

AWT420

Universal 4-wire, dual-input transmitter



HART field device
specification

Measurement made easy

—
Universal 4-wire
single- and dual-
input transmitter

Introduction

This Communications supplement provides HART® field device specifications for the AWT420 transmitter.

For more information

Further publications for the AWT420 transmitter are available for free download from:

www.abb.com/measurement

or by scanning this code:



Links and reference numbers for the transmitter publications are also shown below:

Search for/click on:

AWT420 transmitter – Data Sheet	DS/AWT420-EN
AWT420 transmitter – Commissioning Instruction	CI/AWT420-EN
AWT420 transmitter – Operating Instruction	OI/AWT420-EN
AWT420 transmitter – Hazardous area information:	INF/ANAINST/012-EN
AWT420 transmitter – HART Communications Supplement	COM/AWT420/HART-EN
AWT420 transmitter – Ethernet Communications Supplement	COM/AWT420/ ETHERNET-EN

Health & Safety

Document symbols

Symbols that appear in this document are explained below:

DANGER

The signal word '**DANGER**' indicates an imminent danger. Failure to observe this information will result in death or severe injury.

WARNING

The signal word '**WARNING**' indicates an imminent danger. Failure to observe this information may result in death or severe injury.

CAUTION

The signal word '**CAUTION**' indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

NOTICE

The signal word '**NOTICE**' indicates potential material damage.

Note

'**Note**' indicates useful or important information about the product.

Safety precautions

Be sure to read, understand and follow the instructions contained within this manual before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.

WARNING

Bodily injury

Installation, operation, maintenance and servicing must be performed:

- by suitably trained personnel only
- in accordance with the information provided in this manual
- in accordance with relevant local regulations

Potential safety hazards

AWT420 transmitter – electrical

WARNING

Bodily injury

To ensure safe use when operating this equipment, the following points must be observed:

- Up to 240 V AC may be present. Be sure to isolate the supply before removing the terminal cover.

Safety advice concerning the use of the equipment described in this manual or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

Safety standards

This product has been designed to satisfy the requirements of IEC61010-1:2010 3rd edition 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' and complies with US NEC 500, NIST and OSHA.

Sales



Service



Software



Product symbols

Symbols that may appear on this product are shown below:



Protective earth (ground) terminal.



Functional earth (ground) terminal.



Alternating current supply only.



Direct current supply only.



This symbol, when noted on a product, indicates a potential hazard which could cause serious personal injury and/or death. The user should reference this instruction manual for operation and/or safety information.



This symbol, when noted on a product enclosure or barrier, indicates that a risk of electrical shock and/or electrocution exists and indicates that only individuals qualified to work with hazardous voltages should open the enclosure or remove the barrier.



The equipment is protected through double insulation.



Recycle separately from general waste under the WEEE directive.

Product recycling and disposal (Europe only)



ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible. The European Waste Electrical and Electronic Equipment (WEEE) Directive that initially came into force on August 13 2005 aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment. In conformity with European local and national regulations, electrical equipment marked with the above symbol may not be disposed of in European public disposal systems after 12 August 2005.

Information on ROHS Directive 2011/65/EU (RoHS II)



ABB, Industrial Automation, Measurement & Analytics, UK, fully supports the objectives of the ROHS II directive. All in-scope products placed on the market by IAMA UK on and following the 22nd of July 2017 and without any specific exemption, will be compliant to the ROHS II directive, 2011/65/EU.

End-of-life battery disposal

The transmitter contains a small lithium battery (located on the processor/display board) that must be removed and disposed of responsibly in accordance with local environmental regulations.

Cyber security

This product is designed to be connected to and to communicate information and data via a digital communication interface. It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be). You shall establish and maintain any appropriate measures (such as but not limited to the application of authentication measures etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB Ltd and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

NOTICE

For return for recycling, please contact the equipment manufacturer or supplier for instructions on how to return end-of-life equipment for proper disposal.

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2. Introduction

Scope

ABB AWT420 complies with HART Protocol Revision 7.0. This document specifies all the device specific features and documents HART Protocol implementation details (e.g., the Engineering Unit Codes supported). The functionality of this Field Device is described sufficiently to allow its proper application in a process and its complete support in HART capable host applications.

Purpose

This specification is designed to complement the AWT420 User Guide, Commissioning Instructions and HART Communications Supplement by providing a complete, unambiguous description of this Field Device from a HART Communication perspective

Who should use this document?

The specification is designed to be a technical reference for HART capable Host Application Developers, System Integrators and knowledgeable End Users. It also provides functional specifications (e.g., commands, enumerations and performance requirements) used during Field Device development, maintenance and testing. This document assumes the reader is familiar with HART Protocol requirements and terminology.

Abbreviations and Definitions

2E Sensor	Two Electrode conductivity sensor
4E Sensor	Four Electrode conductivity sensor
TSS Sensor	Digital Turbidity and Total Suspended Solids Sensor
RDO Probe	Rugged Dissolved Oxygen Probe
2E Module	Interprets signals from an analogue two electrode conductivity sensor
4E Module	Interprets signals from an analogue four electrode conductivity sensor
pH Module	Interprets signals from an analogue pH sensor
EZLink Module	Communicates with digital sensors (pH, TSS, RDO)
TC	Temperature Compensation
ORP	Oxidation-Reduction Potential
TSS	Total Suspended Solids
Turb	Turbidity Sensor module

References

OI/AWT420-EN – ABB AWT420 Operating Instruction

COM/AWT420/HART-EN – ABB AWT420 HART Communication Supplement

3.Device Identification

Manufacturer Name:	ABB Ltd	Model Name(s):	AWT 420
Manufacture ID Code:	1A	Device Type Code:	1A35
HART Protocol Revision	7.0	Device Revision:	2
Number of Device Variables	25		
Physical Layers Supported	FSK		
Physical Device Category	Water Analyzer		

4. Product Overview

The AWT420 single or dual-input transmitter is designed for use with ABB's Aztec 400 range of pH and conductivity sensors and advanced digital sensors for monitoring the key parameters in municipal and industrial water / wastewater treatment.

The transmitter and sensors feature ABB's EZLink technology, a plug-and-play connection and configuration method that makes the AWT420 the easiest-to-use and maintain monitoring system on the market today.

The AWT420 utilizes the latest technology to provide a highly reliable yet flexible monitoring system that meets the demands of today's users.

- Plug-and-play sensor connection
- Automatic sensor recognition and set-up
- Advanced predictive maintenance diagnostics
- Enhanced measurement accuracy due to the lowest electrical noise interference
- Data logging and graphical process trending
- Full audit trail capability
- SD card data download capability
- Flexible communications including HART, Ethernet, Profibus and MODBUS protocols

pH and redox (ORP) measurement

The AWT420 pH/ORP module is compatible with ABB's full range of analog pH, redox (ORP) sensors in addition to most competitors' sensors.

For measuring process liquids that change pH value based on temperature, a pH solution coefficient can be entered that compensates the Nernstian value for pH measurements, and the raw voltage value for ORP measurements, by a fixed value per each 10 °C (18 °F).

Conductivity measurement

The AWT420 fully supports ABB's range of 2-electrode and 4-electrode sensors for conductivity, resistivity, concentration and inferred pH measurement making the AWT420 suitable for installations ranging from ultra-pure water to harsh chemical applications. For users that use conductivity to infer liquid concentration a concentration curve can be entered using the 6-point linearizer table.

Turbidity measurement

The AWT420 Turbidity module fully supports ABB's 7998 range of 4690 series Turbidity sensors, offering a configurable range of 0 to 400.0 NTU depending on sensor.

EZLink digital sensors

The AWT420 EZLink module is compatible with ABB's range of EZLink digital sensors providing plug-and-play sensor connectivity, automatic sensor recognition/set-up and advanced predictive diagnostics.

Supported analog sensors:

- pH
- 2-electrode conductivity
- 4-electrode conductivity
- Turbidity
 - 7998/011
 - 7998/012
 - 7998/016

Supported EZLink digital sensors:

- pH/Redox (ORP)
 - 100 GP-D
 - 100 ULTRA-D
 - 500 PRO-D
 - 700 ULTRA-D
- Dissolved oxygen
 - ADS430
- Turbidity/suspended solids
 - ATS430

The Analogue output provided by the HART communications module corresponds to the primary variable, outputting 4mA at the lower range value and 20mA at the upper range value. Two additional analogue outputs can be configured, though do not offer HART FSK.

5. Product Interfaces

5.1. Process Interface

Analogue Sensor Input Channels

The sensor module provides 8 terminals, 1-4 are for Process Variable (detailed in commissioning instructions) and 5-8 for the temperature sensor (up to 3 wire RTD + Shield). Operating ranges correspond to the capabilities of each sensor type.

Digital Sensor Input Channels

Digital sensors can be connected by the EZLink connectors fitted to the underside of the case.

Different types of sensor modules can be connected to this device. Please refer user manual for details about different input signal types and ranges.

5.2. Host Interface

The two-wire 4 to 20 mA current loop is connected via terminals 1 and 2 on the HART communications module and can be tested via terminals 4 and 5.

HART Analog Output

The output from the transmitter representing the PV measurement linearized and scaled according to the engineering range set on the instrument. PV% is displayed on the Signals View page.

	Values (mA or V)
Below Lower Range	3.8 mA
Above Upper Range	20.5 mA
Device malfunction indication	User Configurable High (20.5mA) or Low (3.6mA)
Maximum current	22.0 mA
Multi-Drop current draw	4.0 mA
Lift-off voltage	12V

5.3. Local Interfaces, Jumpers and Switches

Local Controls and Displays

The AWT420 has a color TFT LCD display and 6 capacitive push buttons.

