Serial Communication Protocol

Model 990X

Florite International, Inc.
Model 990X Instrument Serial Communication Protocol

D10109-100308

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1.0 Revision History

Effective Date	Revision Enhancement
25Dec2007	1. Initial edit conversion of 900 Series Protocol Document S990828
28Jul2008	1. Initial release

2.0 Purpose

The purpose of his document is to describe in detail the various aspects of providing 990x instrument commands and responses that result in operating value programming - fundamental to employing the system for acquiring and communicating measured information - and providing for process control output.

3.0 System Overview

3.1 Structure - this instrument is a general platform into which are installed certain standard and special operating modules. This document focuses on standard universal input-output module offerings. The platform supports universal input signal measures; and universal control output signals. The platform supports various communication facilities.

3.2 Channels and Ports - the instrument is comprised of individual functioning ports, or optionally pairs of ports comprised of an input and output to form a channel. The basic instrument is comprised of eight individual universal ports, or four channels; or optionally any combination of the available ports.

4.0 Serial Command Organization

4.1 Command Structures

This protocol was selected to service the need for serial error control while operating in local or wide area networks to transfer information between a unit and host computer.

4.1.1 Elements

The command format is a free form variable entry implementation, enabling expeditious economic means of achieving required programming results. Commands are comprised of the following structural elements:

4.1.1.1 Block Pre-limiter - sentinel indicating start of multiple packets message

4.1.1.2 Packet Pre-limiter - sentinel indicating start of a packet message

4.1.1.3 Information Frame - contains comma pre-limited fields which start with the first character immediately following the message pre-limiter and includes all successive characters up to and including a comma which immediately precedes the first ASCII hexadecimal checksum character.

4.1.1.4 Checksum - is two ASCII hexadecimal characters created for a mod256 negated sum of all message characters which is used by a host computer to check a message packets validity.

4.1.1.5 Packet delimiter - sentinel indicating end of a packet message

4.1.1.6 Block Delimiter - sentinel indicating end of multiple packets message

4.1.2 Transfer - all messages are serial half duplex send-response types.

4.1.3 Mastering - the protocol initiator or originator is the master. The master is responsible for managing the communication link connection status. The wide area network link master is the party that first sends, or solicits a connection to another party, and is first to initiate the

communication messaging process.

4.2 Command Addressing

4.2.1 Each 990x units may be assigned a unique [xxxxx] address, 0-65535, which must be pre-programmed in the instrument prior to deployment in a networked system. An instruments ports are designated with an appended [.x} or [.xx] sub-address.

4.2.2 The five digit address may be omitted when operating a single un-network unit - but must be used in multiple unit networks to differentiate the units from each other.

4.2.3 Command arguments are single ASCII alpha non-case sensitive characters.

HOST SEND

```
AZ     xxxxx          .xx     K       <cr>
|      |              |       |         |
|      |              |       |         + -- message delimiter
|      |              |       +-- command argument
|      |              +-- port sub-address
|      +-- unit address
+-- message prelimiter
```

AZ [.xx] <argument> <cr> Non-networked sub-addressed port

AZ [xxxxx.x] <argument> <cr> Networked sub-addressed port

RESPONSE - <argument> dependent

5.0 Command Operation

5.1 General Commands

These commands are general basic utility types not described in any particular order.

5.1.1 Command Synchronize

This command string terminates commands that may be presently in process and resets the command state machine operation to the initial ready state. It can be sent to instruments in a network to provide command state machine synchronization.

HOST SEND

<esc>AZ<cr>

RESPONSE - none

5.1.2 Menu Command

This command is provided for terminal oriented use and causes display of a menu listing the basic available command arguments, make, model, code version and object code start vector. The menu does not include special factory diagnostic and production test commands.

HOST SEND

AZM <cr>	Non-network
AZ [xxxxx] M <cr>	Network

RESPONSE

<cr><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf><lf>
COMMANDS - Model 0254 01.03.21 FD00
<cr><lf><lf>
[M] Command Select Menu<cr><lf>
[V] Display All Values<cr><lf>
[K] Output Accumulated Values<cr><lf>
[I] Product Identify<cr><lf>
[P] Program New Values<cr><lf>
[Z] Reset Accumulated Values<cr><lf>
[F] Set Control Amount<cr><lf>
[G] Log Record Control<cr><lf>

5.1.3 View Programmed Port Values

This command enables the operator to review all present programmed port values.

