigger Alarm WFC Enable	0 to 1	---	1	F102	0 (Disabled)
3847	SRC X High Curr Trigger Alarm Max WF	0 to 30	---	1	F001	15
<b>Source Settings (Read Only) (30 modules)</b>						
3848	SRC X High Curr Trigger Alarm WF Triggered	0 to 30	---	1	F001	0
<b>Source Settings (Read/Write Command) (30 modules)</b>						
3849	SRC X High Curr Trigger Alarm WF Count Reset	0 to 1	---	1	F126	0 (No)
384A	SRC X Settings Reserved (40 items)	---	---	---	F001	0
3872	...Repeated for module number 2					
3926	...Repeated for module number 3					
39DA	...Repeated for module number 4					
3A8E	...Repeated for module number 5					
3B42	...Repeated for module number 6					
3BF6	...Repeated for module number 7					
3CAA	...Repeated for module number 8					
3D5E	...Repeated for module number 9					
3E12	...Repeated for module number 10					
3EC6	...Repeated for module number 11					
3F7A	...Repeated for module number 12					
402E	...Repeated for module number 13					
4000	...Repeated for module number 14					
4196	...Repeated for module number 15					
424A	...Repeated for module number 16					
42FE	...Repeated for module number 17					
43B2	...Repeated for module number 18					
4466	...Repeated for module number 19					



451A	...Repeated for module number 20					
45CE	...Repeated for module number 21					
4682	...Repeated for module number 22					
4736	...Repeated for module number 23					
47EA	...Repeated for module number 24					
489E	...Repeated for module number 25					
4952	...Repeated for module number 26					
4A06	...Repeated for module number 27					
4ABA	...Repeated for module number 28					
4B6E	...Repeated for module number 29					
4C22	...Repeated for module number 30					
<b>Source Commands (Read/Write Command) (30 modules)</b>						
4CD6	SRC X Open Breaker	0 to 1	---	1	F126	0 (No)
4CD7	SRC X Close Breaker	0 to 1	---	1	F126	0 (No)
4CD8	SRC X Trip Breaker	0 to 1	---	1	F126	0 (No)
4CD9	SRC X Clear Energy	0 to 1	---	1	F126	0 (No)
4CDA	Reserved	---	---	---	F001	0
4CDB	SRC X Remote Lockout Enable	0 to 1	---	1	F126	0 (No)
4CDC	SRC X Remote Lockout Reset	0 to 1	---	1	F126	0 (No)
4CDD	SRC X ATO Mode Enabled	0 to 1	---	1	F126	0 (No)
4CDE	Reserved (2 items)	---	---	---	F001	0
4CE0	SRC X Commands Reserved (20 items)	---	---	---	F001	0
4CF4	...Repeated for module number 2					
4D12	...Repeated for module number 3					
4D30	...Repeated for module number 4					
4D4E	...Repeated for module number 5					
4D6C	...Repeated for module number 6					
4D8A	...Repeated for module number 7					
4DA8	...Repeated for module number 8					
4DC6	...Repeated for module number 9					
4DE4	...Repeated for module number 10					
4E02	...Repeated for module number 11					
4E20	...Repeated for module number 12					

4E3E	...Repeated for module number 13					
4E5C	...Repeated for module number 14					
4E7A	...Repeated for module number 15					
4E98	...Repeated for module number 16					
4EB6	...Repeated for module number 17					
4ED4	...Repeated for module number 18					
4EF2	...Repeated for module number 19					
4F10	...Repeated for module number 20					
4F2E	...Repeated for module number 21					
4F4C	...Repeated for module number 22					
4F6A	...Repeated for module number 23					
4F88	...Repeated for module number 24					
4FA6	...Repeated for module number 25					
4FC4	...Repeated for module number 26					
4FE2	...Repeated for module number 27					
5000	...Repeated for module number 28					
501E	...Repeated for module number 29					
503C	...Repeated for module number 30					
<b>Synch Check Settings (Read/Write Setting) (12 modules)</b>						
505A	Synch Check Enable	0 to 1	---	1	F102	0 (Disabled)
505B	Synch Check V1 Source	0 to 29	---	1	F001	0
505C	Synch Check V2 Source	0 to 29	---	1	F001	0
505D	Synch Check Max Volt Diff	0 to 90	---	0.5	F001	0
505E	Synch Check Max Phase Diff	0 to 60	---	1	F001	0
505F	Synch Check Max Freq Diff	0 to 2	---	0.1	F001	0
5060	Synch Check Dead Max V1	5 to 50	---	1	F001	5
5061	Synch Check Live Min V1	50 to 100	---	1	F001	50
5062	Synch Check Dead MaxV2	5 to 50	---	1	F001	5
5063	Synch Check Live Min V2	50 to 100	---	1	F001	50
5064	Reserved (4 items)	---	---	---	F001	0
5068	Synch Check Dead Source Select	0 to 5	---	1	F176	0 (None)
<b>Synch Check Settings (Read Only) (12 modules)</b>						
5069	Synch Check Status	0 to 65535	---	1	F001	0

506A	Synch Check Reserved (14 items)	---	---	---	F001	0
5078	...Repeated for module number 2					
5096	...Repeated for module number 3					
50B4	...Repeated for module number 4					
50D2	...Repeated for module number 5					
50F0	...Repeated for module number 6					
510E	...Repeated for module number 7					
512C	...Repeated for module number 8					
514A	...Repeated for module number 9					
5168	...Repeated for module number 10					
5186	...Repeated for module number 11					
51A4	...Repeated for module number 12					
<b>ZSI Option Settings (Read/Write Setting)</b>						
51C2	ZSI Option	0 to 2	---	1	F732	0 (ST ZSI)
<b>ZSI Zone Enables (Read/Write Setting) (4 modules)</b>						
51C4	ZSI Zone X Enabled	0 to 1	---	1	F126	0 (No)
51C5	ZSI Zone Enable Reserved (4 items)	---	---	---	F001	0
51C9	...Repeated for module number 2					
51CE	...Repeated for module number 3					
51D3	...Repeated for module number 4					
<b>Simple Network Time Protocol (Read/Write Setting)</b>						
51DD	Simple Network Time Protocol (SNTP) Server IP Address	0 to 4294967295	---	1	F003	0
51DF	Simple Network Time Protocol (SNTP) Server Time Zone Bias	-46800 to 43200	---	900	F004	0
<b>ZSI ST Tier Settings (Read/Write Setting) (30 modules)</b>						
5200	SRC X ST ZSI Zone 1 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5210	SRC X ST ZSI Zone 2 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5220	SRC X ST ZSI Zone 3 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5230	SRC X ST ZSI Zone 4 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5240	SRC X ST ZSI Tier Settings Reserved (16 items)	---	---	---	F001	0
5250	...Repeated for module number 2					
52A0	...Repeated for module number 3					

52F0	...Repeated for module number 4					
5340	...Repeated for module number 5					
5390	...Repeated for module number 6					
53E0	...Repeated for module number 7					
5430	...Repeated for module number 8					
5480	...Repeated for module number 9					
54D0	...Repeated for module number 10					
5520	...Repeated for module number 11					
5570	...Repeated for module number 12					
55C0	...Repeated for module number 13					
5610	...Repeated for module number 14					
5660	...Repeated for module number 15					
56B0	...Repeated for module number 16					
5700	...Repeated for module number 17					
5750	...Repeated for module number 18					
57A0	...Repeated for module number 19					
57F0	...Repeated for module number 20					
5840	...Repeated for module number 21					
5890	...Repeated for module number 22					
58E0	...Repeated for module number 23					
5930	...Repeated for module number 24					
5980	...Repeated for module number 25					
59D0	...Repeated for module number 26					
5A20	...Repeated for module number 27					
5A70	...Repeated for module number 28					
5AC0	...Repeated for module number 29					
5B10	...Repeated for module number 30					
<b>ZSI GF Tier Settings (Read/Write Setting) (30 modules)</b>						
5B60	SRC X GF ZSI Zone 1 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5B70	SRC X GF ZSI Zone 2 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5B80	SRC X GF ZSI Zone 3 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
5B90	SRC X GF ZSI Zone 4 Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)

5BA0	SRC X GF ZSI Tier Settings Reserved (16 items)	---	---	---	F001	0
5BB0	...Repeated for module number 2					
5C00	...Repeated for module number 3					
5C50	...Repeated for module number 4					
5CA0	...Repeated for module number 5					
5CF0	...Repeated for module number 6					
5D40	...Repeated for module number 7					
5D90	...Repeated for module number 8					
5DE0	...Repeated for module number 9					
5E30	...Repeated for module number 10					
5E80	...Repeated for module number 11					
5ED0	...Repeated for module number 12					
5F20	...Repeated for module number 13					
5F70	...Repeated for module number 14					
5FC0	...Repeated for module number 15					
6010	...Repeated for module number 16					
6060	...Repeated for module number 17					
60B0	...Repeated for module number 18					
6100	...Repeated for module number 19					
6150	...Repeated for module number 20					
61A0	...Repeated for module number 21					
61F0	...Repeated for module number 22					
6240	...Repeated for module number 23					
6290	...Repeated for module number 24					
62E0	...Repeated for module number 25					
6330	...Repeated for module number 26					
6380	...Repeated for module number 27					
63D0	...Repeated for module number 28					
6420	...Repeated for module number 29					
6470	...Repeated for module number 30					

**ZSI MSGF Tier Settings (Read/Write Setting) (4 modules)**

64C0	MSGF ZSI Zone 1 GRP X Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
64D0	MSGF ZSI Zone 2 GRP X Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
64E0	MSGF ZSI Zone 3 GRP X Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
64F0	MSGF ZSI Zone 4 GRP X Tier Settings (16 items)	0 to 3	---	1	F733	0 (ZSI Tier 0)
6500	MSGF ZSI Reserved (16 items)	---	---	---	F001	0
6510	...Repeated for module number 2					
6560	...Repeated for module number 3					
65B0	...Repeated for module number 4					
<b>Zone X MSGF Settings (Read/Write Setting) (4 modules)</b>						
6600	Zone X MSGF Trip Pickup Setting (16 items)	30 to 1200	---	10	F001	1200
6610	Zone X MSGF Alarm Pickup Setting (16 items)	30 to 1200	---	10	F001	1200
6620	Zone X MSGF Trip Delay Band Setting (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6630	Zone X MSGF Alarm Delay Band Setting (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6640	Zone X MSGF Trip I2T Curve (16 items)	0 to 1	---	1	F102	0 (Disabled)
6650	Zone X MSGF Alarm I2T Curve (16 items)	0 to 1	---	1	F102	0 (Disabled)
6660	Zone X MSGF Trip Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6670	Zone X MSGF Alarm Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6680	Zone X MSGF Backup Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6690	Zone X MSGF Backup Time Date Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
66A0	Zone X MSGF Trip or Open	0 to 1	---	1	F727	0 (Open and don't activate lockout)
66A1	Zone X MSGF Reserved (16 items)	---	---	---	F001	0
66B1	...Repeated for module number 2					
6762	...Repeated for module number 3					
6813	...Repeated for module number 4					
<b>Zone X BD Settings (Read/Write Setting) (4 modules)</b>						
68C4	Zone X BD Trip Pickup Setting (16 items)	100 to 22000	---	100	F001	1200