Internal Jumpers and Switches

The device has 2 internal DIP switches, situated inside the front cover:

DIP1: Bootloader

If the device is powered up with DIP1 in the ON position it will enter the bootloader allowing for Transmitter Upgrade, Sensor Upgrade (TSS Only), Bluetooth module upgrade, and Factory Reset.

DIP2: Unassigned

6. Device Variables

This Field Device exposes 25 Device Variables, where the instrument configuration does not support a specific variable (i.e. different sensors fitted), these device variables will return a NaN value.

Device Variable	Signal	Source	Sensor Type	Classification	Code
0	pH	Slot 1	pH	Analytical	81
1	pH	Slot 2	pH	Analytical	81
2	Redox/ORP	Slot 1	pH	Electric Potential	83
3	Redox/ORP	Slot 2	pH	Electric Potential	83
4	Conductivity	Slot 1	2E or 4E	Conductance	87
5	Conductivity	Slot 2	2E or EC	Conductance	87
6	Cond. Concentration	Slot 1	2E or EC	Concentration	90
7	Cond. Concentration	Slot 2	2E or EC	Concentration	90
8	Resistivity	Slot 1	2E	Resistance	85
9	Resistivity	Slot 2	TE	Resistance	85
10	Dissolved Oxygen	Slot 1	RDO	Concentration	90
11	Dissolved Oxygen	Slot 2	RDO	Concentration	90
12	% Saturation	Slot 1	RDO	Concentration	90
13	% Saturation	Slot 2	RDO	Concentration	90
14	Turbidity	Slot 1	TSS or Turb	Turbidity	97
15	Turbidity	Slot 2	TSS or Turb	Turbidity	97
16	Total Suspended Solids	Slot 1	TSS	Concentration	90
17	Total Suspended Solids	Slot 2	TSS	Concentration	90
18	Temperature	Slot 1	All	Temperature	64
19	Temperature	Slot 2	All	Temperature	64
20	Inferred pH	Slot 1+2	TE	Analytical	81
21	Difference	Slot 1+2	TE	Conductance	87
22	Ratio	Slot 1+2	TE	None	-
23	% Passage	Slot 1+2	TE	Concentration	90
24	% Rejection	Slot 1+2	TE	Concentration	90

7. Dynamic Variables

Four Dynamic Variables are implemented:

Sensor S1	Primary Variable	Units	Secondary Variable	Units
pH - pH	pH	pH	Temperature	°C, °F
pH - Redox/ORP	ORP	mV	Temperature	°C, °F
TE/4E- Conductivity	Conductivity	mS/cm, µS/cm	Temperature	°C, °F
TE/4E- Concentration	Concentration	%, ppm, ppb, mg/l, µg/l	Temperature	°C, °F
2E- Resistivity	Resistivity	MΩ.cm	Temperature	°C, °F
TSS/Turb - Turbidity	Turbidity	NTU, FNU	N/A	N/A
TSS - Suspended Solids	Suspended Solids	ppm, mg/l	Turbidity	NTU, FNU
RDO - Dissolved Oxygen	Dissolved Oxygen	%	Temperature	°C, °F
RDO - % Saturation	% Saturation	%	Temperature	°C, °F

Sensor S2	Tertiary Variable	Units	Quaternary Variable	Units
pH - pH	pH	pH	Temperature	°C, °F
pH - Redox/ORP	ORP	mV	Temperature	°C, °F
TE/4E- Conductivity	Conductivity	mS/cm, µS/cm	Temperature	°C, °F
TE/4E- Concentration	Concentration	%, ppm, ppb, mg/l, µg/l	Temperature	°C, °F
2E - Resistivity	Resistivity	MΩ.cm	Temperature	°C, °F
TSS/Turb - Turbidity	Turbidity	NTU, FNU	N/A	N/A
TSS - Suspended Solids	Suspended Solids	ppm, mg/l	Turbidity	NTU, FNU
RDO - Dissolved Oxygen	Dissolved Oxygen	%	Temperature	°C, °F
RDO - % Saturation	% Saturation	%	Temperature	°C, °F

8. Status Information

8.1. Device Status

Device status is sent as part of every HART response, the first two bytes of the data field.

Bit 4 indicates more status available – Additional Device Status

Bit 7 indicated Field device malfunction

8.2. Extended Device Status

Extended Device Status is a byte returned to commands 0, 9, 11, 21, and 48 (detailed in section 10) and contains an enumeration value corresponding to the following states:

0 – Default Extended Device Status

1 – Maintenance Required

2 – Device Variable Alert

4 – Critical Power Failure

8.3. Additional Device Status

Command 48 returns 24 bytes of data with the following status information:

Byte	Bit	Meaning	Class	Device Status Bits Set
0	0	Not Used	-	-
	1	Not Used	-	-
	2	Not Used	-	-
	3	Not Used	-	-
	4	Not Used	-	-
	5	Not Used	-	-
	6	Not Used	-	-
	7	Not Used	-	-
1	0	Before Cation High	Out of Spec	4, 7
	1	After Cation High	Out of Spec	4, 7
	2	Not Used	-	-
	3	Clean 1 in Progress	Maintenance	4, 7
	4	Clean 2 in Progress	Maintenance	4, 7
	5	Not Used	-	-
	6	Not Used	-	-
	7	Not Used	-	-
2	0	Alarm Active	Maintenance	4, 7
	1	Memory Write Error	Failure	4, 7
	2	S1: Write Error	Maintenance	4, 7
	3	S2: Write Error	Maintenance	4, 7
	4	S1: PV Out of Range	Out of Spec	4, 7
	5	S2: PV Out of Range	Out of Spec	4, 7
	6	Simulation Active	Function Check	4, 7
	7	Inferred pH Invalid	Out of Spec	4, 7
3	0	S1: Comms Error	Failure	4, 7
	1	S2: Comms Error	Failure	4, 7
	2	Analog Output 1 Out of Range	Out of Spec	4, 7
	3	Analog Output 2 Out of Range	Out of Spec	4, 7
	4	Analog Output 3 Out of Range	Out of Spec	4, 7
	5	Analog Output 4 Out of Range	Out of Spec	4, 7
	6	SD Card Nearly Full	Maintenance	4, 7
	7	SD Card Full	Maintenance	4, 7
4	0	Not Used	-	-
	1	Not Used	-	-

	2	Not Used	-	-
	3	Not Used	-	-
	4	Not Used	-	-
	5	Not Used	-	-
	6	Not Used	-	-
	7	Not Used	-	-
5	0	Not Used	-	-
	1	Not Used	-	-
	2	Not Used	-	-
	3	Not Used	-	-
	4	Not Used	-	-
	5	Not Used	-	-
	6	Not Used	-	-
	7	Not Used	-	-

'Not Used' bits are always set to 0.
All bits that indicate device or sensor failure also set bit 7 and 4 of the Device Status byte.

9. Universal Commands

It is recommended to use the FDI or EDD provided for AWT420 to communicate with the device. The following Common-Practice Commands are implemented:

#0	Read Unique Identifier
#1	Read Primary Variable
#2	Read Loop Current and Percent of Range
#3	Read Dynamic Variables and Loop Current
#6	Write Polling Address
#7	Read Loop Configuration
#8	Read Dynamic Variable Classification
#9	Read Device Variables with Status
#11	Read Unique Identifier with Associated Tag
#12	Read Message
#13	Read Tag, Descriptor Date
#14	Read Primary Variable Transducer Information
#15	Read Device Information
#16	Read Final Assembly Number
#17	Write Message
#18	Write Tag, Descriptor Date
#19	Write Final Assembly Number
#20	Read Long Tag
#21	Read Unique Identifier Associated with Long Tag
#22	Write Long Tag
#38	Reset Configuration Changed Flag
#48	Read Additional Device Status

10. Common-Practice Commands

10.1. Supported Commands

The following Common-Practice Commands are implemented:

#33	Read Device Variables
#35	Write PV Range Values
#40	Enter/Exit Fixed Current Mode
#41	Perform Self-Test
#42	Perform Device Reset
#44	Write PV Units
#45	Trim Loop Current Zero
#46	Trim Loop Current Gain
#50	Read Dynamic Variable Assignments
#53	Write Device Variable Units
#54	Read Device Variable Information
#55	Write Device Variable Damping Value
#59	Write Number of Response Preambles
#71	Lock Device
#73	Find Device
#76	Read Lock Device State

10.2. Burst Mode

This Field Device does not support Burst Mode.

10.3. Catch Device Variable

This Field Device does not support Catch Device Variable.