HOST SEND

AZ .xx V <cr>	Non-network xx=port number (1-8)
AZ [xxxxx.x] V <cr>	Network

RESPONSE

Response is dependent upon whether the port is off, input, output or Global Settings (port 9) which will be further described as provided in subsequent sections.

5.1.4 Identify Command

This command causes the addressed unit to respond with a string providing identity information about the instrument. This command is useful to determine a networked instrument complement. More detailed structural information is available in Section 6.0.

The responding unit checksum may be validated by the host who may request the information again should the received packet be in error.

HOST SEND

AZI <cr>	Non-network
AZ [xxxxx] I <cr>	Network

RESPONSE

AZ,00000,4,FLORITE,990x,08,01.01.13,FD00,<sum><cr><lf>

FIELDS

AZ	Pre-limiter
,00000	Unit address
,4	Response type
,FLORITE	Make
,990x	Model
,08	Port provision count
,01.01.13	Code version date yy-mm-dd
,FD00	Start vector
,<sum>	Negated mod256 sum
<cr><lf>	Delimiter

5.1.5 Message Serial Character Pacing Controls

These commands provide for terminal or host to suspend character sending, or to re-enable the sending to continue. This facility is particularly useful when unit sends large data amounts such as logged information.

5.1.5.1 Serial Character Pacing

This command acts as an XOF to temporarily suspend unit from sending further characters.

HOST SEND

AZH<cr>	Non-network
AZ [xxxxx]<cr>	Network

RESPONSE - none

This command acts as an XON to allow or re-enable unit to continue sending characters.

HOST SEND

AZS<cr>	Non-network
AZ[xxxxx]S<cr>	Network

RESPONSE - none

5.1.5.2 Hardware Pacing

This may electively be controlled by hardware using EIA/TIA232 Request-To-Send (RTS) hardware signal. Serial Xon-off or RTS-CTS pacing may be selected from Global Settings, Control Services section, and is a serial programmable selection.

5.1.6 Serial Message Error Control

Commands provide for error control of information packets sent by the unit. This is particularly useful when transferring information over wide area networks, and causes the unit to continue to send the next packet, or to resend a previous sent packet.

The send-resend is determined by the receiving host based on having computed a checksum from the received characters - then comparing it with the checksum sent by the unit. The unit must be pre-configured to enable the error control protocol.

5.1.6.1 Positive Acknowledge Command

This command must be issued by the receiving host to enable the unit to send its packet which is next eligible. Should the unit not receive positive acknowledgement within four seconds, it will resend the previous packet up to four times before abandoning the send session.

HOST SEND

AZA<cr>	Non-network
AZ [xxxxx] A <cr>	Network

RESPONSE - none

5.1.6.2 Negative Acknowledge Command

This command may be issued from the terminal or host to cause the unit to resend its previous packet. Should the unit not receive negative acknowledgement prior to a lapse of four seconds - it will automatically resend the previous unacknowledged packet up to four times before abandoning the send session.

HOST SEND

AZN<cr>	Non-network
AZ [xxxxx] N <cr>	Network

RESPONSE - none

5.2 Input Port Commands

5.2.1 Measured Values Command

This command is used to gather measured information from one or all input ports.

HOST SEND

Non-Networked

AZ [.xx] K <cr>	Send one input ports values
AZ K <cr>	Send all input ports as a value block with [Comm Port] set for [Report]

Networked

AZ [xxxxx.xx] K <cr>	Send one input ports values
AZ [xxxxx] K <cr>	Send all input ports as a value block with [Comm Port] set for [Report]

RESPONSE - SINGLE PORT MESSAGE

AZ,00000.00,4,00000000.00,00000000.00,- 0000050.00,- 0000049.90,00024,<sum><cr><lf>

RESPONSE - ALL PORTS MESSAGES

<dle><stx>
AZ,00000.00,3,00000000.00,00000000.00,- 0000050.00,- 0000049.90,00024,<sum><cr><lf>
AZ,00000.00,4,00000000.00,00000000.00, 0000050.00, 0000049.90,00024,<sum><cr><lf>
AZ,00000.00,5,00000000.00,00000000.00,+0000050.00,+0000049.90,00024,<sum><cr><lf>
<dle><etx>

5.2.2 Send Input Port Programmed Values
This command enables a terminal operator or host to acquire the present state of input port programmed values.