68D4	Zone X BD Alarm Pickup Setting (16 items)	100 to 22000	---	100	F001	1200
68E4	Zone X BD Trip Pickup Setting2 (16 items)	100 to 22000	---	100	F001	1200
68F4	Zone X BD Alarm Pickup Setting2 (16 items)	100 to 22000	---	100	F001	1200
6904	Zone X BD Trip Delay Band Setting (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6914	Zone X BD Alarm Delay Band Setting (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6924	Zone X BD Trip Delay Band Setting2 (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6934	Zone X BD Alarm Delay Band Setting2 (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6944	Zone X BD Trip Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6954	Zone X BD Alarm Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6964	Zone X BD Backup Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6974	Zone X BD Backup Time Delta Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6984	Zone X BD Trip or Open	0 to 1	---	1	F727	0 (Open and don't activate lockout)
6985	Zone X BD Reserved (16 items)	---	---	---	F001	0
6995	...Repeated for module number 2					
6A66	...Repeated for module number 3					
6B37	...Repeated for module number 4					
<b>Zone X Summation Settings (Read/Write Setting) (2 modules)</b>						
6C08	Zone X Summation MSGF Trip Delay Band Setting (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6C18	Zone X Summation MSGF Alarm Delay Band Setting (16 items)	0 to 6	---	1	F735	2 (BAND 3)
6C28	Zone X Summation MSGF Trip I2T (16 items)	0 to 1	---	1	F102	0 (Disabled)
6C38	Zone X Summation MSGF Alarm I2T Curve (16 items)	0 to 1	---	1	F102	0 (Disabled)
6C48	Zone X Summation MSGF Trip Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6C58	Zone X Summation MSGF Alarm Enabled (16 items)	0 to 1	---	1	F102	0 (Disabled)
6C68	Zone X Summation MSGF Trip Pickup Setting (16 items)	30 to 1200	---	10	F001	1200

6C78	Zone X Summation MSGF Alarm Pickup Setting (16 items)	30 to 1200	---	10	F001	1200
6C88	Zone X Summation MSGF Trip or Open	0 to 1	---	1	F727	0 (Open and don't activate lockout)
6C89	Zone X Summation Reserved (32 items)	---	---	---	F001	0
6CA9	...Repeated for module number 2					
<b>Options (Read Only)</b>						
6D4A	Reserved (242 items)	---	---	---	F001	0
6E3C	Options Authentication State	0 to 2	---	1	F738	0 (New and Old Both Option-strings Invalid)
6E3D	Options Timestamp	0 to 4294967295	---	1	F050	0
6E3F	Options Bit Vectors	0 to 65535	---	1	F728	0
6E40	Options Expanded Metering Count	0 to 30	---	1	F001	0
<b>Options (Read/Write Setting)</b>						
6E41	Option Expanded Metering Node x State Enable	0 to 4294967295	---	1	F722	0
<b>Options (Read Only)</b>						
6E43	Option Demand Metering Count	0 to 30	---	1	F001	0
<b>Options (Read/Write Setting)</b>						
6E44	Option Demand Metering Node x State Enable	0 to 4294967295	---	1	F722	0
<b>Options (Read Only)</b>						
6E46	Option Harmonics Metering Count	0 to 30	---	1	F001	0
<b>Options (Read/Write Setting)</b>						
6E47	Option Harmonics Metering Node x State Enable	0 to 4294967295	---	1	F722	0
<b>Options (Read Only)</b>						
6E49	Option Voltage Relay Count	0 to 30	---	1	F001	0
<b>Options (Read/Write Setting)</b>						
6E4A	Option Voltage Relay Node x State Enable	0 to 4294967295	---	1	F722	0
<b>Options (Read Only)</b>						
6E4C	Option High Current Relay Count	0 to 30	---	1	F001	0



<b>Options (Read/Write Setting)</b>						
6E4D	Option High Current Relay Node x State Enable	0 to 4294967295	---	1	F722	0
<b>Options (Read Only)</b>						
6E4F	Option Freq and Rev Pwr Relay Count	0 to 30	---	1	F001	0
<b>Options (Read/Write Setting)</b>						
6E50	Option Freq and Rev Pwr Relay Node x Enable	0 to 4294967295	---	1	F722	0
6E52	Reserved (3 items)	---	---	---	F001	0
<b>Options (Read Only)</b>						
6E55	Option HRGF Location Count	0 to 4	---	1	F001	0
<b>Options (Read/Write Setting)</b>						
6E56	Option HRGF Location Function x State Enable	0 to 15	---	1	F722	0
<b>Self Test Targets (Read Only)</b>						
6E64	Reserved (4 items)	---	---	---	F001	0
<b>Function X HRGF Location Settings (Read/Write Setting) (4 modules)</b>						
6E80	Function X HRGF Location Auto Mode Enabled	0 to 1	---	1	F102	1 (Enabled)
6E81	Function X HRGF Location Main Breaker	0 to 30	---	1	F001	30
6E82	Function X HRGF Location ReAlarm Delay	0 to 99	S	1	F001	8
6E83	Function X HRGF Location Alarm ReCheck Delay	0 to 99	S	1	F001	2
6E84	Function X HRGF Location Trip Delay	0 to 999	S	1	F001	0
6E85	Function X HRGF Location Trip Enabled	0 to 1	---	1	F102	0 (Disabled)
6E86	Function X HRGF Location Settings Reserved (5 items)	---	---	---	F001	0
6E8B	...Repeated for module number 2					
6E96	...Repeated for module number 3					
6EA1	...Repeated for module number 4					
<b>Function X HRGF Location (Read/Write Setting)</b>						
6EA8	Function X HRGF Location Manual Mode Start	0 to 1	---	1	F102	0 (Disabled)

6EA9	Function X HRGF Location Contactor Frequency	0.5 to 2	Hz	0.25	F001	100
6EAA	Function X HRGF Location Contactor Duty Cycle	0 to 100	%	1	F001	50
6EAB	Function X HRGF Location Manual Function To Start	0 to 4	---	1	F001	0
<b>Function X HRGF Location (Read Only)</b>						
6EAC	Function X HRGF Location Manual Availability	0 to 15	---	1	F500	0
<b>Function X HRGF Location (Read/Write Setting)</b>						
6EAD	Function X HRGF Location Test Contactor Pulsing	0 to 4	---	1	F001	0
6EAE	Function X HRGF Location Subinterval	20 to 60	s	5	F001	30
<b>Contact Input Configuration (Read/Write Setting) (2 modules)</b>						
7003	Board x I/O Direction High	0 to 4294967295	---	1	F737	0
7005	Board x I/O Direction Low	0 to 4294967295	---	1	F736	0
7007	...Repeated for module number 2					
<b>Mandatory (Read/Write Setting)</b>						
700B	Reserved (2 items)	---	---	---	F001	0
<b>Discrete I/O Configuration (Read Only)</b>						
702A	Boards Detected	0 to 8	---	1	F001	0
702B	Boards Used	0 to 8	---	1	F001	0
702C	Total I/O Points Available	0 to 65535	---	1	F001	0
702D	Contact Input Count	0 to 128	---	1	F001	0
702E	Contact Output Count	0 to 128	---	1	F001	0
<b>Discrete I/O Configuration (Read/Write Setting)</b>						
702F	Boards Expected	0 to 2	---	1	F001	0
<b>Expanded Digital I/O States (Read Only)</b>						
703F	Contact Input x State (128 items)	0 to 1	---	1	F108	0 (Off)
70BF	Contact Output x State (128 items)	0 to 1	---	1	F108	0 (Off)
<b>Contact Inputs (Read/Write Setting) (128 modules)</b>						
713F	Contact Input x Name	---	---	---	F200	"Contact Input 1 "
7153	Contact Input x Events	0 to 1	---	1	F102	1 (Enabled)

7154	Contact Input x Debounce Time	0 to 4	---	1	F734	0 (Disabled)
7155	Contact Input x Reserved (4 items)	---	---	---	F001	0
7159	...Repeated for module number 2					
7173	...Repeated for module number 3					
718D	...Repeated for module number 4					
71A7	...Repeated for module number 5					
71C1	...Repeated for module number 6					
71DB	...Repeated for module number 7					
71F5	...Repeated for module number 8					
720F	...Repeated for module number 9					
7229	...Repeated for module number 10					
7243	...Repeated for module number 11					
725D	...Repeated for module number 12					
7277	...Repeated for module number 13					
7291	...Repeated for module number 14					
72AB	...Repeated for module number 15					
72C5	...Repeated for module number 16					
72DF	...Repeated for module number 17					
72F9	...Repeated for module number 18					
7313	...Repeated for module number 19					
732D	...Repeated for module number 20					
7347	...Repeated for module number 21					
7361	...Repeated for module number 22					
737B	...Repeated for module number 23					
7395	...Repeated for module number 24					
73AF	...Repeated for module number 25					
73C9	...Repeated for module number 26					
73E3	...Repeated for module number 27					
73FD	...Repeated for module number 28					
7417	...Repeated for module number 29					
7431	...Repeated for module number 30					
744B	...Repeated for module number 31					
7465	...Repeated for module number 32					

747F	...Repeated for module number 33
7499	...Repeated for module number 34
74B3	...Repeated for module number 35
74CD	...Repeated for module number 36
74E7	...Repeated for module number 37
7501	...Repeated for module number 38
751B	...Repeated for module number 39
7535	...Repeated for module number 40
754F	...Repeated for module number 41
7569	...Repeated for module number 42
7583	...Repeated for module number 43
759D	...Repeated for module number 44
75B7	...Repeated for module number 45
75D1	...Repeated for module number 46
75EB	...Repeated for module number 47
7605	...Repeated for module number 48
761F	...Repeated for module number 49
7639	...Repeated for module number 50
7653	...Repeated for module number 51
766D	...Repeated for module number 52
7687	...Repeated for module number 53
76A1	...Repeated for module number 54
76BB	...Repeated for module number 55
76D5	...Repeated for module number 56
76EF	...Repeated for module number 57
7709	...Repeated for module number 58
7723	...Repeated for module number 59
773D	...Repeated for module number 60
7757	...Repeated for module number 61
7771	...Repeated for module number 62
778B	...Repeated for module number 63
77A5	...Repeated for module number 64
77BF	...Repeated for module number 65