11. Device Specific Commands

The Following Device Specific Commands are implemented:

- #132 Read Device Setup Parameters
- #133 Write Device Setup Parameters
- #134 Read Device Info
- #135 Read Analog Signal Status
- #136 Read Analog Signal List
- #137 Read Analog Output 1 Configuration
- #138 Write Analog Output 1 Configuration
- #139 Read Analog Output 2 Configuration
- #140 Write Analog Output 2 Configuration
- #141 Read Process Alarm 1 Configuration
- #142 Write Process Alarm 1 Configuration
- #143 Read Process Alarm 2 Configuration
- #144 Write Process Alarm 2 Configuration
- #145 Read Process Alarm 3 Configuration
- #146 Write Process Alarm 3 Configuration
- #147 Read Process Alarm 4 Configuration
- #148 Write Process Alarm 4 Configuration
- #149 Read Process Alarm 5 Configuration
- #150 Write Process Alarm 5 Configuration
- #151 Read Process Alarm 6 Configuration
- #152 Write Process Alarm 6 Configuration
- #153 Read Process Alarm 7 Configuration
- #154 Write Process Alarm 7 Configuration
- #155 Read Process Alarm 8 Configuration
- #156 Write Process Alarm 8 Configuration
- #157 Read Digital Input/Output Configuration
- #158 Write Digital Input/Output Configuration
- #159 Read Relay 1 Configuration
- #160 Write Relay 1 Configuration
- #161 Read Relay 2 Configuration
- #162 Write Relay 2 Configuration
- #163 Read Relay 3 Configuration
- #164 Write Relay 3 Configuration
- #165 Read Relay 4 Configuration
- #166 Write Relay 4 Configuration
- #167 Read Data Logging
- #168 Write Data Logging
- #169 Read Language
- #170 Write Language
- #171 Read Operator Template
- #172 Write Operator Template
- #173 Read Chart View Setup
- #174 Write Chart View Setup
- #175 Read View/Log Enable Setup
- #176 Write View/Log Enable Setup
- #177 Read Date and Time Setup
- #178 Write Date and Time Setup
- #179 Read Custom Daylight Savings Configuration
- #180 Write Custom Daylight Savings Configuration
- #181 Read Sensor1 Information
- #182 Read Sensor2 Information
- #183 Read Cleaning 1 Information

#184	Write Cleaning 1 Information
#185	Read Cleaning 2 Information
#186	Write Cleaning 2 Information
#187	Write Write-Protection Status
#188	Read Diagnostics Block 1
#189	Read Diagnostics Block 2
#190	Write Diagnostics Block 1 Masking
#191	Write Diagnostics Block 2 Masking
#192	Write Diagnostics Block 1 Simulation
#193	Write Diagnostics Block 2 Simulation
#194	Read Diagnostics Block 1 Masking
#195	Read Diagnostics Block 2 Masking
#196	Read Diagnostics Block 1 Simulation
#197	Read Diagnostics Block 2 Simulation
#198	Read Current Date and Time
#199	Write Current Date and Time
#200	Read Clean 1 Date and Time
#201	Write Clean 1 Date and Time
#202	Read Clean 2 Date and Time
#203	Write Clean 2 Date and Time
#204	Read Diagnostics Simulation Status
#205	Write Diagnostics Simulation Status
#206	Read Alarm Current Option
#207	Write Alarm Current Option
#208	Read Operator Control Enable
#209	Write Operator Control Enable
#210	Read Sensor 1 Control Action
#211	Write Sensor 1 Control Action
#212	Read Sensor 2 Control Action
#213	Write Sensor 2 Control Action
#214	Read Sensor 1 Direct Control Setup
#215	Write Sensor 1 Direct Control Setup
#216	Read Sensor 2 Direct Control Setup
#217	Write Sensor 2 Direct Control Setup
#218	Read Sensor 1 Reverse Control Setup
#219	Write Sensor 1 Reverse Control Setup
#220	Read Sensor 2 Reverse Control Setup
#221	Write Sensor2 Reverse Control Setup
#222	Read Sensor 1 Dual Control Setup
#223	Write Sensor 1 Dual Control Setup
#224	Read Sensor 2 Dual Control Setup
#225	Write Sensor 2 Dual Control Setup
#226	Read Sensor 1 Control Configuration
#227	Write Sensor 1 Control Configuration
#228	Read Sensor 2 Control Configuration
#229	Write Sensor 2 Control Configuration
#230	Read Sensor 1 Control Manual Output
#231	Write Sensor 1 Control Manual Output
#232	Read Sensor 2 Control Manual Output
#233	Write Sensor 2 Control Manual Output
#234	Read Control Output Signals

Sensor Specific Commands

- #235 Read pH Sensor Configuration
- #236 Write pH Sensor Configuration
- #237 Read 2-Electrode Conductivity Sensor Configuration
- #238 Write 2-Electrode Conductivity Sensor Configuration
- #239 Read 4-Electrode Conductivity Sensor Configuration
- #240 Write 4-Electrode Conductivity Sensor Configuration
- #241 Read RDO Sensor Configuration
- #242 Write RDO Sensor Configuration
- #243 Read TSS Sensor Configuration
- #244 Write TSS Sensor Configuration
- #245 Read Turbidity Sensor Configuration
- #246 Write Turbidity Sensor Configuration
- #247 Read Sensor Tag (All sensor types)
- #248 Write Sensor Tag (All sensor types)
- #249 Read Custom Tables (2E/4E cond.)
- #250 Write Custom Tables (2E/4E cond.)
- #251 Reset Sensor to Defaults (All Sensors)
- #252 Read Calculated Values Configuration (Dual 2E cond.)
- #253 Write Calculated Values Configuration (Dual 2E cond.)

11.132. Command #132: Read Device Setup Parameters

Reads instrument tag, temperature unit, and write protection status from device.

Enum	Temperature Unit	Enum	Write Protection Status
13	°C	0	Disabled
14	°F	1	Enabled

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Instrument tag character 1 (ASCII)
1	Unsigned-8	Instrument tag character 2 (ASCII)
2	Unsigned-8	Instrument tag character 3 (ASCII)
3	Unsigned-8	Instrument tag character 4 (ASCII)
4	Unsigned-8	Instrument tag character 5 (ASCII)
5	Unsigned-8	Instrument tag character 6 (ASCII)
6	Unsigned-8	Instrument tag character 7 (ASCII)
7	Unsigned-8	Instrument tag character 8 (ASCII)
8	Unsigned-8	Instrument tag character 9 (ASCII)
9	Unsigned-8	Instrument tag character 10 (ASCII)
10	Unsigned-8	Instrument tag character 11 (ASCII)
11	Unsigned-8	Instrument tag character 12 (ASCII)
12	Unsigned-8	Instrument tag character 13 (ASCII)
13	Unsigned-8	Instrument tag character 14 (ASCII)
14	Unsigned-8	Instrument tag character 15 (ASCII)
15	Unsigned-8	Instrument tag character 16 (ASCII)
16	Enumeration	Temperature unit
17	Enumeration	Write Protection Status

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.133. Command #133: Write Device Setup Parameters

Writes instrument tag, temperature unit, and write protection status to device.

Enum	Temperature Unit
13	°C
14	°F

Request Data Bytes

Byte	Format	Description
0	Unsigned-8	Instrument tag character 1 (ASCII)
1	Unsigned-8	Instrument tag character 2 (ASCII)
2	Unsigned-8	Instrument tag character 3 (ASCII)
3	Unsigned-8	Instrument tag character 4 (ASCII)
4	Unsigned-8	Instrument tag character 5 (ASCII)
5	Unsigned-8	Instrument tag character 6 (ASCII)
6	Unsigned-8	Instrument tag character 7 (ASCII)
7	Unsigned-8	Instrument tag character 8 (ASCII)
8	Unsigned-8	Instrument tag character 9 (ASCII)
9	Unsigned-8	Instrument tag character 10 (ASCII)
10	Unsigned-8	Instrument tag character 11 (ASCII)
11	Unsigned-8	Instrument tag character 12 (ASCII)
12	Unsigned-8	Instrument tag character 13 (ASCII)
13	Unsigned-8	Instrument tag character 14 (ASCII)
14	Unsigned-8	Instrument tag character 15 (ASCII)
15	Unsigned-8	Instrument tag character 16 (ASCII)
16	Enumeration	Temperature unit

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Instrument tag character 1 (ASCII)
1	Unsigned-8	Instrument tag character 2 (ASCII)
2	Unsigned-8	Instrument tag character 3 (ASCII)
3	Unsigned-8	Instrument tag character 4 (ASCII)
4	Unsigned-8	Instrument tag character 5 (ASCII)
5	Unsigned-8	Instrument tag character 6 (ASCII)
6	Unsigned-8	Instrument tag character 7 (ASCII)
7	Unsigned-8	Instrument tag character 8 (ASCII)
8	Unsigned-8	Instrument tag character 9 (ASCII)
9	Unsigned-8	Instrument tag character 10 (ASCII)
10	Unsigned-8	Instrument tag character 11 (ASCII)
11	Unsigned-8	Instrument tag character 12 (ASCII)
12	Unsigned-8	Instrument tag character 13 (ASCII)
13	Unsigned-8	Instrument tag character 14 (ASCII)
14	Unsigned-8	Instrument tag character 15 (ASCII)
15	Unsigned-8	Instrument tag character 16 (ASCII)
16	Enumeration	Temperature unit

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.134. Command #134: Read Device Info

Reads transmitter serial number, software version and hardware version from device.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Unsigned-8	Transmitter serial number character 1 (ASCII)
1	Unsigned-8	Transmitter serial number character 2 (ASCII)
2	Unsigned-8	Transmitter serial number character 3 (ASCII)
3	Unsigned-8	Transmitter serial number character 4 (ASCII)
4	Unsigned-8	Transmitter serial number character 5 (ASCII)
5	Unsigned-8	Transmitter serial number character 6 (ASCII)
6	Unsigned-8	Transmitter serial number character 7 (ASCII)
7	Unsigned-8	Transmitter serial number character 8 (ASCII)
8	Unsigned-8	Transmitter serial number character 9 (ASCII)
9	Unsigned-8	Transmitter serial number character 10 (ASCII)
10	Unsigned-8	Transmitter serial number character 11 (ASCII)
11	Unsigned-8	Transmitter serial number character 12 (ASCII)
12	Unsigned-8	Transmitter serial number character 13 (ASCII)
13	Unsigned-8	Transmitter serial number character 14 (ASCII)
14	Unsigned-8	Transmitter serial number character 15 (ASCII)
15	Unsigned-8	Transmitter software version character 1 (ASCII)
16	Unsigned-8	Transmitter software version character 2 (ASCII)
17	Unsigned-8	Transmitter software version character 3 (ASCII)
18	Unsigned-8	Transmitter software version character 4 (ASCII)
19	Unsigned-8	Transmitter software version character 5 (ASCII)
20	Unsigned-8	Transmitter software version character 6 (ASCII)
21	Unsigned-8	Transmitter software version character 7 (ASCII)
22	Unsigned-8	Transmitter software version character 8 (ASCII)
23	Unsigned-8	Transmitter software version character 9 (ASCII)
24	Unsigned-8	Transmitter software version character 10 (ASCII)
25	Unsigned-8	Transmitter software version character 11 (ASCII)
26	Unsigned-8	Transmitter software version character 12 (ASCII)
27	Unsigned-8	Transmitter software version character 13 (ASCII)
28	Unsigned-8	Transmitter software version character 14 (ASCII)
29	Unsigned-8	Transmitter software version character 15 (ASCII)
30	Unsigned-8	Transmitter software version character 16 (ASCII)
31	Unsigned-8	Transmitter hardware version

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.135. Command #135: Read Analog Signal Status

Reads status signals 1, 2 and 3 on sensors 1 and 2.