HOST SEND

AZ [.xx] V <cr>	Non-network
AZ [xxxxx.x] V <cr>	Network

RESPONSE

```
PROGRAM VALUES - Channel 1 - Port 01

<04>  Measure Units            ml
<10>  Time Base               min
<03>  Decimal Point          x.xx
<27>  Gas Factor            1.000
<28>  Log Type                Off
<00>  PV Signal Type       0-20mA
<09>  PV Full Scale         20.00 ml/m
```

5.2.3 Program Input Port Values
Each of the input port programmed operating values can be individually queried or changed in accordance with Section 6.0 using the <xx> value index.

5.2.4 Clear Accumulated Values
This command allows any one input port accumulated value to be independently reset to zero.

HOST SEND

AZ [.xx] Z n <cr>	Non-network
AZ [xxxxx.xx] Z n <cr>	Network

n=0	Quantity 1
n=1	Quantity 2
n=2	Quantity 1, Quantity 2, Time
n=3	Operate Time
n=4	Set Factory default program values

RESPONSE - none

5.3 Output Port Control Commands

5.3.1 Control Output Port Values
This command enables terminal operator or host to acquire the present state of output port programmed values.

HOST SEND

AZ [.xx] V <cr>	Non-network
AZ [xxxxx.x] V <cr>	Network

RESPONSE

```
PROGRAM VALUES - Channel 1 - Port 02

<00>  SP Signal Type       0-20mA
<09>  SP Full Scale         20.00 ml/m
<02>  SP Function             Rate
<01>  SP Rate               0.00 ml/m
<29>  SP VOR               Normal
<44>  SP Batch              0.00 ml
<45>  SP Blend             0.000 %
<46>   SP Source            Keypad
```

5.3.2 Program Output Port Values

Each of the output port programmed operating values can be individually queried or changed in accordance with Section 6.0 using the <xx> value index.

5.3.3 Batch and Blend Control Commands

These commands are provided to conduct output port control operations that require starting and stopping.

5.3.3.1 Batch Command

This command is used to start a new batch quantity process, or stop a batch process that may currently be in processing.

5.3.3.1.1 Bulk Batching

Bulk batching starts all qualified batch processes for all qualified ports(channels) at the same time.

Qualified output ports(channels) [Control Function] must be programmed to [Batch] and [Batch Quantity] set greater than zero; with [Link] input port programmed to accumulate quantity.

HOST SEND

AZ F*<cr>	start all batches
AZ F<cr>	stop all batches

RESPONSE(S)

AZ, [xxxxx.xx],5,FOK,DA,<cr><lf>	batch started and in process
AZ, [xxxxx.xx],5,FDONE,4E,<cr><lf>	batch(s) completed
AZ, [xxxxx.xx],5,FERROR,5D,<cr><lf>	command error

5.3.3.2 Blend Command

This command is used to select a blend master and at the same time start a desired blending operation. At least one, or more, slaves output rates are controlled to be a

proportion of the selected masters delivery rate.

Qualified output ports(channels) must have their [Control Function] set to [Blend]. A

The required master input port(channel) is specified in the start command by inserting its port sub-address [.xx] in the command, and must be one of the following:

Channel	Sub-Address
1	1
2	3
3	5
4	7

HOST SEND

AZ [.xx] B<cr>	Start blending
AZ F<cr>	Stop blending

RESPONSE - none

5.4 Global Settings Services

5.4.1 Global Setting Values

This command enables terminal operator or host to acquire the present state of the Global programmed values. The Global Settings port number is one greater than the maximum number of available ports - nine (9) for a 990x.

HOST SEND

AZ [.09] V <cr>	Non-Network
<or>	
AZ [.9] V <cr>	
AZ [xxxxx.09] V <cr>	Network
AZ [xxxxx.9] V <cr>	

RESPONSE

```
PROGRAM VALUES - Channel Global

<39>  Audio Beep      On
<32>  Zero Supress    On
<33>  Pwr SP Clear    Off
<17>  Network Addr    00000
<22>  Date-Time       00Jan00 00:00:00
<42>  Report Next     00Jan00 00:00:00 (view only)
<23>  Report Start    00Jan00 00:00:00
<24>  Report Rate     535 sec
<43>  Record Count    000000 (view only)
<25>  Sample Rate     535 sec
```

5.4.2 Set Global Settings Values

Each of the system port programmed operating values can be individually queried or changed in accordance with Section 6.0 using the <xx> value index.