77D9	...Repeated for module number 66
77F3	...Repeated for module number 67
780D	...Repeated for module number 68
7827	...Repeated for module number 69
7841	...Repeated for module number 70
785B	...Repeated for module number 71
7875	...Repeated for module number 72
788F	...Repeated for module number 73
78A9	...Repeated for module number 74
78C3	...Repeated for module number 75
78DD	...Repeated for module number 76
78F7	...Repeated for module number 77
7911	...Repeated for module number 78
792B	...Repeated for module number 79
7945	...Repeated for module number 80
795F	...Repeated for module number 81
7979	...Repeated for module number 82
7993	...Repeated for module number 83
79AD	...Repeated for module number 84
79C7	...Repeated for module number 85
79E1	...Repeated for module number 86
79FB	...Repeated for module number 87
7A15	...Repeated for module number 88
7A2F	...Repeated for module number 89
7A49	...Repeated for module number 90
7A63	...Repeated for module number 91
7A7D	...Repeated for module number 92
7A97	...Repeated for module number 93
7AB1	...Repeated for module number 94
7ACB	...Repeated for module number 95
7AE5	...Repeated for module number 96
7AFF	...Repeated for module number 97
7B19	...Repeated for module number 98

7B33	...Repeated for module number 99					
7B4D	...Repeated for module number 100					
7B67	...Repeated for module number 101					
7B81	...Repeated for module number 102					
7B9B	...Repeated for module number 103					
7BB5	...Repeated for module number 104					
7BCF	...Repeated for module number 105					
7BE9	...Repeated for module number 106					
7C03	...Repeated for module number 107					
7C1D	...Repeated for module number 108					
7C37	...Repeated for module number 109					
7C51	...Repeated for module number 110					
7C6B	...Repeated for module number 111					
7C85	...Repeated for module number 112					
7C9F	...Repeated for module number 113					
7CB9	...Repeated for module number 114					
7CD3	...Repeated for module number 115					
7CED	...Repeated for module number 116					
7D07	...Repeated for module number 117					
7D21	...Repeated for module number 118					
7D3B	...Repeated for module number 119					
7D55	...Repeated for module number 120					
7D6F	...Repeated for module number 121					
7D89	...Repeated for module number 122					
7DA3	...Repeated for module number 123					
7DBD	...Repeated for module number 124					
7DD7	...Repeated for module number 125					
7DF1	...Repeated for module number 126					
7E0B	...Repeated for module number 127					
7E25	...Repeated for module number 128					
<b>Contact Outputs (Read/Write Setting) (128 modules)</b>						
7E3F	Contact Output x Name	---	---	---	F200	“Contact Output 1”

7E53	Contact Output x Operation	0 to 65535	---	1	F300	0
7E54	Contact Output x Sealin	0 to 65535	---	1	F300	0
7E55	Contact Output x Events	0 to 1	---	1	F102	1 (Enabled)
7E56	Contact Outputs Reserved (7 items)	---	---	---	F001	0
7E5D	...Repeated for module number 2					
7E7B	...Repeated for module number 3					
7E99	...Repeated for module number 4					
7EB7	...Repeated for module number 5					
7ED5	...Repeated for module number 6					
7EF3	...Repeated for module number 7					
7F11	...Repeated for module number 8					
7F2F	...Repeated for module number 9					
7F4D	...Repeated for module number 10					
7F6B	...Repeated for module number 11					
7F89	...Repeated for module number 12					
7FA7	...Repeated for module number 13					
7FC5	...Repeated for module number 14					
7FE3	...Repeated for module number 15					
8001	...Repeated for module number 16					
801F	...Repeated for module number 17					
803D	...Repeated for module number 18					
805B	...Repeated for module number 19					
8079	...Repeated for module number 20					
8097	...Repeated for module number 21					
80B5	...Repeated for module number 22					
80D3	...Repeated for module number 23					
80F1	...Repeated for module number 24					
810F	...Repeated for module number 25					
812D	...Repeated for module number 26					
814B	...Repeated for module number 27					
8169	...Repeated for module number 28					
8187	...Repeated for module number 29					
81A5	...Repeated for module number 30					

81C3	...Repeated for module number 31
81E1	...Repeated for module number 32
81FF	...Repeated for module number 33
821D	...Repeated for module number 34
823B	...Repeated for module number 35
8259	...Repeated for module number 36
8277	...Repeated for module number 37
8295	...Repeated for module number 38
82B3	...Repeated for module number 39
82D1	...Repeated for module number 40
82EF	...Repeated for module number 41
830D	...Repeated for module number 42
832B	...Repeated for module number 43
8349	...Repeated for module number 44
8367	...Repeated for module number 45
8385	...Repeated for module number 46
83A3	...Repeated for module number 47
83C1	...Repeated for module number 48
83DF	...Repeated for module number 49
83FD	...Repeated for module number 50
841B	...Repeated for module number 51
8439	...Repeated for module number 52
8457	...Repeated for module number 53
8475	...Repeated for module number 54
8493	...Repeated for module number 55
84B1	...Repeated for module number 56
84CF	...Repeated for module number 57
84ED	...Repeated for module number 58
850B	...Repeated for module number 59
8529	...Repeated for module number 60
8547	...Repeated for module number 61
8565	...Repeated for module number 62
8583	...Repeated for module number 63



85A1	...Repeated for module number 64
85BF	...Repeated for module number 65
85DD	...Repeated for module number 66
85FB	...Repeated for module number 67
8619	...Repeated for module number 68
8637	...Repeated for module number 69
8655	...Repeated for module number 70
8673	...Repeated for module number 71
8691	...Repeated for module number 72
86AF	...Repeated for module number 73
86CD	...Repeated for module number 74
86EB	...Repeated for module number 75
8709	...Repeated for module number 76
8727	...Repeated for module number 77
8745	...Repeated for module number 78
8763	...Repeated for module number 79
8781	...Repeated for module number 80
879F	...Repeated for module number 81
87BD	...Repeated for module number 82
87DB	...Repeated for module number 83
87F9	...Repeated for module number 84
8817	...Repeated for module number 85
8835	...Repeated for module number 86
8853	...Repeated for module number 87
8871	...Repeated for module number 88
888F	...Repeated for module number 89
88AD	...Repeated for module number 90
88CB	...Repeated for module number 91
88E9	...Repeated for module number 92
8907	...Repeated for module number 93
8925	...Repeated for module number 94
8943	...Repeated for module number 95
8961	...Repeated for module number 96

897F	...Repeated for module number 97
899D	...Repeated for module number 98
89BB	...Repeated for module number 99
89D9	...Repeated for module number 100
89F7	...Repeated for module number 101
8A15	...Repeated for module number 102
8A33	...Repeated for module number 103
8A51	...Repeated for module number 104
8A6F	...Repeated for module number 105
8A8D	...Repeated for module number 106
8AAB	...Repeated for module number 107
8AC9	...Repeated for module number 108
8AE7	...Repeated for module number 109
8B05	...Repeated for module number 110
8B23	...Repeated for module number 111
8B41	...Repeated for module number 112
8B5F	...Repeated for module number 113
8B7D	...Repeated for module number 114
8B9B	...Repeated for module number 115
8BB9	...Repeated for module number 116
8BD7	...Repeated for module number 117
8BF5	...Repeated for module number 118
8C13	...Repeated for module number 119
8C31	...Repeated for module number 120
8C4F	...Repeated for module number 121
8C6D	...Repeated for module number 122
8C8B	...Repeated for module number 123
8CA9	...Repeated for module number 124
8CC7	...Repeated for module number 125
8CE5	...Repeated for module number 126
8D03	...Repeated for module number 127
8D21	...Repeated for module number 128
<b>Force Contact Inputs (Read/Write Setting)</b>	

8D3F	Force Contact Input x State (128 items)	0 to 2	---	1	F144	0 (Disabled)
<b>Force Contact Outputs (Read/Write Setting)</b>						
8DBF	Force Contact Output x State (128 items)	0 to 3	---	1	F131	0 (Disabled)
<b>FlexLogic Status (Read Only)</b>						
9588	FlexLogic Active	0 to 1	---	1	F126	0 (No)
9589	FlexLogic Status Message	---	---	---	F200	(none)
<b>FlexLogic (Read/Write Setting)</b>						
95B1	Reserved (4096 items)	---	---	---	F001	0
<b>Breaker Control (Read/Write Setting) (30 modules)</b>						
A5B1	Breaker Control x Open Flux Shifter	0 to 65535	---	1	F300	0
A5B2	Breaker Control x Open Shunt Trip	0 to 65535	---	1	F300	0
A5B3	Breaker Control x Trip Flux Shifter	0 to 65535	---	1	F300	0
A5B4	Breaker Control x Trip Shunt Trip	0 to 65535	---	1	F300	0
A5B5	Breaker Control x Close	0 to 65535	---	1	F300	0
A5B6	Breaker Control x Lockout	0 to 65535	---	1	F300	0
A5B7	Breaker Control x Lockout Reset	0 to 65535	---	1	F300	0
A5B8	Reserved	---	---	---	F001	0
A5B9	Reserved items per Breaker Control (17 items)	---	---	---	F001	0
A5CA	...Repeated for module number 2					
A5E3	...Repeated for module number 3					
A5FC	...Repeated for module number 4					
A615	...Repeated for module number 5					
A62E	...Repeated for module number 6					
A647	...Repeated for module number 7					
A660	...Repeated for module number 8					
A679	...Repeated for module number 9					
A692	...Repeated for module number 10					
A6AB	...Repeated for module number 11					
A6C4	...Repeated for module number 12					
A6DD	...Repeated for module number 13					
A6F6	...Repeated for module number 14					
A70F	...Repeated for module number 15					

A728	...Repeated for module number 16					
A741	...Repeated for module number 17					
A75A	...Repeated for module number 18					
A773	...Repeated for module number 19					
A78C	...Repeated for module number 20					
A7A5	...Repeated for module number 21					
A7BE	...Repeated for module number 22					
A7D7	...Repeated for module number 23					
A7F0	...Repeated for module number 24					
A809	...Repeated for module number 25					
A822	...Repeated for module number 26					
A83B	...Repeated for module number 27					
A854	...Repeated for module number 28					
A86D	...Repeated for module number 29					
A886	...Repeated for module number 30					
<b>Alarm FlexLogic (Read/Write Setting) (30 modules)</b>						
A89F	Alarm x FlexLogic	0 to 65535	---	1	F300	0
A8A0	Alarm FlexLogic Reserved	---	---	---	F001	0
A8A1	...Repeated for module number 2					
A8A3	...Repeated for module number 3					
A8A5	...Repeated for module number 4					
A8A7	...Repeated for module number 5					
A8A9	...Repeated for module number 6					
A8AB	...Repeated for module number 7					
A8AD	...Repeated for module number 8					
A8AF	...Repeated for module number 9					
A8B1	...Repeated for module number 10					
A8B3	...Repeated for module number 11					
A8B5	...Repeated for module number 12					
A8B7	...Repeated for module number 13					
A8B9	...Repeated for module number 14					
A8BB	...Repeated for module number 15					
A8BD	...Repeated for module number 16					