Enum	Signal	Enum	Signal
0	OK	9	Manually Set
1	Over range	10	Constant
2	Under range	11	Failure
3	Accuracy Poor	12	Not Processed
4	Held	13	Not Available
5	Held to Low Limit	14	Configuration Error
6	Held to High Limit	15	Error

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor 1 Signal 1 Status
1	Enumeration	Sensor 1 Signal 2 Status
2	Enumeration	Sensor 1 Signal 3 Status
3	Enumeration	Sensor 2 Signal 1 Status
4	Enumeration	Sensor 2 Signal 2 Status
5	Enumeration	Sensor 2 Signal 3 Status

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.136. Command #136: Read Analog Signal List

Reads type of signals 1, 2 and 3 on sensors 1 and 2.

Enum	Signal	Enum	Signal
0	None	8	% Saturation
1	pH	9	Turbidity
2	Redox/ORP	10	Suspended Solids
3	Temperature	11	Inferred pH
4	Conductivity	12	Difference
5	Concentration	13	Ratio
6	Resistivity	14	% Passage
7	Dissolved Oxygen	15	% Rejection

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor 1 Signal 1 Type
1	Enumeration	Sensor 1 Signal 2 Type
2	Enumeration	Sensor 1 Signal 3 Type
3	Enumeration	Sensor 2 Signal 1 Type
4	Enumeration	Sensor 2 Signal 2 Type
5	Enumeration	Sensor 2 Signal 3 Type

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.137. Command #137: Read Analog Output 1 Configuration

Reads source, type, output range, input range limits, input range and failure current information from Analog Output 1 configuration

Enum	Source	Enum	Output Type	Enum	Failure Current Enable
0	S1 Variable 1	0	Linear	0	Disabled
1	S1 Variable 2	1	Log 2 Decade	1	Enabled
2	S1 Variable 3	2	Log 3 Decade		
3	S2 Variable 1	3	Log 4 Decade		
4	S2 Variable 2				
5	S2 Variable 3				

Enum	Eng. Unit	Enum	Eng. Unit	Enum	Eng. Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Output Type
2-5	Float	Electrical Range High (mA)
6-9	Float	Electrical Range Low (mA)
10	Enumeration	Engineering Units
11-14	Float	Engineering Range Upper Limit (Eng. Units)
15-18	Float	Engineering Range Lower Limit (Eng. Units)
19-22	Float	Engineering Range High (Eng. Units)
23-26	Float	Engineering Range Low (Eng. Units)
27	Enumeration	Output Failure Current Enable
28-31	Float	Output Failure Current (mA)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.138. Command #138: Write Analog Output 1 Configuration

Writes source, type, output range, input range and failure current information to Analog Output 1 configuration.

Enum	Source	Enum	Output Type	Enum	Failure Current Enable
0	None	0	Linear	0	Disabled
1	S1 Variable 1	1	Log 2 Decade	1	Enabled
2	S1 Variable 2	2	Log 3 Decade		
3	S1 Variable 3	3	Log 4 Decade		
4	S2 Variable 1				
5	S2 Variable 2				
6	S2 Variable 3				

Enum	Eng. Unit	Enum	Eng. Unit	Enum	Eng. Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Output Type
2-5	Float	Electrical Range High (mA)
6-9	Float	Electrical Range Low (mA)
10-13	Float	Engineering Range High (Eng. Units)
14-17	Float	Engineering Range Low (Eng. Units)
18	Enumeration	Output Failure Current Enable
19-22	Float	Output Failure Current (mA)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Output Type
2-5	Float	Electrical Range High (mA)
6-9	Float	Electrical Range Low (mA)
10-13	Float	Engineering Range High (Eng. Units)
14-17	Float	Engineering Range Low (Eng. Units)
18	Enumeration	Output Failure Current Enable
19-22	Float	Output Failure Current (mA)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.139. Command #139: Read Analog Output 2 Configuration

Reads source, type, output range, input range limits, input range and failure current information from Analog Output 2 configuration

Enum	Source	Enum	Output Type	Enum	Failure Current Enable
0	S1 Variable 1	0	Linear	0	Disabled
1	S1 Variable 2	1	Log 2 Decade	1	Enabled
2	S1 Variable 3	2	Log 3 Decade		
3	S2 Variable 1	3	Log 4 Decade		
4	S2 Variable 2				
5	S2 Variable 3				

Enum	Eng. Unit	Enum	Eng. Unit	Enum	Eng. Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Output Type
2-5	Float	Electrical Range High (mA)
6-9	Float	Electrical Range Low (mA)
10	Enumeration	Engineering Units
11-14	Float	Engineering Range Upper Limit (Eng. Units)
15-18	Float	Engineering Range Lower Limit (Eng. Units)
19-22	Float	Engineering Range High (Eng. Units)
23-26	Float	Engineering Range Low (Eng. Units)
27	Enumeration	Output Failure Current Enable
28-31	Float	Output Failure Current (mA)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.140. Command #140: Write Analog Output 2 Configuration

Writes source, type, output range, input range and failure current information to Analog Output 2 configuration.

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Output Type
2-5	Float	Electrical Range High (mA)
6-9	Float	Electrical Range Low (mA)
10-13	Float	Engineering Range High (Eng. Units)
14-17	Float	Engineering Range Low (Eng. Units)
18	Enumeration	Output Failure Current Enable
19-22	Float	Output Failure Current (mA)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Output Type
2-5	Float	Electrical Range High (mA)
6-9	Float	Electrical Range Low (mA)
10-13	Float	Engineering Range High (Eng. Units)
14-17	Float	Engineering Range Low (Eng. Units)
18	Enumeration	Output Failure Current Enable
19-22	Float	Output Failure Current (mA)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.141. Command #141: Read Process Alarm 1 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 1.

Enum	Source	Enum	Type
0	S1 Variable 1	0	None
1	S1 Variable 2	1	High Process
2	S1 Variable 3	2	Low Process
3	S2 Variable 1	3	High Latch
4	S2 Variable 2	4	Low Latch
5	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.142. Command #142: Write Process Alarm 1 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 1.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.143. Command #143: Read Process Alarm 2 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 2.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.144. Command #144: Write Process Alarm 2 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 2.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.145. Command #145: Read Process Alarm 3 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 3.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.146. Command #146: Write Process Alarm 3 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 3.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)

12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.147. Command #147: Read Process Alarm 4 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 4.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.148. Command #148: Write Process Alarm 4 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 4.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.149. Command #149: Read Process Alarm 5 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 5.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.150. Command #150: Write Process Alarm 5 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 5.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.151. Command #151: Read Process Alarm 6 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 6.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.152. Command #152: Write Process Alarm 6 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 6.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.153. Command #153: Read Process Alarm 7 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 7.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.154. Command #154: Write Process Alarm 7 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 7.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.155. Command #155: Read Process Alarm 8 Configuration

Reads source, type, tag, source range limits, trip point, hysteresis and time hysteresis from configuration of Process Alarm 8.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Enum	Source Unit	Enum	Source Unit	Enum	Source Unit
0	None	8	µg/l	23	mV
1	NTU	13	°C	24	% Sat
2	FNU	14	°F	25	%
5	ppm	15	µS/cm	38	MΩ-cm
6	mg/l	17	mS/cm		
7	ppb	22	pH		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18	Enumeration	Source Units
19-22	Float	Trip Range Upper Limit (Eng. Units)
23-26	Float	Trip Range Lower Limit (Eng. Units)
27-30	Float	Trip Point (Source Units)
31-34	Float	Hysteresis (Source Units)
35-36	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.156. Command #156: Write Process Alarm 8 Configuration

Writes source, type, tag, source range limits, trip point, hysteresis and time hysteresis to configuration of Process Alarm 8.

Enum	Source	Enum	Type
0	None	0	None
1	S1 Variable 1	1	High Process
2	S1 Variable 2	2	Low Process
3	S1 Variable 3	3	High Latch
4	S2 Variable 1	4	Low Latch
5	S2 Variable 2		
6	S2 Variable 3		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.157. Command #157: Read Digital Input/Output Configuration

Reads the type, source and polarity of the digital input/output port.

Enum	Type	Enum	Input Source	Enum	Polarity
0	Off	0	None	0	Inverted
1	Input	46	Hold S1	1	Non-Inverted
2	Output	47	Hold S2		
		48	Start Clean S1		
		49	Start Clean S2		

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Type
1	Enumeration	Source
2	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.158. Command #158: Write Digital Input/Output Configuration

Writes the type, source and polarity to the configuration of digital input/output port.