5.5 Communication Message Basics

Messages between host and unit are either polled (solicited) or un-polled (un-solicited), where the host is normally the polling (soliciting) party. The unit either responds to a host poll - or based on the 990x programming - it can send un-polled messages to the host to send information on the occurrence of an alarm or other selected event; or as a periodic report invoked based on a programmed scheduled frequency.

5.5.1 Message Structure

A packet is a group of information from a single port. A group of packets sent together are a block message as shown in examples as follows:

MESSAGE

AZ,00909.00,2,00000988.93,00162871.43,-0000003.27,+0000003.27,00022,Q,X,H,L,X,<sum><cr><lf>

BLOCK

<dle><stx>
AZ,00909.02,2,00000988.93,00162871.43,-0000003.27, 0000003.27,00022,Q,X,H,L,X,<sum><cr><lf>
AZ,00909.03,2,00000988.93,00162871.43, 0000003.27,+0000003.27,00022,Q,X,H,L,X,<sum><cr><lf>
<dle><etx>

5.5.2 Message Format

BLOCK PRELIMITER

<dle><stx>	Start of multi-port block

PACKET PRELIMITER

AZ	Start of a port packet

ADDRESS - unit and port(s) providing the information

,xxxxx	unit address
.xx	port sub-address

TYPE - message purpose

Un-polled Types	
,0	Alarm
,1	Report scheduled
,2	Com install test
,3	Service acknowledge
,6	Log data scheduled report
Polled Types	
,4	Information request response
,5	Control batch status
,6	Log data request
,7	<reserved>
,8	<reserved>

,9	<reserved>

MEASURE - port values - sign convention as +, space(+), or -

,QTY1	Quantity 1
,QTY2	Quantity 2
,RATE	Rate-Value
,<reserved>	<reserved>
,HOURS	Time

ALARMS - based on programmed alarm limit values

,X	No alarm <default>
,Q	Quantity 1
,C	Quantity 2
,H	Rate-Value high
,L	Rate-Value low
,T	Service Time

CHECKSUM

,<sum>	Negated mod256 sum

PACKET DELIMITER

<cr><lf>	Packet end

BLOCK DELIMITER

<dle><etx>	Block end

5.5.3 Communication Procedures - Wide Area Network (WAN)

5.5.3.1 The unit performs an un-polled link connection with the host and delays 10 seconds to insure the host link negotiation is complete which nominally requiring about 5 seconds before taking further action.

5.5.3.2 Prior to link negotiate delay expiration - the host may send an AZH (XOF) command causing the unit to suspend sending its un-polled message until the host thereafter sends an AZS (XON) command releasing the suspend condition.

Once the unit is enabled to send - the host has become the line master and the field unit will stay connected for a maximum of 8 minutes, unless the link is first disconnected by the host.

5.5.3.3 The unit sends the message to the host that had originally been the cause to acquire the host link.

5.5.3.4 Four seconds are allowed for the host to receive the first information packet and acknowledge its receipt during which time the host compares the checksum sent by the unit against its own calculated value. The host then sends a positive acknowledge (AZA)

to the unit if the checksums are equal, indicating the message was correctly received. Otherwise - the host may either not send a positive acknowledge, or send a negative acknowledge (AZN), either of which indicates the received packet was in error.

5.5.3.5 When the unit receives a AZN, or no positive host response in 4 seconds, the unit will resend the packet that was, or presumed to be, in error.

5.5.3.6 The object is to communicate the information to the host. The unit allows 3 more such tries to resend a particular packet - after which it will disconnect the link; reinitiate the entire send process after two minutes for a total of four such re-initiations; and if each continues to be unsuccessful - re-initiation of all of the above will occur every twenty-four hours thereafter.

5.6 Log Record Sub-System

A unit may optionally be installed with the log sub-system which supports periodic sampling of input port measured information which is then stored in the log memory as sequential date-time stamped records.

This section describes the serial command operation for the logging sub-system. The ability of an instrument to perform periodic logging requires that the real date-time clock option be installed, and logging memory installed - the presence of which are automatically detected by the unit at power-up.

5.6.1 Serial Control Commands

The logging serial function commands are a duplicate of the manual key functions.

5.6.1.1 Start Logging

This operation clears existing records and starts logging new records at the present date-time which is logged in the memory as a stamp record.