A8BF	...Repeated for module number 17					
A8C1	...Repeated for module number 18					
A8C3	...Repeated for module number 19					
A8C5	...Repeated for module number 20					
A8C7	...Repeated for module number 21					
A8C9	...Repeated for module number 22					
A8CB	...Repeated for module number 23					
A8CD	...Repeated for module number 24					
A8CF	...Repeated for module number 25					
A8D1	...Repeated for module number 26					
A8D3	...Repeated for module number 27					
A8D5	...Repeated for module number 28					
A8D7	...Repeated for module number 29					
A8D9	...Repeated for module number 30					
<b>FlexLogic Timers (Read/Write Setting) (160 modules)</b>						
A8DB	Reserved (960 items)	---	---	---	F001	0
<b>Virtual Inputs (Read/Write Setting) (32 modules)</b>						
AC9B	Virtual Input x Function	0 to 1	---	1	F102	0 (Disabled)
AC9C	Virtual Input x Name	---	---	---	F200	"Virtual Input 1 "
ACB0	Virtual Input x Programmed Type	0 to 1	---	1	F127	0 (Latched)
ACB1	Virtual Input x Events	0 to 1	---	1	F102	0 (Disabled)
ACB2	Virtual Input x Reserved (3 items)	---	---	---	F001	0
ACB5	...Repeated for module number 2					
ACCF	...Repeated for module number 3					
ACE9	...Repeated for module number 4					
AD03	...Repeated for module number 5					
AD1D	...Repeated for module number 6					
AD37	...Repeated for module number 7					
AD51	...Repeated for module number 8					
AD6B	...Repeated for module number 9					
AD85	...Repeated for module number 10					
AD9F	...Repeated for module number 11					
ADB9	...Repeated for module number 12					

ADD3	...Repeated for module number 13					
ADED	...Repeated for module number 14					
AE07	...Repeated for module number 15					
AE21	...Repeated for module number 16					
AE3B	...Repeated for module number 17					
AE55	...Repeated for module number 18					
AE6F	...Repeated for module number 19					
AE89	...Repeated for module number 20					
AEA3	...Repeated for module number 21					
AEBD	...Repeated for module number 22					
AED7	...Repeated for module number 23					
AEF1	...Repeated for module number 24					
AF0B	...Repeated for module number 25					
AF25	...Repeated for module number 26					
AF3F	...Repeated for module number 27					
AF59	...Repeated for module number 28					
AF73	...Repeated for module number 29					
AF8D	...Repeated for module number 30					
AFA7	...Repeated for module number 31					
AFC1	...Repeated for module number 32					
<b>Virtual Outputs (Read/Write Setting) (480 modules)</b>						
AFDB	Virtual Output x Name	---	---	---	F200	"Virtual Output 1 "
AFEF	Virtual Output x Events	0 to 1	---	1	F102	0 (Disabled)
AFF0	Virtual Output x Reserved	---	---	---	F001	0
AFF1	...Repeated for module number 2					
B007	...Repeated for module number 3					
B01D	...Repeated for module number 4					
B033	...Repeated for module number 5					
B049	...Repeated for module number 6					
B05F	...Repeated for module number 7					
B075	...Repeated for module number 8					
B08B	...Repeated for module number 9					

B0A1	...Repeated for module number 10
B0B7	...Repeated for module number 11
B0CD	...Repeated for module number 12
B0E3	...Repeated for module number 13
B0F9	...Repeated for module number 14
B10F	...Repeated for module number 15
B125	...Repeated for module number 16
B13B	...Repeated for module number 17
B151	...Repeated for module number 18
B167	...Repeated for module number 19
B17D	...Repeated for module number 20
B193	...Repeated for module number 21
B1A9	...Repeated for module number 22
B1BF	...Repeated for module number 23
B1D5	...Repeated for module number 24
B1EB	...Repeated for module number 25
B201	...Repeated for module number 26
B217	...Repeated for module number 27
B22D	...Repeated for module number 28
B243	...Repeated for module number 29
B259	...Repeated for module number 30
B26F	...Repeated for module number 31
B285	...Repeated for module number 32
B29B	...Repeated for module number 33
B2B1	...Repeated for module number 34
B2C7	...Repeated for module number 35
B2DD	...Repeated for module number 36
B2F3	...Repeated for module number 37
B309	...Repeated for module number 38
B31F	...Repeated for module number 39
B335	...Repeated for module number 40
B34B	...Repeated for module number 41
B361	...Repeated for module number 42

B377	...Repeated for module number 43
B38D	...Repeated for module number 44
B3A3	...Repeated for module number 45
B3B9	...Repeated for module number 46
B3CF	...Repeated for module number 47
B3E5	...Repeated for module number 48
B3FB	...Repeated for module number 49
B411	...Repeated for module number 50
B427	...Repeated for module number 51
B43D	...Repeated for module number 52
B453	...Repeated for module number 53
B469	...Repeated for module number 54
B47F	...Repeated for module number 55
B495	...Repeated for module number 56
B4AB	...Repeated for module number 57
B4C1	...Repeated for module number 58
B4D7	...Repeated for module number 59
B4ED	...Repeated for module number 60
B503	...Repeated for module number 61
B519	...Repeated for module number 62
B52F	...Repeated for module number 63
B545	...Repeated for module number 64
B55B	...Repeated for module number 65
B571	...Repeated for module number 66
B587	...Repeated for module number 67
B59D	...Repeated for module number 68
B5B3	...Repeated for module number 69
B5C9	...Repeated for module number 70
B5DF	...Repeated for module number 71
B5F5	...Repeated for module number 72
B60B	...Repeated for module number 73
B621	...Repeated for module number 74
B637	...Repeated for module number 75



B64D	...Repeated for module number 76
B663	...Repeated for module number 77
B679	...Repeated for module number 78
B68F	...Repeated for module number 79
B6A5	...Repeated for module number 80
B6BB	...Repeated for module number 81
B6D1	...Repeated for module number 82
B6E7	...Repeated for module number 83
B6FD	...Repeated for module number 84
B713	...Repeated for module number 85
B729	...Repeated for module number 86
B73F	...Repeated for module number 87
B755	...Repeated for module number 88
B76B	...Repeated for module number 89
B781	...Repeated for module number 90
B797	...Repeated for module number 91
B7AD	...Repeated for module number 92
B7C3	...Repeated for module number 93
B7D9	...Repeated for module number 94
B7EF	...Repeated for module number 95
B805	...Repeated for module number 96
B81B	...Repeated for module number 97
B831	...Repeated for module number 98
B847	...Repeated for module number 99
B85D	...Repeated for module number 100
B873	...Repeated for module number 101
B889	...Repeated for module number 102
B89F	...Repeated for module number 103
B8B5	...Repeated for module number 104
B8CB	...Repeated for module number 105
B8E1	...Repeated for module number 106
B8F7	...Repeated for module number 107
B90D	...Repeated for module number 108

B923	...Repeated for module number 109
B939	...Repeated for module number 110
B94F	...Repeated for module number 111
B965	...Repeated for module number 112
B97B	...Repeated for module number 113
B991	...Repeated for module number 114
B9A7	...Repeated for module number 115
B9BD	...Repeated for module number 116
B9D3	...Repeated for module number 117
B9E9	...Repeated for module number 118
B9FF	...Repeated for module number 119
BA15	...Repeated for module number 120
BA2B	...Repeated for module number 121
BA41	...Repeated for module number 122
BA57	...Repeated for module number 123
BA6D	...Repeated for module number 124
BA83	...Repeated for module number 125
BA99	...Repeated for module number 126
BAAF	...Repeated for module number 127
BAC5	...Repeated for module number 128
BADB	...Repeated for module number 129
BAF1	...Repeated for module number 130
BB07	...Repeated for module number 131
BB1D	...Repeated for module number 132
BB33	...Repeated for module number 133
BB49	...Repeated for module number 134
BB5F	...Repeated for module number 135
BB75	...Repeated for module number 136
BB8B	...Repeated for module number 137
BBA1	...Repeated for module number 138
BBB7	...Repeated for module number 139
BBCD	...Repeated for module number 140
BBE3	...Repeated for module number 141

BBF9	...Repeated for module number 142
BC0F	...Repeated for module number 143
BC25	...Repeated for module number 144
BC3B	...Repeated for module number 145
BC51	...Repeated for module number 146
BC67	...Repeated for module number 147
BC7D	...Repeated for module number 148
BC93	...Repeated for module number 149
BCA9	...Repeated for module number 150
BCBF	...Repeated for module number 151
BCD5	...Repeated for module number 152
BCEB	...Repeated for module number 153
BD01	...Repeated for module number 154
BD17	...Repeated for module number 155
BD2D	...Repeated for module number 156
BD43	...Repeated for module number 157
BD59	...Repeated for module number 158
BD6F	...Repeated for module number 159
BD85	...Repeated for module number 160
BD9B	...Repeated for module number 161
BDB1	...Repeated for module number 162
BDC7	...Repeated for module number 163
BDDD	...Repeated for module number 164
BDF3	...Repeated for module number 165
BE09	...Repeated for module number 166
BE1F	...Repeated for module number 167
BE35	...Repeated for module number 168
BE4B	...Repeated for module number 169
BE61	...Repeated for module number 170
BE77	...Repeated for module number 171
BE8D	...Repeated for module number 172
BEA3	...Repeated for module number 173
BEB9	...Repeated for module number 174

BECF	...Repeated for module number 175
BEE5	...Repeated for module number 176
BEFB	...Repeated for module number 177
BF11	...Repeated for module number 178
BF27	...Repeated for module number 179
BF3D	...Repeated for module number 180
BF53	...Repeated for module number 181
BF69	...Repeated for module number 182
BF7F	...Repeated for module number 183
BF95	...Repeated for module number 184
BFAB	...Repeated for module number 185
BFC1	...Repeated for module number 186
BFD7	...Repeated for module number 187
BFED	...Repeated for module number 188
C003	...Repeated for module number 189
C019	...Repeated for module number 190
C02F	...Repeated for module number 191
C045	...Repeated for module number 192
C05B	...Repeated for module number 193
C071	...Repeated for module number 194
C087	...Repeated for module number 195
C09D	...Repeated for module number 196
C0B3	...Repeated for module number 197
C0C9	...Repeated for module number 198
C0DF	...Repeated for module number 199
C0F5	...Repeated for module number 200
C10B	...Repeated for module number 201
C121	...Repeated for module number 202
C137	...Repeated for module number 203
C14D	...Repeated for module number 204
C163	...Repeated for module number 205
C179	...Repeated for module number 206
C18F	...Repeated for module number 207