Enum	Type	Enum	Input Source	Enum	Polarity
0	Off	0	None	0	Inverted
1	Input	46	Hold S1	1	Non-Inverted
2	Output	47	Hold S2		
		48	Start Clean S1		
		49	Start Clean S2		
Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Type
1	Enumeration	Source
2	Enumeration	Polarity

Response Data Bytes

Byte	Format	Description
0	Enumeration	Type
1	Enumeration	Source
2	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.159. Command #159: Read Relay 1 Configuration

Reads the source and polarity from the configuration of Relay 1.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.160. Command #160: Write Relay 1 Configuration

Writes the source and polarity to the configuration of Relay 1.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.161. Command #161: Read Relay 2 Configuration

Reads the source and polarity from the configuration of Relay 2.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.162. Command #162: Write Relay 2 Configuration

Writes the source and polarity to the configuration of Relay 2.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.163. Command #163: Read Relay 3 Configuration

Reads the source and polarity from the configuration of Relay 3.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.164. Command #164: Write Relay 3 Configuration

Writes the source and polarity to the configuration of Relay 3.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Alarm Type
2	Unsigned-8	Alarm Tag character 1 (ASCII)
3	Unsigned-8	Alarm Tag character 2 (ASCII)
4	Unsigned-8	Alarm Tag character 3 (ASCII)
5	Unsigned-8	Alarm Tag character 4 (ASCII)
6	Unsigned-8	Alarm Tag character 5 (ASCII)
7	Unsigned-8	Alarm Tag character 6 (ASCII)
8	Unsigned-8	Alarm Tag character 7 (ASCII)
9	Unsigned-8	Alarm Tag character 8 (ASCII)
10	Unsigned-8	Alarm Tag character 9 (ASCII)
11	Unsigned-8	Alarm Tag character 10 (ASCII)
12	Unsigned-8	Alarm Tag character 11 (ASCII)
13	Unsigned-8	Alarm Tag character 12 (ASCII)
14	Unsigned-8	Alarm Tag character 13 (ASCII)
15	Unsigned-8	Alarm Tag character 14 (ASCII)
16	Unsigned-8	Alarm Tag character 15 (ASCII)
17	Unsigned-8	Alarm Tag character 16 (ASCII)
18-21	Float	Trip Point (Source Units)
24-27	Float	Hysteresis (Source Units)
28-31	Signed-16	Time Hysteresis (Seconds)

11.165. Command #165: Read Relay 4 Configuration

Reads the source and polarity from the configuration of Relay 4.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.166. Command #166: Write Relay 4 Configuration

Writes the source and polarity to the configuration of Relay 4.

Enum	Polarity
0	Non-Inverted
1	Inverted

Enum	Output Source	Enum	Output Source	Enum	Output Source
0	None	24	S2 Out of Spec	36	S2 Cal Failed
13	Process Alarm 1	25	S1 Maintenance	37	Clean 1
14	Process Alarm 2	26	S2 Maintenance	38	Clean 2
15	Process Alarm 3	27	S1 Function Check	39	Diagnostic Active
16	Process Alarm 4	28	S2 Function Check	40	S1 Control Output
17	Process Alarm 5	29	Tx Failure	41	S1 Control Output A
18	Process Alarm 6	30	Tx Out of Spec	42	S1 Control Output B
19	Process Alarm 7	31	Tx Maintenance	43	S2 Control Output
20	Process Alarm 8	32	Tx Function Check	44	S2 Control Output A
21	S1 Failure	33	S1 Cal in Progress	45	S2 Control Output B
22	S2 Failure	34	S2 Cal in Progress		
23	S1 Out of Spec	35	S1 Cal Failed		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Response Data Bytes

Byte	Format	Description
0	Enumeration	Source
1	Enumeration	Polarity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8	Error	Update Failure
9-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.167. Command #167: Read Data Logging

Reads data logging setup for SD Card logging.

Enum	Logging Enable	Enum	Source	Enum	Sampling Time
0	Disabled	0	S1 Variable 1	0	5 Seconds
1	Enabled	1	S1 Variable 2	1	10 Seconds
		2	S1 Variable 3	2	30 Seconds
		3	S2 Variable 1	3	1 Minute
		4	S2 Variable 2	4	5 Minutes
		5	S2 Variable 3	5	10 Minutes
				6	30 Minutes
				7	1 Hour

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Logging Enable
1	Enumeration	Channel 1 Source
2	Enumeration	Channel 2 Source
3	Enumeration	Channel 3 Source
4	Enumeration	Channel 4 Source
5	Enumeration	Channel 5 Source
6	Enumeration	Channel 6 Source
7	Enumeration	Data Logging Sampling Time

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

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11.168. Command #168: Write Data Logging

Reads data logging setup for SD Card logging.

Enum	Logging Enable	Enum	Source	Enum	Sampling Time
0	Disabled	0	S1 Variable 1	0	5 Seconds
1	Enabled	1	S1 Variable 2	1	10 Seconds
		2	S1 Variable 3	2	30 Seconds
		3	S2 Variable 1	3	1 Minute
		4	S2 Variable 2	4	5 Minutes
		5	S2 Variable 3	5	10 Minutes
				6	30 Minutes
				7	1 Hour

Request Data Bytes

Byte	Format	Description
0	Enumeration	Logging Enable
1	Enumeration	Channel 1 Source
2	Enumeration	Channel 2 Source
3	Enumeration	Channel 3 Source
4	Enumeration	Channel 4 Source
5	Enumeration	Channel 5 Source
6	Enumeration	Channel 6 Source
7	Enumeration	Data Logging Sampling Time

Response Data Bytes

Byte	Format	Description
0	Enumeration	Logging Enable
1	Enumeration	Channel 1 Source
2	Enumeration	Channel 2 Source
3	Enumeration	Channel 3 Source
4	Enumeration	Channel 4 Source
5	Enumeration	Channel 5 Source
6	Enumeration	Channel 6 Source
7	Enumeration	Data Logging Sampling Time

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-255		Undefined

11.169. Command #169: Read Device Language

Reads the language set on the device.

Enum	Language
0	English
1	French
2	German
3	Spanish
4	Italian
5	Portuguese

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Language

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.170. Command #170: Write Device Language

Reads the language set on the device.

Enum	Language
0	English
1	French
2	German
3	Spanish
4	Italian
5	Portuguese

Request Data Bytes

Byte	Format	Description
0	Enumeration	Language

Response Data Bytes

Byte	Format	Description
0	Enumeration	Language

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.173. Command #173: Read Chart View Setup

Reads the setup of the operator pages

Enum	Source	Enum	Chart Duration
0	None	15	1 Hour
1	S1 Variable 1	30	2 Hours
2	S1 Variable 2	60	4 Hours
3	S1 Variable 3	120	8 Hours
4	S2 Variable 1	180	12 Hours
5	S2 Variable 2	240	16 Hours
6	S2 Variable 3	254	20 Hours
		255	24 Hours

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Channel 1 Source
1	Unsigned-8	Channel 1 Tag Character 1 (ASCII)
2	Unsigned-8	Channel 1 Tag Character 2 (ASCII)
3	Unsigned-8	Channel 1 Tag Character 3 (ASCII)
4	Enumeration	Channel 2 Source
5	Unsigned-8	Channel 2 Tag Character 1 (ASCII)
6	Unsigned-8	Channel 2 Tag Character 2 (ASCII)
7	Unsigned-8	Channel 2 Tag Character 3 (ASCII)
8	Enumeration	Chart Duration

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.174. Command #174: Write Chart View Setup

Reads the setup of the operator pages

Enum	Source	Enum	Chart Duration
0	S1 Variable 1	15	1 Hour
1	S1 Variable 2	30	2 Hours
2	S1 Variable 3	60	4 Hours
3	S2 Variable 1	120	8 Hours
4	S2 Variable 2	180	12 Hours
5	S2 Variable 3	240	16 Hours
		254	20 Hours
		255	24 Hours

Request Data Bytes

Byte	Format	Description
0	Enumeration	Channel 1 Source
1	Unsigned-8	Channel 1 Tag Character 1 (ASCII)
2	Unsigned-8	Channel 1 Tag Character 2 (ASCII)
3	Unsigned-8	Channel 1 Tag Character 3 (ASCII)
4	Enumeration	Channel 2 Source
5	Unsigned-8	Channel 2 Tag Character 1 (ASCII)
6	Unsigned-8	Channel 2 Tag Character 2 (ASCII)
7	Unsigned-8	Channel 2 Tag Character 3 (ASCII)
8	Enumeration	Chart Duration

Response Data Bytes

Byte	Format	Description
0	Enumeration	Channel 1 Source
1	Unsigned-8	Channel 1 Tag Character 1 (ASCII)
2	Unsigned-8	Channel 1 Tag Character 2 (ASCII)
3	Unsigned-8	Channel 1 Tag Character 3 (ASCII)
4	Enumeration	Channel 2 Source
5	Unsigned-8	Channel 2 Tag Character 1 (ASCII)
6	Unsigned-8	Channel 2 Tag Character 2 (ASCII)
7	Unsigned-8	Channel 2 Tag Character 3 (ASCII)
8	Enumeration	Chart Duration

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.175. Command #175: Read View/Log Setup

Reads the setup of the operator pages

Enum

0	Disable
1	Enable

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Diagnostics View
1	Enumeration	Signals View
2	Enumeration	Chart View
3	Enumeration	Alarm View
4	Enumeration	Analog Output View
5	Enumeration	Calibration Log(s)
6	Enumeration	Alarm Log
7	Enumeration	Audit Log
8	Enumeration	Diagnostic Log

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.176. Command #176: Write View/Log Setup

Reads the setup of the operator pages

Enum

0	Disable
1	Enable

Request Data Bytes

Byte	Format	Description
0	Enumeration	Diagnostics View
1	Enumeration	Signals View
2	Enumeration	Chart View
3	Enumeration	Alarm View
4	Enumeration	Analog Output View
5	Enumeration	Calibration Log(s)
6	Enumeration	Alarm Log
7	Enumeration	Audit Log
8	Enumeration	Diagnostic Log

Response Data Bytes

Byte	Format	Description
0	Enumeration	Diagnostics View
1	Enumeration	Signals View
2	Enumeration	Chart View
3	Enumeration	Alarm View
4	Enumeration	Analog Output View
5	Enumeration	Calibration Log(s)
6	Enumeration	Alarm Log
7	Enumeration	Audit Log
8	Enumeration	Diagnostic Log

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.177. Command #177: Read Date and Time Setup

Reads the date format and daylight-saving zone settings.