HOST SEND

AZG2<cr> Key [START] viewing records

RESPONSE - none

5.6.1.2 Send Log Records

This operation stops logging, if not already stopped, and sends all records from the date-time this logging session was begun.

HOST SEND

AZG0<cr> Key [UP] viewing records

RESPONSE

As shown and described in the Log Send Record Structure section.

5.6.1.3 Clear Log Records
This operation causes all previous records to be deleted from the log memory.

HOST SEND
AZG1<cr> Key [LEFT] viewing records

RESPONSE - none

5.6.1.4 Stop Periodic Logging
This operation causes the logging process to stop with all existing log records retained for host acquisition, and a date-time stamp record is inserted in the log memory.

HOST SEND
AZG3<cr> Key [STOP] viewing records

RESPONSE - none

5.6.2 Log Record Send Pacing - described in previous section.

5.6.3 Log Error Control - described in previous section.

5.6.4 Log Send Compression
The log send process may be selected to send the numeric value portions of records in compressed signed binary reducing send time.

5.6.5 Log Send Record Structure
Log records are sent as a block with embedded column definitions - easy Excel import as follows:

BLOCK

```
<dle><stx>Addr,Port,Type,Value,Units,Date,Time<cr><lf>
00990,,Stamp,,,07Jan06,07:12:39<cr><lf>> ← Starting Time Stamp
00990,01,Qty1,00000183.33, ml,07Jan06,07:12:39<cr><lf>
00990,02,Rate,00000000.28, øC,07Jan06,07:12:39<cr><lf>
00990,08,Qty2,00000247.15,gal,07Jan06,07:12:39<cr><lf>
00990,01,Qty1,00000183.33, ml,07Jan06,07:12:41<cr><lf>
00990,02,Rate,00000000.28, øC,07Jan06,07:12:41<cr><lf>
00990,08,Qty2,00000247.15,gal,07Jan06,07:12:41<cr><lf>
00990,,Stamp,,,07Jan06,07:12:58<cr><lf>  ← Time Stamp Change Record
00990,01,Qty1,00000188.42, ml,07Jan06,07:12:58<cr><lf>
00990,02,Rate,00000000.29, øC,07Jan06,07:12:58<cr><lf>
00990,08,Qty2,00000247.15,gal,07Jan06,07:12:58<cr><lf>
00990,01,Qty1,00000188.42, ml,07Jan06,07:13:00<cr><lf>
00990,02,Rate,00000000.29, øC,07Jan06,07:13:00<cr><lf>
00990,08,Qty2,00000247.16,gal,07Jan06,07:13:00<cr><lf>
<dle><etx>
```

COLUMNS

Addr	Unit network address
Port	Measure input port number
Type	Measure description
Value	Numeric value
Units	Measure units
Date,Time	Value date-time in 24 hour format
Stamp	Time gap record

5.6.6 Log Date-Time Stamps

Clock records are sent sequentially in time and include all stamp records. The logging function may be in process when power to the logger is lost. When power is restored - the logger checks whether it was logging prior to the time power was lost. If logging was previously in process - a time gap record is inserted into the log memory indicating all records following the gap record have occurred at the programmed logging rate.

6.0 Serial Value Programming

This section is organized into reading and programming values. The <index> value is a numeric designator unique to each programmable value - except Port Type.

6.1 Read a Programmed Value

HOST SEND

AZ [.xx] P [index] ? <cr>	Non-network
AZ [xxxxx.xx] P[index] ? <cr>	Network

RESPONSE

<200ms delay>

AZ,xxxxx.xx,4,Pyy,<present value>,<cksm><cr><lf>

A received response indicates that no error was detected.

EXAMPLE

AZ,00123.08,4,P08,04.000,DF<cr><lf>

6.2 Program a New Value

HOST SEND

AZ [.xx] P[index] = <new value> <cr>	Non-network
AZ [xxxxx.xx] P[index] = <new value> <cr>	Network

RESPONSE

<200ms delay>

AZ,xxxxx.xx,4,Pyy,<new value>,<cksm><cr><lf>

A correct received response indicates that no error was detected. It is recommended that host software validate the responding message check-sum, followed by the unit message address, port number, value index, and new programmed value to be certain that the desired value change was programmed successfully.