C1A5	...Repeated for module number 208
C1BB	...Repeated for module number 209
C1D1	...Repeated for module number 210
C1E7	...Repeated for module number 211
C1FD	...Repeated for module number 212
C213	...Repeated for module number 213
C229	...Repeated for module number 214
C23F	...Repeated for module number 215
C255	...Repeated for module number 216
C26B	...Repeated for module number 217
C281	...Repeated for module number 218
C297	...Repeated for module number 219
C2AD	...Repeated for module number 220
C2C3	...Repeated for module number 221
C2D9	...Repeated for module number 222
C2EF	...Repeated for module number 223
C305	...Repeated for module number 224
C31B	...Repeated for module number 225
C331	...Repeated for module number 226
C347	...Repeated for module number 227
C35D	...Repeated for module number 228
C373	...Repeated for module number 229
C389	...Repeated for module number 230
C39F	...Repeated for module number 231
C3B5	...Repeated for module number 232
C3CB	...Repeated for module number 233
C3E1	...Repeated for module number 234
C3F7	...Repeated for module number 235
C40D	...Repeated for module number 236
C423	...Repeated for module number 237
C439	...Repeated for module number 238
C44F	...Repeated for module number 239
C465	...Repeated for module number 240

C47B	...Repeated for module number 241
C491	...Repeated for module number 242
C4A7	...Repeated for module number 243
C4BD	...Repeated for module number 244
C4D3	...Repeated for module number 245
C4E9	...Repeated for module number 246
C4FF	...Repeated for module number 247
C515	...Repeated for module number 248
C52B	...Repeated for module number 249
C541	...Repeated for module number 250
C557	...Repeated for module number 251
C56D	...Repeated for module number 252
C583	...Repeated for module number 253
C599	...Repeated for module number 254
C5AF	...Repeated for module number 255
C5C5	...Repeated for module number 256
C5DB	...Repeated for module number 257
C5F1	...Repeated for module number 258
C607	...Repeated for module number 259
C61D	...Repeated for module number 260
C633	...Repeated for module number 261
C649	...Repeated for module number 262
C65F	...Repeated for module number 263
C675	...Repeated for module number 264
C68B	...Repeated for module number 265
C6A1	...Repeated for module number 266
C6B7	...Repeated for module number 267
C6CD	...Repeated for module number 268
C6E3	...Repeated for module number 269
C6F9	...Repeated for module number 270
C70F	...Repeated for module number 271
C725	...Repeated for module number 272
C73B	...Repeated for module number 273

C751	...Repeated for module number 274
C767	...Repeated for module number 275
C77D	...Repeated for module number 276
C793	...Repeated for module number 277
C7A9	...Repeated for module number 278
C7BF	...Repeated for module number 279
C7D5	...Repeated for module number 280
C7EB	...Repeated for module number 281
C801	...Repeated for module number 282
C817	...Repeated for module number 283
C82D	...Repeated for module number 284
C843	...Repeated for module number 285
C859	...Repeated for module number 286
C86F	...Repeated for module number 287
C885	...Repeated for module number 288
C89B	...Repeated for module number 289
C8B1	...Repeated for module number 290
C8C7	...Repeated for module number 291
C8DD	...Repeated for module number 292
C8F3	...Repeated for module number 293
C909	...Repeated for module number 294
C91F	...Repeated for module number 295
C935	...Repeated for module number 296
C94B	...Repeated for module number 297
C961	...Repeated for module number 298
C977	...Repeated for module number 299
C98D	...Repeated for module number 300
C9A3	...Repeated for module number 301
C9B9	...Repeated for module number 302
C9CF	...Repeated for module number 303
C9E5	...Repeated for module number 304
C9FB	...Repeated for module number 305
CA11	...Repeated for module number 306

CA27	...Repeated for module number 307
CA3D	...Repeated for module number 308
CA53	...Repeated for module number 309
CA69	...Repeated for module number 310
CA7F	...Repeated for module number 311
CA95	...Repeated for module number 312
CAAB	...Repeated for module number 313
CAC1	...Repeated for module number 314
CAD7	...Repeated for module number 315
CAED	...Repeated for module number 316
CB03	...Repeated for module number 317
CB19	...Repeated for module number 318
CB2F	...Repeated for module number 319
CB45	...Repeated for module number 320
CB5B	...Repeated for module number 321
CB71	...Repeated for module number 322
CB87	...Repeated for module number 323
CB9D	...Repeated for module number 324
CBB3	...Repeated for module number 325
CBC9	...Repeated for module number 326
CBDF	...Repeated for module number 327
CBF5	...Repeated for module number 328
CC0B	...Repeated for module number 329
CC21	...Repeated for module number 330
CC37	...Repeated for module number 331
CC4D	...Repeated for module number 332
CC63	...Repeated for module number 333
CC79	...Repeated for module number 334
CC8F	...Repeated for module number 335
CCA5	...Repeated for module number 336
CCBB	...Repeated for module number 337
CCD1	...Repeated for module number 338
CCE7	...Repeated for module number 339



CCFD	...Repeated for module number 340
CD13	...Repeated for module number 341
CD29	...Repeated for module number 342
CD3F	...Repeated for module number 343
CD55	...Repeated for module number 344
CD6B	...Repeated for module number 345
CD81	...Repeated for module number 346
CD97	...Repeated for module number 347
CDAD	...Repeated for module number 348
CDC3	...Repeated for module number 349
CDD9	...Repeated for module number 350
CDEF	...Repeated for module number 351
CE05	...Repeated for module number 352
CE1B	...Repeated for module number 353
CE31	...Repeated for module number 354
CE47	...Repeated for module number 355
CE5D	...Repeated for module number 356
CE73	...Repeated for module number 357
CE89	...Repeated for module number 358
CE9F	...Repeated for module number 359
CEB5	...Repeated for module number 360
CECB	...Repeated for module number 361
CEE1	...Repeated for module number 362
CEF7	...Repeated for module number 363
CF0D	...Repeated for module number 364
CF23	...Repeated for module number 365
CF39	...Repeated for module number 366
CF4F	...Repeated for module number 367
CF65	...Repeated for module number 368
CF7B	...Repeated for module number 369
CF91	...Repeated for module number 370
CFA7	...Repeated for module number 371
CFBD	...Repeated for module number 372

CFD3	...Repeated for module number 373
CFE9	...Repeated for module number 374
CFFF	...Repeated for module number 375
D015	...Repeated for module number 376
D02B	...Repeated for module number 377
D041	...Repeated for module number 378
D057	...Repeated for module number 379
D06D	...Repeated for module number 380
D083	...Repeated for module number 381
D099	...Repeated for module number 382
D0AF	...Repeated for module number 383
D0C5	...Repeated for module number 384
D0DB	...Repeated for module number 385
D0F1	...Repeated for module number 386
D107	...Repeated for module number 387
D11D	...Repeated for module number 388
D133	...Repeated for module number 389
D149	...Repeated for module number 390
D15F	...Repeated for module number 391
D175	...Repeated for module number 392
D18B	...Repeated for module number 393
D1A1	...Repeated for module number 394
D1B7	...Repeated for module number 395
D1CD	...Repeated for module number 396
D1E3	...Repeated for module number 397
D1F9	...Repeated for module number 398
D20F	...Repeated for module number 399
D225	...Repeated for module number 400
D23B	...Repeated for module number 401
D251	...Repeated for module number 402
D267	...Repeated for module number 403
D27D	...Repeated for module number 404
D293	...Repeated for module number 405

D2A9	...Repeated for module number 406
D2BF	...Repeated for module number 407
D2D5	...Repeated for module number 408
D2EB	...Repeated for module number 409
D301	...Repeated for module number 410
D317	...Repeated for module number 411
D32D	...Repeated for module number 412
D343	...Repeated for module number 413
D359	...Repeated for module number 414
D36F	...Repeated for module number 415
D385	...Repeated for module number 416
D39B	...Repeated for module number 417
D3B1	...Repeated for module number 418
D3C7	...Repeated for module number 419
D3DD	...Repeated for module number 420
D3F3	...Repeated for module number 421
D409	...Repeated for module number 422
D41F	...Repeated for module number 423
D435	...Repeated for module number 424
D44B	...Repeated for module number 425
D461	...Repeated for module number 426
D477	...Repeated for module number 427
D48D	...Repeated for module number 428
D4A3	...Repeated for module number 429
D4B9	...Repeated for module number 430
D4CF	...Repeated for module number 431
D4E5	...Repeated for module number 432
D4FB	...Repeated for module number 433
D511	...Repeated for module number 434
D527	...Repeated for module number 435
D53D	...Repeated for module number 436
D553	...Repeated for module number 437
D569	...Repeated for module number 438

D57F	...Repeated for module number 439
D595	...Repeated for module number 440
D5AB	...Repeated for module number 441
D5C1	...Repeated for module number 442
D5D7	...Repeated for module number 443
D5ED	...Repeated for module number 444
D603	...Repeated for module number 445
D619	...Repeated for module number 446
D62F	...Repeated for module number 447
D645	...Repeated for module number 448
D65B	...Repeated for module number 449
D671	...Repeated for module number 450
D687	...Repeated for module number 451
D69D	...Repeated for module number 452
D6B3	...Repeated for module number 453
D6C9	...Repeated for module number 454
D6DF	...Repeated for module number 455
D6F5	...Repeated for module number 456
D70B	...Repeated for module number 457
D721	...Repeated for module number 458
D737	...Repeated for module number 459
D74D	...Repeated for module number 460
D763	...Repeated for module number 461
D779	...Repeated for module number 462
D78F	...Repeated for module number 463
D7A5	...Repeated for module number 464
D7BB	...Repeated for module number 465
D7D1	...Repeated for module number 466
D7E7	...Repeated for module number 467
D7FD	...Repeated for module number 468
D813	...Repeated for module number 469
D829	...Repeated for module number 470
D83F	...Repeated for module number 471