Enum	Date Format	Enum	Daylight Saving Zone
0	DD/MM/YYYY	0	Disabled
1	MM/DD/YYYY	1	Europe
2	YYYY/MM/DD	2	USA
		3	Custom

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Date Format
1	Enumeration	Daylight Saving Zone

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.178. Command #178: Write Date and Time Setup

Reads the date format and daylight-saving zone settings.

Enum	Date Format	Enum	Daylight Saving Zone
0	DD/MM/YYYY	0	Disabled
1	MM/DD/YYYY	1	Europe
2	YYYY/MM/DD	2	USA
		3	Custom

Request Data Bytes

Byte	Format	Description
0	Enumeration	Date Format
1	Enumeration	Daylight Saving Zone

Response Data Bytes

Byte	Format	Description
0	Enumeration	Date Format
1	Enumeration	Daylight Saving Zone

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.179. Command #179: Read Custom Daylight-Saving Setup

Reads the custom daylight savings setup.

Enum	Start/End Month	Enum	Week of Month	Enum	Day of Week
0	January	0	First	0	Sunday
1	February	1	Second	1	Monday
2	March	2	Third	2	Tuesday
3	April	3	Last	3	Wednesday
4	May			4	Thursday
5	June			5	Friday
6	July			6	Saturday
7	August				
8	September				
9	October				
10	November				
11	December				

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Start Month
1	Enumeration	Start Week of Month
2	Enumeration	Start Day of Week
3	Unsigned-8	Start Hour
4	Enumeration	End Month
5	Enumeration	End Week of Month
6	Enumeration	End Day of Week
7	Unsigned-8	End Hour

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.180. Command #180: Write Custom Daylight-Saving Setup

Writes the custom daylight savings setup.

Enum	Start/End Month	Enum	Week of Month	Enum	Day of Week
1	January	0	First	0	Sunday
2	February	1	Second	1	Monday
3	March	2	Third	2	Tuesday
4	April	3	Last	3	Wednesday
5	May			4	Thursday
6	June			5	Friday
7	July			6	Saturday
8	August				
9	September				
10	October				
11	November				
12	December				

Request Data Bytes

Byte	Format	Description
0	Enumeration	Start Month
1	Enumeration	Start Week of Month
2	Enumeration	Start Day of Week
3	Unsigned-8	Start Hour
4	Enumeration	End Month
5	Enumeration	End Week of Month
6	Enumeration	End Day of Week
7	Unsigned-8	End Hour

Response Data Bytes

Byte	Format	Description
0	Enumeration	Start Month
1	Enumeration	Start Week of Month
2	Enumeration	Start Day of Week
3	Unsigned-8	Start Hour
4	Enumeration	End Month
5	Enumeration	End Week of Month
6	Enumeration	End Day of Week
7	Unsigned-8	End Hour

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.181. Command #181: Read Sensor 1 Info

Reads Sensor 1 Information.

Enum	Sensor Type
0	Unrecognized
10	Two Electrode Conductivity
30	Four Electrode Conductivity
42	Rugged Dissolved Oxygen
60	pH
77	Turbidity/Suspended Solids
78	Turbidity
255	None

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor 1 Sensor Type
1	Unsigned-8	Sensor 1 Serial Number Character 1 (ASCII)
2	Unsigned-8	Sensor 1 Serial Number Character 2 (ASCII)
3	Unsigned-8	Sensor 1 Serial Number Character 3 (ASCII)
4	Unsigned-8	Sensor 1 Serial Number Character 4 (ASCII)
5	Unsigned-8	Sensor 1 Serial Number Character 5 (ASCII)
6	Unsigned-8	Sensor 1 Serial Number Character 6 (ASCII)
7	Unsigned-8	Sensor 1 Serial Number Character 7 (ASCII)
8	Unsigned-8	Sensor 1 Serial Number Character 8 (ASCII)
9	Unsigned-8	Sensor 1 Serial Number Character 9 (ASCII)
10	Unsigned-8	Sensor 1 Serial Number Character 10 (ASCII)
11	Unsigned-8	Sensor 1 Serial Number Character 11 (ASCII)
12	Unsigned-8	Sensor 1 Serial Number Character 12 (ASCII)
13	Unsigned-8	Sensor 1 Serial Number Character 13 (ASCII)
14	Unsigned-8	Sensor 1 Serial Number Character 14 (ASCII)
15	Unsigned-8	Sensor 1 Serial Number Character 15 (ASCII)
16-17	Unsigned-16	Sensor 1 Hardware Version
18	Unsigned-8	Sensor 1 Software Version Character 1 (ASCII)
19	Unsigned-8	Sensor 1 Software Version Character 2 (ASCII)
20	Unsigned-8	Sensor 1 Software Version Character 3 (ASCII)
21	Unsigned-8	Sensor 1 Software Version Character 4 (ASCII)
22	Unsigned-8	Sensor 1 Software Version Character 5 (ASCII)
23	Unsigned-8	Sensor 1 Software Version Character 6 (ASCII)
24	Unsigned-8	Sensor 1 Software Version Character 7 (ASCII)
25	Unsigned-8	Sensor 1 Software Version Character 8 (ASCII)
26	Unsigned-8	Sensor 1 Software Version Character 9 (ASCII)
27	Unsigned-8	Sensor 1 Software Version Character 10 (ASCII)
28	Unsigned-8	Sensor 1 Software Version Character 11 (ASCII)
29	Unsigned-8	Sensor 1 Software Version Character 12 (ASCII)
30	Unsigned-8	Sensor 1 Software Version Character 13 (ASCII)
31	Unsigned-8	Sensor 1 Software Version Character 14 (ASCII)
32	Unsigned-8	Sensor 1 Software Version Character 15 (ASCII)
33	Unsigned-8	Sensor 1 Software Version Character 16 (ASCII)
34	Unsigned-8	Sensor 1 Software Version Character 17 (ASCII)
35	Unsigned-8	Sensor 1 Software Version Character 18 (ASCII)
39	Unsigned-8	Sensor 1 Software Version Character 19 (ASCII)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.182. Command #182: Read Sensor 2 Info

Reads Sensor 2 Information.

Enum	Sensor Type
0	Unrecognized
10	Two Electrode Conductivity
30	Four Electrode Conductivity
42	Rugged Dissolved Oxygen
60	pH
77	Turbidity/Suspended Solids
78	Turbidity
255	None

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor 2 Sensor Type
1	Unsigned-8	Sensor 2 Serial Number Character 1 (ASCII)
2	Unsigned-8	Sensor 2 Serial Number Character 2 (ASCII)
3	Unsigned-8	Sensor 2 Serial Number Character 3 (ASCII)
4	Unsigned-8	Sensor 2 Serial Number Character 4 (ASCII)
5	Unsigned-8	Sensor 2 Serial Number Character 5 (ASCII)
6	Unsigned-8	Sensor 2 Serial Number Character 6 (ASCII)
7	Unsigned-8	Sensor 2 Serial Number Character 7 (ASCII)
8	Unsigned-8	Sensor 2 Serial Number Character 8 (ASCII)
9	Unsigned-8	Sensor 2 Serial Number Character 9 (ASCII)
10	Unsigned-8	Sensor 2 Serial Number Character 10 (ASCII)
11	Unsigned-8	Sensor 2 Serial Number Character 11 (ASCII)
12	Unsigned-8	Sensor 2 Serial Number Character 12 (ASCII)
13	Unsigned-8	Sensor 2 Serial Number Character 13 (ASCII)
14	Unsigned-8	Sensor 2 Serial Number Character 14 (ASCII)
15	Unsigned-8	Sensor 2 Serial Number Character 15 (ASCII)
16-17	Unsigned-16	Sensor 2 Hardware Version
18	Unsigned-8	Sensor 2 Software Version Character 1 (ASCII)
19	Unsigned-8	Sensor 2 Software Version Character 2 (ASCII)
20	Unsigned-8	Sensor 2 Software Version Character 3 (ASCII)
21	Unsigned-8	Sensor 2 Software Version Character 4 (ASCII)
22	Unsigned-8	Sensor 2 Software Version Character 5 (ASCII)
23	Unsigned-8	Sensor 2 Software Version Character 6 (ASCII)
24	Unsigned-8	Sensor 2 Software Version Character 7 (ASCII)
25	Unsigned-8	Sensor 2 Software Version Character 8 (ASCII)
26	Unsigned-8	Sensor 2 Software Version Character 9 (ASCII)
27	Unsigned-8	Sensor 2 Software Version Character 10 (ASCII)
28	Unsigned-8	Sensor 2 Software Version Character 11 (ASCII)
29	Unsigned-8	Sensor 2 Software Version Character 12 (ASCII)
30	Unsigned-8	Sensor 2 Software Version Character 13 (ASCII)
31	Unsigned-8	Sensor 2 Software Version Character 14 (ASCII)
32	Unsigned-8	Sensor 2 Software Version Character 15 (ASCII)
33	Unsigned-8	Sensor 2 Software Version Character 16 (ASCII)
34	Unsigned-8	Sensor 2 Software Version Character 17 (ASCII)
35	Unsigned-8	Sensor 2 Software Version Character 18 (ASCII)
36	Unsigned-8	Sensor 2 Software Version Character 19 (ASCII)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.183. Command #183: Read Clean 1 Information