6.3 Input Port Values

Index	Value Title	Value	Range	Notes
0	Port Type			1 or 2 ascii chars
		0	Off	
		1-4		<output port reserved>
		5	Input 0-20mA	1 ascii char min
		6	Input 0-10V	
		7	Input 0-4096mV	
		8	Input Ohms	
		9	Input TTD	
		:	Input Pulse-Freq	
		;	Input Digital	
	Input Excitation			1 ascii char optional
		0	VR	analog reference voltage
		1	5v	
		2	Vn	system input voltage
Measurement magnitude range				
3	Decimal Point	0	xxx.	1 ascii char
		1	xx.x	
		2	x.xx	
		3	.xxx	
Character string identifying the physical measurement type				
4	Measure Units	uuuuu	<see Data Sheet>	1-5 ascii chars
Analog interpolator representing the engineering units of the greater measured signal				
9	PV Full Scale	xxxxxxxxxx	0 to 1,999,999,999 - 999,999,999	1-11 ascii chars var dp
Measurement per unit time relationship				
10	Rate Time Base	0	Scalar <none>	1 ascii char
		1	sec	
		2	min	
		3	hrs	
		4	day	
Scale Factor by which interpolated units are multiplied				
27	Scale Factor	xxxxxxx.xxx	0 to ±9,999,999.999	1-11 ascii chars fix dp

Ohm Calibrate value
Gas Factor

Select measured value to periodically log

28	Log Select			1 ascii char
		0	Off	
		1	Rate-Scalar	
		2	Quantity 1	
		3	Quantity 2	

6.4 Output Port Values

Index	Value Title	Value	Range	Notes
0	Port Type			1 or 2 ascii chars
		0	Off	1 ascii char min
		1	Output 0-20mA	Source current
		2	Output 0-10V	
		3	Output Relay	
		4	Output Dig	
		<5-;>		<input port reserved>
	Output Link			1 or 2 ascii char(s)
		0	Custom PLC - reserved	
		1-9	Linked input port number	

Manual output set-point

1	SP Rate	xxxxxxxxxx	0 to 1,999,999,999 -999,999,999	1-11 ascii char var dp

Select output control service

2	SP Function	0	Monitor	1 ascii char
		1	Manual (Rate)	
		2	Batch	
		3	Blend	
		4	Pid	
		5	Digital	

Analog De-Interpolate representing the engineering units of the greatest signal allowed

9	SP Full Scale	xxxxxxxxxx	0 to +1,999,999,999 - 999,999,999	1-11 ascii chars var dp

Valve Override valve state selection

29	SP VOR		0-2	1 ascii char
		0	Normal	tri-state
		1	Closed	vo < -4v
		2	Open	vo > +8v

Batch Delivery Set-Point				
44	SP Batch	xxxxxxxxxx	0 to 1,999,999,999 - 999,999,999	1-11 ascii chars var dp
Blend Mixing Set-Point				
45	SP Blend	xxxxxxxxxx	0 to 1,999,999,999 - 999,999,999	1-11 ascii chars var dp automatic % units
Set-Point Programming Source				
46	SP Source	0-1		1 ascii char
		0 Keypad		
		1 Serial		keypad prohibit

6.5 Global Setting Values

These settings affect all aspects of the system - not port or channel associated.

Index	Value Title	Value	Range	Notes
17	Network Addr	xxxxx	0-65535	1-5 ascii chars
Clock Date-Time				
22	Date-Time			ddmmyyhhmmss string
	day	dd	01-31	2 ascii chars
	mon	mm	01-12	2 ascii chars
	yr	yy	00-99	2 ascii chars
	hrs	hh	00-23	2 ascii chars
	min	mm	00-59	2 ascii chars
	sec	ss	00-59	2 ascii chars
Report start date-time				
23	Report Start	see index <22>		
Report recurring interval to send un-solicited				
24	Report Freq	<nnn><unit>		4 ascii chars total
		nnn	000-999	3 ascii chars
		unit		
		0	sec	1 ascii char
		1	min	
		2	hrs	
		3	day	
		4	mon	
Log record periodic sample rate				
25	Log Freq	see index <24>		

Zero Suppression - ON suppresses leading value zero values

32	Zero Supress		0-1	1 ascii char
		0	Off	
		1	On	

Power Set-Points Clear - ON causes all channel set-points to become zero

33	Pwr SP Clear		0-1	1 ascii char
		0	Off	
		1	On	

Audio Annunciate Control - ON enables annunciate key activation and alarms

39	Audio Beep		0-1	1 ascii char
		0	Off	
		1	On	