D855	...Repeated for module number 472					
D86B	...Repeated for module number 473					
D881	...Repeated for module number 474					
D897	...Repeated for module number 475					
D8AD	...Repeated for module number 476					
D8C3	...Repeated for module number 477					
D8D9	...Repeated for module number 478					
D8EF	...Repeated for module number 479					
D905	...Repeated for module number 480					
<b>Virtual Input Commands (Read/Write Command) (32 modules)</b>						
D91B	Virtual Input x State	0 to 1	---	1	F108	0 (Off)
D91C	...Repeated for module number 2					
D91D	...Repeated for module number 3					
D91E	...Repeated for module number 4					
D91F	...Repeated for module number 5					
D920	...Repeated for module number 6					
D921	...Repeated for module number 7					
D922	...Repeated for module number 8					
D923	...Repeated for module number 9					
D924	...Repeated for module number 10					
D925	...Repeated for module number 11					
D926	...Repeated for module number 12					
D927	...Repeated for module number 13					
D928	...Repeated for module number 14					
D929	...Repeated for module number 15					
D92A	...Repeated for module number 16					
D92B	...Repeated for module number 17					
D92C	...Repeated for module number 18					
D92D	...Repeated for module number 19					
D92E	...Repeated for module number 20					
D92F	...Repeated for module number 21					
D930	...Repeated for module number 22					
D931	...Repeated for module number 23					

D932	...Repeated for module number 24					
D933	...Repeated for module number 25					
D934	...Repeated for module number 26					
D935	...Repeated for module number 27					
D936	...Repeated for module number 28					
D937	...Repeated for module number 29					
D938	...Repeated for module number 30					
D939	...Repeated for module number 31					
D93A	...Repeated for module number 32					
<b>PLC Inputs (Read/Write Setting) (256 modules)</b>						
D93B	PLC Input x Function	0 to 1	---	1	F102	0 (Disabled)
D93C	PLC Input x Events	0 to 1	---	1	F102	0 (Disabled)
D93D	...Repeated for module number 2					
D93F	...Repeated for module number 3					
D941	...Repeated for module number 4					
D943	...Repeated for module number 5					
D945	...Repeated for module number 6					
D947	...Repeated for module number 7					
D949	...Repeated for module number 8					
D94B	...Repeated for module number 9					
D94D	...Repeated for module number 10					
D94F	...Repeated for module number 11					
D951	...Repeated for module number 12					
D953	...Repeated for module number 13					
D955	...Repeated for module number 14					
D957	...Repeated for module number 15					
D959	...Repeated for module number 16					
D95B	...Repeated for module number 17					
D95D	...Repeated for module number 18					
D95F	...Repeated for module number 19					
D961	...Repeated for module number 20					
D963	...Repeated for module number 21					
D965	...Repeated for module number 22					

D967	...Repeated for module number 23
D969	...Repeated for module number 24
D96B	...Repeated for module number 25
D96D	...Repeated for module number 26
D96F	...Repeated for module number 27
D971	...Repeated for module number 28
D973	...Repeated for module number 29
D975	...Repeated for module number 30
D977	...Repeated for module number 31
D979	...Repeated for module number 32
D97B	...Repeated for module number 33
D97D	...Repeated for module number 34
D97F	...Repeated for module number 35
D981	...Repeated for module number 36
D983	...Repeated for module number 37
D985	...Repeated for module number 38
D987	...Repeated for module number 39
D989	...Repeated for module number 40
D98B	...Repeated for module number 41
D98D	...Repeated for module number 42
D98F	...Repeated for module number 43
D991	...Repeated for module number 44
D993	...Repeated for module number 45
D995	...Repeated for module number 46
D997	...Repeated for module number 47
D999	...Repeated for module number 48
D99B	...Repeated for module number 49
D99D	...Repeated for module number 50
D99F	...Repeated for module number 51
D9A1	...Repeated for module number 52
D9A3	...Repeated for module number 53
D9A5	...Repeated for module number 54
D9A7	...Repeated for module number 55

D9A9	...Repeated for module number 56
D9AB	...Repeated for module number 57
D9AD	...Repeated for module number 58
D9AF	...Repeated for module number 59
D9B1	...Repeated for module number 60
D9B3	...Repeated for module number 61
D9B5	...Repeated for module number 62
D9B7	...Repeated for module number 63
D9B9	...Repeated for module number 64
D9BB	...Repeated for module number 65
D9BD	...Repeated for module number 66
D9BF	...Repeated for module number 67
D9C1	...Repeated for module number 68
D9C3	...Repeated for module number 69
D9C5	...Repeated for module number 70
D9C7	...Repeated for module number 71
D9C9	...Repeated for module number 72
D9CB	...Repeated for module number 73
D9CD	...Repeated for module number 74
D9CF	...Repeated for module number 75
D9D1	...Repeated for module number 76
D9D3	...Repeated for module number 77
D9D5	...Repeated for module number 78
D9D7	...Repeated for module number 79
D9D9	...Repeated for module number 80
D9DB	...Repeated for module number 81
D9DD	...Repeated for module number 82
D9DF	...Repeated for module number 83
D9E1	...Repeated for module number 84
D9E3	...Repeated for module number 85
D9E5	...Repeated for module number 86
D9E7	...Repeated for module number 87
D9E9	...Repeated for module number 88



D9EB	...Repeated for module number 89
D9ED	...Repeated for module number 90
D9EF	...Repeated for module number 91
D9F1	...Repeated for module number 92
D9F3	...Repeated for module number 93
D9F5	...Repeated for module number 94
D9F7	...Repeated for module number 95
D9F9	...Repeated for module number 96
D9FB	...Repeated for module number 97
D9FD	...Repeated for module number 98
D9FF	...Repeated for module number 99
DA01	...Repeated for module number 100
DA03	...Repeated for module number 101
DA05	...Repeated for module number 102
DA07	...Repeated for module number 103
DA09	...Repeated for module number 104
DA0B	...Repeated for module number 105
DA0D	...Repeated for module number 106
DA0F	...Repeated for module number 107
DA11	...Repeated for module number 108
DA13	...Repeated for module number 109
DA15	...Repeated for module number 110
DA17	...Repeated for module number 111
DA19	...Repeated for module number 112
DA1B	...Repeated for module number 113
DA1D	...Repeated for module number 114
DA1F	...Repeated for module number 115
DA21	...Repeated for module number 116
DA23	...Repeated for module number 117
DA25	...Repeated for module number 118
DA27	...Repeated for module number 119
DA29	...Repeated for module number 120
DA2B	...Repeated for module number 121

DA2D	...Repeated for module number 122
DA2F	...Repeated for module number 123
DA31	...Repeated for module number 124
DA33	...Repeated for module number 125
DA35	...Repeated for module number 126
DA37	...Repeated for module number 127
DA39	...Repeated for module number 128
DA3B	...Repeated for module number 129
DA3D	...Repeated for module number 130
DA3F	...Repeated for module number 131
DA41	...Repeated for module number 132
DA43	...Repeated for module number 133
DA45	...Repeated for module number 134
DA47	...Repeated for module number 135
DA49	...Repeated for module number 136
DA4B	...Repeated for module number 137
DA4D	...Repeated for module number 138
DA4F	...Repeated for module number 139
DA51	...Repeated for module number 140
DA53	...Repeated for module number 141
DA55	...Repeated for module number 142
DA57	...Repeated for module number 143
DA59	...Repeated for module number 144
DA5B	...Repeated for module number 145
DA5D	...Repeated for module number 146
DA5F	...Repeated for module number 147
DA61	...Repeated for module number 148
DA63	...Repeated for module number 149
DA65	...Repeated for module number 150
DA67	...Repeated for module number 151
DA69	...Repeated for module number 152
DA6B	...Repeated for module number 153
DA6D	...Repeated for module number 154

DA6F	...Repeated for module number 155
DA71	...Repeated for module number 156
DA73	...Repeated for module number 157
DA75	...Repeated for module number 158
DA77	...Repeated for module number 159
DA79	...Repeated for module number 160
DA7B	...Repeated for module number 161
DA7D	...Repeated for module number 162
DA7F	...Repeated for module number 163
DA81	...Repeated for module number 164
DA83	...Repeated for module number 165
DA85	...Repeated for module number 166
DA87	...Repeated for module number 167
DA89	...Repeated for module number 168
DA8B	...Repeated for module number 169
DA8D	...Repeated for module number 170
DA8F	...Repeated for module number 171
DA91	...Repeated for module number 172
DA93	...Repeated for module number 173
DA95	...Repeated for module number 174
DA97	...Repeated for module number 175
DA99	...Repeated for module number 176
DA9B	...Repeated for module number 177
DA9D	...Repeated for module number 178
DA9F	...Repeated for module number 179
DAA1	...Repeated for module number 180
DAA3	...Repeated for module number 181
DAA5	...Repeated for module number 182
DAA7	...Repeated for module number 183
DAA9	...Repeated for module number 184
DAAB	...Repeated for module number 185
DAAD	...Repeated for module number 186
DAAF	...Repeated for module number 187

DAB1	...Repeated for module number 188
DAB3	...Repeated for module number 189
DAB5	...Repeated for module number 190
DAB7	...Repeated for module number 191
DAB9	...Repeated for module number 192
DABB	...Repeated for module number 193
DABD	...Repeated for module number 194
DABF	...Repeated for module number 195
DAC1	...Repeated for module number 196
DAC3	...Repeated for module number 197
DAC5	...Repeated for module number 198
DAC7	...Repeated for module number 199
DAC9	...Repeated for module number 200
DACB	...Repeated for module number 201
DACD	...Repeated for module number 202
DACF	...Repeated for module number 203
DAD1	...Repeated for module number 204
DAD3	...Repeated for module number 205
DAD5	...Repeated for module number 206
DAD7	...Repeated for module number 207
DAD9	...Repeated for module number 208
DADB	...Repeated for module number 209
DADD	...Repeated for module number 210
DADF	...Repeated for module number 211
DAE1	...Repeated for module number 212
DAE3	...Repeated for module number 213
DAE5	...Repeated for module number 214
DAE7	...Repeated for module number 215
DAE9	...Repeated for module number 216
DAEB	...Repeated for module number 217
DAED	...Repeated for module number 218
DAEF	...Repeated for module number 219
DAF1	...Repeated for module number 220

DAF3	...Repeated for module number 221
DAF5	...Repeated for module number 222
DAF7	...Repeated for module number 223
DAF9	...Repeated for module number 224
DAFB	...Repeated for module number 225
DAFD	...Repeated for module number 226
DAFF	...Repeated for module number 227
DB01	...Repeated for module number 228
DB03	...Repeated for module number 229
DB05	...Repeated for module number 230
DB07	...Repeated for module number 231
DB09	...Repeated for module number 232
DB0B	...Repeated for module number 233
DB0D	...Repeated for module number 234
DB0F	...Repeated for module number 235
DB11	...Repeated for module number 236
DB13	...Repeated for module number 237
DB15	...Repeated for module number 238
DB17	...Repeated for module number 239
DB19	...Repeated for module number 240
DB1B	...Repeated for module number 241
DB1D	...Repeated for module number 242
DB1F	...Repeated for module number 243
DB21	...Repeated for module number 244
DB23	...Repeated for module number 245
DB25	...Repeated for module number 246
DB27	...Repeated for module number 247
DB29	...Repeated for module number 248
DB2B	...Repeated for module number 249
DB2D	...Repeated for module number 250
DB2F	...Repeated for module number 251
DB31	...Repeated for module number 252
DB33	...Repeated for module number 253