Reads setup for clean 1

Enum	Sensor	Enum	Clean Assignment	Enum	Clean Interval	Enum	Clean Interval
0	S1	0	None	0	Off	18	15 Hours
1	S2	1	Relay 1	1	15 Minutes	19	16 Hours
		2	Relay 2	2	30 Minutes	20	17 Hours
		3	Relay 3	3	45 Minutes	21	18 Hours
0	Continuous	4	Relay 4	4	1 Hour	22	19 Hours
1	Pulsed	5	Digital Output	5	2 Hours	23	20 Hours
				6	3 Hours	24	21 Hours
				7	4 Hours	25	22 Hours
				8	5 Hours	26	23 Hours
				9	6 Hours	27	24 Hours
				10	7 Hours		
				11	8 Hours		
				12	9 Hours		
				13	10 Hours		
				14	11 Hours		
				15	12 Hours		
				16	13 Hours		
				17	14 Hours		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor to Clean
1	Enumeration	Clean Assignment
2	Enumeration	Clean Frequency/Interval
3	Enumeration	Clean Type
4	Unsigned-8	On Time (Seconds)
5	Unsigned-8	Off Time (Seconds)
6	Enumeration	Number of Pulses
7	Enumeration	Recovery Time
8-11	Unsigned-32	Duration (Seconds)
12-15	Unsigned-32	Next Clean (Time in Seconds since 2000)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.184. Command #184: Write Clean 1 Information

Writes setup for clean 1

Enum	Sensor	Enum	Clean Assignment	Enum	Clean Interval	Enum	Clean Interval
0	S1	0	None	0	Off	18	15 Hours
1	S2	1	Relay 1	1	15 Minutes	19	16 Hours
		2	Relay 2	2	30 Minutes	20	17 Hours
		3	Relay 3	3	45 Minutes	21	18 Hours
0	Continuous	4	Relay 4	4	1 Hour	22	19 Hours
1	Pulsed	5	Digital Output	5	2 Hours	23	20 Hours
				6	3 Hours	24	21 Hours
				7	4 Hours	25	22 Hours
				8	5 Hours	26	23 Hours
				9	6 Hours	27	24 Hours
				10	7 Hours		
				11	8 Hours		
				12	9 Hours		
				13	10 Hours		
				14	11 Hours		
				15	12 Hours		
				16	13 Hours		
				17	14 Hours		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Sensor to Clean
1	Enumeration	Clean Assignment
2	Enumeration	Clean Frequency/Interval
3	Enumeration	Clean Type
4	Unsigned-8	On Time (Seconds)
5	Unsigned-8	Off Time (Seconds)
6	Enumeration	Number of Pulses
7	Enumeration	Recovery Time
8-11	Unsigned-32	Duration (Seconds)
12-15	Unsigned-32	Next Clean (Time in Seconds since 2000)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor to Clean
1	Enumeration	Clean Assignment
2	Enumeration	Clean Frequency/Interval
3	Enumeration	Clean Type
4	Unsigned-8	On Time (Seconds)
5	Unsigned-8	Off Time (Seconds)
6	Enumeration	Number of Pulses
7	Enumeration	Recovery Time
8-11	Unsigned-32	Duration (Seconds)
12-15	Unsigned-32	Next Clean (Time in Seconds since 2000)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.185. Command #185: Read Clean 2 Information

Reads setup for clean 2

Enum	Sensor	Enum	Clean Assignment	Enum	Clean Interval	Enum	Clean Interval
0	S1	0	None	0	Off	18	15 Hours
1	S2	1	Relay 1	1	15 Minutes	19	16 Hours
		2	Relay 2	2	30 Minutes	20	17 Hours
		3	Relay 3	3	45 Minutes	21	18 Hours
0	Continuous	4	Relay 4	4	1 Hour	22	19 Hours
1	Pulsed	5	Digital Output	5	2 Hours	23	20 Hours
				6	3 Hours	24	21 Hours
				7	4 Hours	25	22 Hours
				8	5 Hours	26	23 Hours
				9	6 Hours	27	24 Hours
				10	7 Hours		
				11	8 Hours		
				12	9 Hours		
				13	10 Hours		
				14	11 Hours		
				15	12 Hours		
				16	13 Hours		
				17	14 Hours		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor to Clean
1	Enumeration	Clean Assignment
2	Enumeration	Clean Frequency/Interval
3	Enumeration	Clean Type
4	Unsigned-8	On Time (Seconds)
5	Unsigned-8	Off Time (Seconds)
6	Enumeration	Number of Pulses
7	Enumeration	Recovery Time
8-11	Unsigned-32	Duration (Seconds)
12-15	Unsigned-32	Next Clean (Time in Seconds since 2000)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.186. Command #186: Write Clean 2 Information

Writes setup for clean 2

Enum	Sensor	Enum	Clean Assignment	Enum	Clean Interval	Enum	Clean Interval
0	S1	0	None	0	Off	18	15 Hours
1	S2	1	Relay 1	1	15 Minutes	19	16 Hours
		2	Relay 2	2	30 Minutes	20	17 Hours
		3	Relay 3	3	45 Minutes	21	18 Hours
0	Continuous	4	Relay 4	4	1 Hour	22	19 Hours
1	Pulsed	5	Digital Output	5	2 Hours	23	20 Hours
				6	3 Hours	24	21 Hours
				7	4 Hours	25	22 Hours
				8	5 Hours	26	23 Hours
				9	6 Hours	27	24 Hours
				10	7 Hours		
				11	8 Hours		
				12	9 Hours		
				13	10 Hours		
				14	11 Hours		
				15	12 Hours		
				16	13 Hours		
				17	14 Hours		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Sensor to Clean
1	Enumeration	Clean Assignment
2	Enumeration	Clean Frequency/Interval
3	Enumeration	Clean Type
4	Unsigned-8	On Time (Seconds)
5	Unsigned-8	Off Time (Seconds)
6	Enumeration	Number of Pulses
7	Enumeration	Recovery Time
8-11	Unsigned-32	Duration (Seconds)
12-15	Unsigned-32	Next Clean (Time in Seconds since 2000)

Response Data Bytes

Byte	Format	Description
0	Enumeration	Sensor to Clean
1	Enumeration	Clean Assignment
2	Enumeration	Clean Frequency/Interval
3	Enumeration	Clean Type
4	Unsigned-8	On Time (Seconds)
5	Unsigned-8	Off Time (Seconds)
6	Enumeration	Number of Pulses
7	Enumeration	Recovery Time
8-11	Unsigned-32	Duration (Seconds)
12-15	Unsigned-32	Next Clean (Time in Seconds since 2000)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.187. Command #187: Enable/Disable Write Protection

Enables/Disables write protection.

Enum	Write Protection Status
0	Disabled
1	Enabled

Request Data Bytes

Byte	Format	Description
0	Enumeration	Write Protection

Response Data Bytes

Byte	Format	Description
0	Enumeration	Write Protection

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.188. Command #188: Read Diagnostics Block 1

Reads state of diagnostics in block 1.

Enum	Diagnostic State
0	Inactive
1	Active

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range
3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined

4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined
5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits
10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure

11.3	Bit	S2 pH – Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure
11.7	Bit	S2 pH – Undefined
12.0	Bit	S1 2E– Calibrating
12.1	Bit	S1 2E– Recovery
12.2	Bit	S1 2E– Undefined
12.3	Bit	S1 2E– Undefined
12.4	Bit	S1 2E– Undefined
12.5	Bit	S1 2E– Undefined
12.6	Bit	S1 2E– Undefined
12.7	Bit	S1 2E– Undefined
13.0	Bit	S1 2E– Undefined
13.1	Bit	S1 2E– Undefined
13.2	Bit	S1 2E– Undefined
13.3	Bit	S1 2E– Undefined
13.4	Bit	S1 2E– Undefined
13.5	Bit	S1 2E– Undefined
13.6	Bit	S1 2E– Out of Solution
13.7	Bit	S1 2E– Undefined
14.0	Bit	S1 2E– Calibration Failed
14.1	Bit	S1 2E– PV Outside Sensor Limits
14.2	Bit	S1 2E– Undefined
14.3	Bit	S1 2E– Undefined
14.4	Bit	S1 2E– Process Temperature Out of Range
14.5	Bit	S1 2E– Undefined
14.6	Bit	S1 2E– Undefined
14.7	Bit	S1 2E– Internal Temperature out of Range
15.0	Bit	S1 2E– PV Failure
15.1	Bit	S1 2E– ADC Failure
15.2	Bit	S1 2E– Memory Failure
15.3	Bit	S1 2E– Undefined
15.4	Bit	S1 2E– Polarization
15.5	Bit	S1 2E– Undefined
15.6	Bit	S1 2E– Temperature Failure
15.7	Bit	S1 2E– Undefined
16.0	Bit	S2 2E– Calibrating
16.1	Bit	S2 2E– Recovery
16.2	Bit	S2 2E– Undefined
16.3	Bit	S2 2E– Undefined
16.4	Bit	S2 2E– Undefined
16.5	Bit	S2 2E– Undefined
16.6	Bit	S2 2E– Undefined
16.7	Bit	S2 2E– Undefined
17.0	Bit	S2 2E– Undefined
17.1	Bit	S2 2E– Undefined
17.2	Bit	S2 2E– Undefined
17.3	Bit	S2 2E– Undefined
17.4	Bit	S2 2E– Undefined
17.5	Bit	S2 2E– Undefined
17.6	Bit	S2 2E– Out of Solution

17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined
18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure
23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined

24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined
24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined
29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined

30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired
31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery
36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed

37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined
37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.189. Command #189: Read Diagnostics Block 2

Reads state of diagnostics in block 2.

Enum	Diagnostic State
0	Inactive
1	Active

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined
3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined

4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined
5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits
10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure

11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined
11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined
16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined

17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined
18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined
23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined

24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined
24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined
29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined

30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined
31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined
36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined

37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined
37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.190. Command #190: Write Diagnostics Masking Block 1

Masks individual diagnostics in block 1 when masking is enabled.