DB35	...Repeated for module number 254					
DB37	...Repeated for module number 255					
DB39	...Repeated for module number 256					
<b>PLC Interface (Read/Write)</b>						
DC00	PLC Input States (16 items)	0 to 65535	---	1	F500	0
<b>PLC Interface (Read Only)</b>						
DC10	Virtual Input States (2 items)	0 to 65535	---	1	F500	0
DC12	Virtual Output States (30 items)	0 to 65535	---	1	F500	0
DC30	Contact Input States (8 items)	0 to 65535	---	1	F500	0
DC38	Contact Output States (8 items)	0 to 65535	---	1	F500	0
DC40	Breaker Control Flex Operand States (25 items)	0 to 65535	---	1	F500	0
DC59	Bus Differential Flex Operand States (2 items)	0 to 65535	---	1	F500	0
DC5B	Reserved (12 items)	---	---	---	F001	0
DC67	Ground Fault Flex Operand States (12 items)	0 to 65535	---	1	F500	0
DC73	High Current Flex Operand States (6 items)	0 to 65535	---	1	F500	0
DC79	Reserved (3 items)	---	---	---	F001	0
DC7C	High Current Transient Flex Operand States (6 items)	0 to 65535	---	1	F500	0
DC82	HRGF Detection Flex Operand States (6 items)	0 to 65535	---	1	F500	0
DC88	HRGF Location Flex Operand States	0 to 65535	---	1	F500	0
DC89	IOC Flex Operand States (4 items)	0 to 65535	---	1	F500	0
DC8D	LT Overcurrent Flex Operand States (6 items)	0 to 65535	---	1	F500	0
DC93	MSGF Overcurrent Flex Operand States (2 items)	0 to 65535	---	1	F500	0
DC95	Multi Point RELT Flex Operand States	0 to 65535	---	1	F500	0
DC96	Over Frequency Flex Operand States (12 items)	0 to 65535	---	1	F500	0
DCA2	Over Voltage Flex Operand States (12 items)	0 to 65535	---	1	F500	0
DCAE	Phase Loss Flex Operand States (12 items)	0 to 65535	---	1	F500	0
DCBA	Power Reversal Flex Operand States (12 items)	0 to 65535	---	1	F500	0

DCC6	Reserved (12 items)	---	---	---	F001	0
DCD2	ST Overcurrent Flex Operand States (6 items)	0 to 65535	---	1	F500	0
DCD8	Summation MSGF Zone Flex Operand States	0 to 65535	---	1	F500	0
DCD9	Synch Check Flex Operand States (8 items)	0 to 65535	---	1	F500	0
DCE1	Under Frequency Flex Operand States (12 items)	0 to 65535	---	1	F500	0
DCED	Under Voltage Flex Operand States (12 items)	0 to 65535	---	1	F500	0
DCF9	Reserved (7 items)	---	---	---	F001	0
<b>Source Setting Groups (Read/Write Setting) (30 modules)</b>						
E1FF	SRC X IOC Enabled (16 items)	0 to 1	---	1	F718	1 (Enabled)
E20F	SRC X IOC Pickup Setting Multiplier (16 items)	1.5 to 15	---	0.5	F001	60
E21F	SRC X Short Time Protection Switch (16 items)	0 to 1	---	1	F102	1 (Enabled)
E22F	SRC X Short Time Pickup Setting (16 items)	1.5 to 9	---	0.5	F001	40
E23F	SRC X Short Time I2T Curve (16 items)	0 to 1	---	1	F102	0 (Disabled)
E24F	SRC X Short Time Delay Band Setting (16 items)	0 to 6	---	1	F713	2 (BAND 3)
E25F	SRC X Long Time Delay Band Setting (16 items)	0 to 3	---	1	F711	1 (BAND 2)
E26F	SRC X GF Protection Switch (16 items)	0 to 1	---	1	F102	0 (Disabled)
E27F	SRC X GF Protection Trip Pickup Setting (16 items)	0.2 to 0.6	---	0.01	F001	24
E28F	SRC X GF Protection Trip I2T Curve (16 items)	0 to 1	---	1	F102	1 (Enabled)
E29F	SRC X GF Protection Trip Delay Band Setting (16 items)	0 to 6	---	1	F713	2 (BAND 3)
E2AF	SRC X GF Protection Trip Priority (16 items)	0 to 30	---	1	F001	0
E2BF	SRC X GF Protection Alarm Enable (16 items)	0 to 1	---	1	F102	0 (Disabled)
E2CF	SRC X GF Protection Alarm Pickup Setting (16 items)	0.2 to 0.6	---	0.01	F001	24
E2DF	SRC X GF Protection Alarm I2T Curve (16 items)	0 to 1	---	1	F102	1 (Enabled)
E2EF	SRC X GF Protection Alarm Delay Band Setting (16 items)	0 to 6	---	1	F713	2 (BAND 3)
E2FF	...Repeated for module number 2					

E3FF	...Repeated for module number 3
E4FF	...Repeated for module number 4
E5FF	...Repeated for module number 5
E6FF	...Repeated for module number 6
E7FF	...Repeated for module number 7
E8FF	...Repeated for module number 8
E9FF	...Repeated for module number 9
EAFF	...Repeated for module number 10
EBFF	...Repeated for module number 11
ECFF	...Repeated for module number 12
EDFF	...Repeated for module number 13
EEFF	...Repeated for module number 14
EFFF	...Repeated for module number 15
F0FF	...Repeated for module number 16
F1FF	...Repeated for module number 17
F2FF	...Repeated for module number 18
F3FF	...Repeated for module number 19
F4FF	...Repeated for module number 20
F5FF	...Repeated for module number 21
F6FF	...Repeated for module number 22
F7FF	...Repeated for module number 23
F8FF	...Repeated for module number 24
F9FF	...Repeated for module number 25
FAFF	...Repeated for module number 26
FBFF	...Repeated for module number 27
FCFF	...Repeated for module number 28
FDFD	...Repeated for module number 29
FEFF	...Repeated for module number 30



Format Name	Format Type/Bitmask	Format Definition
F001	UINT16	UNSIGNED 16 BIT INTEGER
F003	UINT32	UNSIGNED 32 BIT INTEGER (2 registers) High order word is stored in the first register. Low order word is stored in the second register.
F004	SINT32	SIGNED 32 BIT INTEGER (2 registers) High order word is stored in the first register. Low order word is stored in the second register.
F013	POWER_FACTOR	POWER FACTOR (SIGNED 16 BIT INTEGER) Positive values indicate lagging power factor; negative values indicate leading.
F050	UINT32	TIME and DATE (UNSIGNED 32 BIT INTEGER) Gives the current time in seconds elapsed since 00:00:00 January 1, 1970.
F060	FLOATING_POINT	IEEE FLOATING POINT (32 bits)
F072	HEX6	6 BYTES - 12 ASCII DIGITS
F102	ENUMERATION	DISABLED/ENABLED 0 Disabled 1 Enabled
F106	ENUMERATION	PHASE ROTATION 0 ABC 1 ACB
F108	ENUMERATION	OFF/ON 0 Off 1 On
F118	ENUMERATION	WAVEFORM CAPTURE MODE 0 Automatic Overwrite 1 Protected
F126	ENUMERATION	NO/YES CHOICE 0 No 1 Yes
F127	ENUMERATION	LATCHED OR SELF-RESETTING

		0	Latched
		1	Self-Reset
F131	ENUMERATION		FORCED CONTACT OUTPUT STATE
		0	Disabled
		1	Energized
		2	De-energized
		3	Freeze
F144	ENUMERATION		FORCED CONTACT INPUT STATE
		0	Disabled
		1	Open
		2	Closed
F176	ENUMERATION		SYNCHROCHECK DEAD SOURCE SELECT
		0	None
		1	LV1 and DV2
		2	DV1 and LV2
		3	DV1 or DV2
		4	DV1 xor DV2
		5	DV1 and DV2
F200	TEXT40		40 CHARACTER ASCII TEXT
			20 registers -16 Bits: 1st Char MSB, 2nd Char. LSB
F203	TEXT16		16 CHARACTER ASCII TEXT
F204	TEXT80		80 CHARACTER ASCII TEXT
F205	TEXT12		12 CHARACTER ASCII TEXT
F300	UINT16		FLEXLOGIC BASE TYPE (6 bit type)

The flexlogic BASE type is 6 bits and is combined with a 9 bit descriptor and 1 bit for protection element to form a 16 bit value. The combined bits are of the form : PTTTTTD-DDDDDDDD where P bit if set, indicates that the flexlogic type is associated with a protection element state and T represents bits for the BASE type, and D represents bits for the descriptor. The values in square brackets indicate the base type with P prefix [PTTTTTT] and the values in round brackets indicate the descriptor range.

[0] Off(0) this is boolean FALSE value

[0] On (1)This is boolean TRUE value

[2] CONTACT INPUTS (1 - 96)

[3] CONTACT INPUTS OFF (1-96)

[4] VIRTUAL INPUTS (1-64)

- [6] VIRTUAL OUTPUTS (1-64)
- [10] CONTACT OUTPUTS VOLTAGE DETECTED ( 1-64)
- [11] CONTACT OUTPUTS VOLTAGE OFF DETECTED (1-64)
- [12] CONTACT OUTPUTS CURRENT DETECTED (1-64)
- [13] CONTACT OUTPUTS CURRENT OFF DETECTED (1-64)
- [14] REMOTE INPUTS (1-32)
- [28] INSERT (Via Keypad only)
- [32] END
- [34] NOT (1 INPUT)
- [36] 2 INPUT XOR (0)
- [38] LATCH SET/RESET (2 INPUTS)
- [40] OR (2-16 INPUTS)
- [42] AND (2-16 INPUTS)
- [44] NOR (2-16 INPUTS)
- [46] NAND (2-16 INPUTS)
- [48] TIMER (1-32)
- [50] ASSIGN VIRTUAL OUTPUT (1 - 64)
- [52] SELF-TEST ERROR (See F141 for range)
- [56] ACTIVE SETTING GROUP (1-8)
- [62] MISCELLANEOUS EVENTS (See F146 for range)
- [64-127] ELEMENT STATES (Refer to Memory Map Element States Section)

F500                      UINT16                      PACKED BITFIELD

First register indicates I/O state with bits 0(MSB)-15(LSB) corresponding to I/O state 1-16. Second register indicates I/O state with bits 0-15 corresponding to I/O state 17-32 (if required). Third register indicates I/O state with bits 0-15 corresponding to I/O state 33-48 (if required). Fourth register indicates I/O state with bits 0-15 corresponding to I/O state 49-64 (if required). The number of registers required is determined by the specific data item.

A bit value of 0 = Off, 1 = On

- F701                      BITFIELD
- 0                      Power-on Self Test Error Detected
  - 1                      Built-In-Test Error Detected
  - 2                      Invalid Data Detected
  - 3                      Jamb sync occurred over threshold
  - 4                      Invalid node configuration detected

	5	Invalid CRC check of node firmware
	6	IButton Missing
	7	EEPROM Configuration Invalid
	8	Not Used
	9	Not Used
	10	Not Used
	11	Not Used
	12	Not Used
	13	Not Used
	14	Not Used
	15	Not Used
F702	BITFIELD	SRCx Node System Diagnostics 1
	0	Node not receiving a broadcast message from CPU A
	1	Node not receiving a broadcast message from CPU B
	2	No link pulse from CPU A
	3	No link pulse from CPU B
	4	Invalid system frequency received from CPU A
	5	Invalid system frequency received from CPU B
	6	Invalid IOC pickup setting multiplier received from CPU A
	7	Invalid IOC pickup setting multiplier received from CPU B
	8	Invalid ST setting received from CPU A
	9	Invalid ST setting received from CPU B
	10	Invalid GF setting received from CPU A
	11	Invalid GF setting received from CPU B
	12	Invalid command received from CPU A
	13	Invalid command received from CPU B
	14	CPU A command not completed due to arbitration
	15	CPU B command not completed due to arbitration
F703	BITFIELD	SRCx Node System Diagnostics 2
	0	CPU A command timed out
	1	CPU B command timed out
	2	Node synch not locked
	3	Unknown Message Received on Port 0

	4	Unknown Message Received on Port 1
	5	Not Used
	6	Not Used
	7	Not Used
	8	Not Used
	9	Not Used
	10	Not Used
	11	Not Used
	12	Not Used
	13	Not Used
	14	Not Used
	15	Not Used
F704	BITFIELD	SRCx Node Hardware Diagnostics
	0	Secondary Control Power
	1	Not Used
	2	Not Used
	3	Not Used
	4	AD AIOC Failure
	5	Node Not Calibrated
	6	Not Used
	7	Not Used
	8	Not Used
	9	Control_Power1_Status
	10	Control_Power2_Status
	11	App Flash CRC Fail
	12	Boot Flash CRC Fail
	13	Option Box Failure
	14	Not Used
	15	Not Used
F705	BITFIELD	SRCx NodeProt Protection Function Configuration
	0	Ground Fault Protection Enabled
	1	Instantaneous Overcurrent Protection Enabled

	2	Short Time Protection Enabled
	3	Switchable ST/IOC Protection Enabled/Disabled
	4	Switchable GF
	5	Not Used
	6	Not Used
	7	Not Used
	8	Not Used
	9	Not Used
	10	Not Used
	11	Not Used
	12	Not Used
	13	Not Used
	14	Not Used
	15	Not Used
F706	BITFIELD	SRCx Reflected CPU Diagnostics
	0	CPU A is using the hardware clock
	1	CPU A is not receiving data from one or more nodes
	2	CPU A Identifier
	3	CPU A Running Flex Logic
	4	CPU B Running Flex Logic
	5	Not Used
	6	Not Used
	7	Not Used
	8	CPU B is using the hardware clock
	9	CPU B is not receiving data from one or more nodes
	10	CPU B Identifier
	11	CPU A Running Flex Logic
	12	CPU B Running Flex Logic
	13	Not Used
	14	Not Used
	15	Not Used
F707	BITFIELD	SRCx Reflected CPU Commands
	0	No Op

	1	Open
	2	Close
	3	Trip
	4	Network Interlock
	5	Reset Interlock
	6	Light LED
	7	ATO Mode
	8	Start Firmware Download
	9	Switch Firmware
	10	Cancel Firmware Download
	11	Ignore CPU Message
	12	Firmware Packet Present
	13	Flux Shifter Open
	14	Flux Shifter Trip
	15	Not Used
F708	BITFIELD	SRCx Node Physical Status
	0	Breaker Contacts Open
	1	Breaker Contacts Closed
	2	Lockout
	3	Closing Spring Charged
	4	Primary Connected
	5	Primary Disconnected
	6	Secondary Connected
	7	Door Interlock
	8	Analog IOC
	9	Not Used
	10	Not Used
	11	Not Used
	12	Not Used
	13	Not Used
	14	Not Used
	15	Not Used
F709	BITFIELD	SRCx Node Logic and Trip Status

	0	Synchronization Source Bit 0
	1	Synchronization Source Bit 1
	2	Download Source Bit 0
	3	Download Source Bit 1
	4	Download Complete
	5	Test Mode
	6	GF Suspend
	7	Not Used
	8	Trip Flag
	9	Trip due to LT
	10	Trip due to ST
	11	Trip due to GF
	12	Trip due to IOC
	13	Phase Indicator Bit 0
	14	Phase Indicator Bit 1
	15	Not Used
F711	ENUMERATION	SRCx Long Time Delay Band Setting
	0	BAND 1
	1	BAND 2
	2	BAND 3
	3	BAND 4
F712	ENUMERATION	SRCx Breaker Connection
	0	Forward
	1	Reverse
F713	ENUMERATION	Delay Band Settings
	0	BAND 1
	1	BAND 2
	2	BAND 3
	3	BAND 4
	4	BAND 5
	5	BAND 6
	6	BAND 7
F714	ENUMERATION	SRCx Ground Fault Protection or Alarm Select



		0	Trip
		1	Alarm
F715	ENUMERATION		UL or ANSI
		0	UL
		1	ANSI
F716	ENUMERATION		Product Type
		0	Low Voltage Switchgear
		1	Medium Voltage Switchgear
		2	Paralleling Switchgear
F717	ENUMERATION		CPU Identifier
		0	CPU A
		1	CPU B
F718	ENUMERATION		IOC Protection Type
		0	Disabled
		1	Enabled
F719	ENUMERATION		SRCx PT Wiring
		0	None
		1	PT Rating 600V Delta
		2	PT Rating 600V Wye
		3	PT Rating 480V Delta
		4	PT Rating 480V Wye
		5	PT Rating 240V Delta
		6	PT Rating 208V Wye
F722	UINT32		Node 0-29 Bit Field Vector
		0	Bit field representing a 0 or 1 for Node 0
		1	Bit field representing a 0 or 1 for Node 1
		2	Bit field representing a 0 or 1 for Node 2
		3	Bit field representing a 0 or 1 for Node 3
		4	Bit field representing a 0 or 1 for Node 4
		5	Bit field representing a 0 or 1 for Node 5
		6	Bit field representing a 0 or 1 for Node 6
		7	Bit field representing a 0 or 1 for Node 7
		8	Bit field representing a 0 or 1 for Node 8

	9	Bit field representing a 0 or 1 for Node 9
	10	Bit field representing a 0 or 1 for Node 10
	11	Bit field representing a 0 or 1 for Node 11
	12	Bit field representing a 0 or 1 for Node 12
	13	Bit field representing a 0 or 1 for Node 13
	14	Bit field representing a 0 or 1 for Node 14
	15	Bit field representing a 0 or 1 for Node 15
	16	Bit field representing a 0 or 1 for Node 16
	17	Bit field representing a 0 or 1 for Node 17
	18	Bit field representing a 0 or 1 for Node 18
	19	Bit field representing a 0 or 1 for Node 19
	20	Bit field representing a 0 or 1 for Node 20
	21	Bit field representing a 0 or 1 for Node 21
	22	Bit field representing a 0 or 1 for Node 22
	23	Bit field representing a 0 or 1 for Node 23
	24	Bit field representing a 0 or 1 for Node 24
	25	Bit field representing a 0 or 1 for Node 25
	26	Bit field representing a 0 or 1 for Node 26
	27	Bit field representing a 0 or 1 for Node 27
	28	Bit field representing a 0 or 1 for Node 28
	29	Bit field representing a 0 or 1 for Node 29
	30	Not Used
	31	Not Used
F726	ENUMERATION	SRCX curve type
	0	Inverse time curve
	1	Constant time curve
F727	ENUMERATION	SRCX Trip or Open setting
	0	Open and don't activate lockout
	1	Trip and activate lockout
F728	BITFIELD	Option Bit Vectors
F732	ENUMERATION	ZSI Option
	0	ST ZSI
	1	GF ZSI

		2	ST and GF ZSI
F733	ENUMERATION		ZSI Zone Tier Settings
		0	ZSI Tier 0
		1	ZSI Tier 1
		2	ZSI Tier 2
		3	ZSI Tier 3
F734	ENUMERATION		Contact IO Debounce values
		0	Disabled
		1	Enabled_00016
		2	Enabled_00104
		3	Enabled_04088
		4	Enabled_32760
F735	ENUMERATION		Multipoint delay band settings
		0	BAND 1
		1	BAND 2
		2	BAND 3
		3	BAND 4
		4	BAND 5
		5	BAND 6
		6	BAND 7
F736	UINT32		Contact Input Configuration Low Vector
		0	0 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		1	1 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		2	2 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		3	3 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		4	4 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		5	5 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		6	6 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		7	7 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		8	8 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		9	9 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		10	10 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
		11	11 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output

	12	12 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	13	13 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	14	14 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	15	15 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	16	16 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	17	17 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	18	18 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	19	19 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	20	20 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	21	21 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	22	22 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	23	23 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	24	24 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	25	25 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	26	26 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	27	27 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	28	28 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	29	29 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	30	30 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	31	31 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
F737	UINT32	Contact Input Configuration High Vector
	0	32 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	1	33 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	2	34 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	3	35 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	4	36 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	5	37 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	6	38 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	7	39 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	8	40 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	9	41 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	10	42 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
	11	43 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output

12	44 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
13	45 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
14	46 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
15	47 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
16	48 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
17	49 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
18	50 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
19	51 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
20	52 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
21	53 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
22	54 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
23	55 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
24	56 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
25	57 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
26	58 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
27	59 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
28	60 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
29	61 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
30	62 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output
31	63 - I/O x + (bit number) Input, 1 - I/O x + (bit number) Output

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ENUMERATION

	Option String Authentication Status
0	New and Old Both Option strings Invalid
1	Using Valid New Option String
2	Using Valid Old Option String