Enum	Masking
0	Unmasked
1	Masked

Request Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range
3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined
4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined

5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits
10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure
11.3	Bit	S2 pH – Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure

11.7	Bit	S2 pH - Undefined
12.0	Bit	S1 2E- Calibrating
12.1	Bit	S1 2E- Recovery
12.2	Bit	S1 2E- Undefined
12.3	Bit	S1 2E- Undefined
12.4	Bit	S1 2E- Undefined
12.5	Bit	S1 2E- Undefined
12.6	Bit	S1 2E- Undefined
12.7	Bit	S1 2E- Undefined
13.0	Bit	S1 2E- Undefined
13.1	Bit	S1 2E- Undefined
13.2	Bit	S1 2E- Undefined
13.3	Bit	S1 2E- Undefined
13.4	Bit	S1 2E- Undefined
13.5	Bit	S1 2E- Undefined
13.6	Bit	S1 2E- Out of Solution
13.7	Bit	S1 2E- Undefined
14.0	Bit	S1 2E- Calibration Failed
14.1	Bit	S1 2E- PV Outside Sensor Limits
14.2	Bit	S1 2E- Undefined
14.3	Bit	S1 2E- Undefined
14.4	Bit	S1 2E- Process Temperature Out of Range
14.5	Bit	S1 2E- Undefined
14.6	Bit	S1 2E- Undefined
14.7	Bit	S1 2E- Internal Temperature out of Range
15.0	Bit	S1 2E- PV Failure
15.1	Bit	S1 2E- ADC Failure
15.2	Bit	S1 2E- Memory Failure
15.3	Bit	S1 2E- Undefined
15.4	Bit	S1 2E- Polarization
15.5	Bit	S1 2E- Undefined
15.6	Bit	S1 2E- Temperature Failure
15.7	Bit	S1 2E- Undefined
16.0	Bit	S2 2E- Calibrating
16.1	Bit	S2 2E- Recovery
16.2	Bit	S2 2E- Undefined
16.3	Bit	S2 2E- Undefined
16.4	Bit	S2 2E- Undefined
16.5	Bit	S2 2E- Undefined
16.6	Bit	S2 2E- Undefined
16.7	Bit	S2 2E- Undefined
17.0	Bit	S2 2E- Undefined
17.1	Bit	S2 2E- Undefined
17.2	Bit	S2 2E- Undefined
17.3	Bit	S2 2E- Undefined
17.4	Bit	S2 2E- Undefined
17.5	Bit	S2 2E- Undefined
17.6	Bit	S2 2E- Out of Solution
17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined

18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure
23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined
24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined

24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined
29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined
30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired

31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery
36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed
37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined

37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Response Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range

3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined
4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined
5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits

10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure
11.3	Bit	S2 pH - Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure
11.7	Bit	S2 pH - Undefined
12.0	Bit	S1 2E– Calibrating
12.1	Bit	S1 2E– Recovery
12.2	Bit	S1 2E– Undefined
12.3	Bit	S1 2E– Undefined
12.4	Bit	S1 2E– Undefined
12.5	Bit	S1 2E– Undefined
12.6	Bit	S1 2E– Undefined
12.7	Bit	S1 2E– Undefined
13.0	Bit	S1 2E– Undefined
13.1	Bit	S1 2E– Undefined
13.2	Bit	S1 2E– Undefined
13.3	Bit	S1 2E– Undefined
13.4	Bit	S1 2E– Undefined
13.5	Bit	S1 2E– Undefined
13.6	Bit	S1 2E– Out of Solution
13.7	Bit	S1 2E– Undefined
14.0	Bit	S1 2E– Calibration Failed
14.1	Bit	S1 2E– PV Outside Sensor Limits
14.2	Bit	S1 2E– Undefined
14.3	Bit	S1 2E– Undefined
14.4	Bit	S1 2E– Process Temperature Out of Range
14.5	Bit	S1 2E– Undefined
14.6	Bit	S1 2E– Undefined
14.7	Bit	S1 2E– Internal Temperature out of Range
15.0	Bit	S1 2E– PV Failure
15.1	Bit	S1 2E– ADC Failure
15.2	Bit	S1 2E– Memory Failure
15.3	Bit	S1 2E– Undefined
15.4	Bit	S1 2E– Polarization
15.5	Bit	S1 2E– Undefined
15.6	Bit	S1 2E– Temperature Failure
15.7	Bit	S1 2E– Undefined
16.0	Bit	S2 2E– Calibrating
16.1	Bit	S2 2E– Recovery
16.2	Bit	S2 2E– Undefined
16.3	Bit	S2 2E– Undefined
16.4	Bit	S2 2E– Undefined
16.5	Bit	S2 2E– Undefined

16.6	Bit	S2 2E- Undefined
16.7	Bit	S2 2E- Undefined
17.0	Bit	S2 2E- Undefined
17.1	Bit	S2 2E- Undefined
17.2	Bit	S2 2E- Undefined
17.3	Bit	S2 2E- Undefined
17.4	Bit	S2 2E- Undefined
17.5	Bit	S2 2E- Undefined
17.6	Bit	S2 2E- Out of Solution
17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined
18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure

23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined
24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined
24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined

29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined
30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired
31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery

36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed
37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined
37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.191. Command #191: Write Diagnostics Masking Block 2

Masks individual diagnostics in block 2 when masking is enabled.

Enum	Masking
0	Unmasked
1	Masked

Request Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined
3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined
4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined

5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits
10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure
11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined

11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined
16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined
17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined

18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined
23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined
24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined

24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined
29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined
30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined

31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined
36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined
37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined

37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Response Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined

3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined
4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined
5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits

10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure
11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined
11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined

16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined
17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined
18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined

23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined
24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined
24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined

29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined
30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined
31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined

36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined
37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined
37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.192. Command #192: Write Diagnostics Simulation Block 1

Sets state of individual diagnostics in block 1 when simulated diagnostics are enabled.

Enum	Masking
0	Inactive
1	Active

Request Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range
3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined
4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined

5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits
10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure
11.3	Bit	S2 pH – Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure

11.7	Bit	S2 pH - Undefined
12.0	Bit	S1 2E- Calibrating
12.1	Bit	S1 2E- Recovery
12.2	Bit	S1 2E- Undefined
12.3	Bit	S1 2E- Undefined
12.4	Bit	S1 2E- Undefined
12.5	Bit	S1 2E- Undefined
12.6	Bit	S1 2E- Undefined
12.7	Bit	S1 2E- Undefined
13.0	Bit	S1 2E- Undefined
13.1	Bit	S1 2E- Undefined
13.2	Bit	S1 2E- Undefined
13.3	Bit	S1 2E- Undefined
13.4	Bit	S1 2E- Undefined
13.5	Bit	S1 2E- Undefined
13.6	Bit	S1 2E- Out of Solution
13.7	Bit	S1 2E- Undefined
14.0	Bit	S1 2E- Calibration Failed
14.1	Bit	S1 2E- PV Outside Sensor Limits
14.2	Bit	S1 2E- Undefined
14.3	Bit	S1 2E- Undefined
14.4	Bit	S1 2E- Process Temperature Out of Range
14.5	Bit	S1 2E- Undefined
14.6	Bit	S1 2E- Undefined
14.7	Bit	S1 2E- Internal Temperature out of Range
15.0	Bit	S1 2E- PV Failure
15.1	Bit	S1 2E- ADC Failure
15.2	Bit	S1 2E- Memory Failure
15.3	Bit	S1 2E- Undefined
15.4	Bit	S1 2E- Polarization
15.5	Bit	S1 2E- Undefined
15.6	Bit	S1 2E- Temperature Failure
15.7	Bit	S1 2E- Undefined
16.0	Bit	S2 2E- Calibrating
16.1	Bit	S2 2E- Recovery
16.2	Bit	S2 2E- Undefined
16.3	Bit	S2 2E- Undefined
16.4	Bit	S2 2E- Undefined
16.5	Bit	S2 2E- Undefined
16.6	Bit	S2 2E- Undefined
16.7	Bit	S2 2E- Undefined
17.0	Bit	S2 2E- Undefined
17.1	Bit	S2 2E- Undefined
17.2	Bit	S2 2E- Undefined
17.3	Bit	S2 2E- Undefined
17.4	Bit	S2 2E- Undefined
17.5	Bit	S2 2E- Undefined
17.6	Bit	S2 2E- Out of Solution
17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined

18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure
23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined
24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined

24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined
29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined
30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired

31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery
36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed
37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined

37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Response Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range

3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined
4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined
5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits

10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure
11.3	Bit	S2 pH - Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure
11.7	Bit	S2 pH - Undefined
12.0	Bit	S1 2E– Calibrating
12.1	Bit	S1 2E– Recovery
12.2	Bit	S1 2E– Undefined
12.3	Bit	S1 2E– Undefined
12.4	Bit	S1 2E– Undefined
12.5	Bit	S1 2E– Undefined
12.6	Bit	S1 2E– Undefined
12.7	Bit	S1 2E– Undefined
13.0	Bit	S1 2E– Undefined
13.1	Bit	S1 2E– Undefined
13.2	Bit	S1 2E– Undefined
13.3	Bit	S1 2E– Undefined
13.4	Bit	S1 2E– Undefined
13.5	Bit	S1 2E– Undefined
13.6	Bit	S1 2E– Out of Solution
13.7	Bit	S1 2E– Undefined
14.0	Bit	S1 2E– Calibration Failed
14.1	Bit	S1 2E– PV Outside Sensor Limits
14.2	Bit	S1 2E– Undefined
14.3	Bit	S1 2E– Undefined
14.4	Bit	S1 2E– Process Temperature Out of Range
14.5	Bit	S1 2E– Undefined
14.6	Bit	S1 2E– Undefined
14.7	Bit	S1 2E– Internal Temperature out of Range
15.0	Bit	S1 2E– PV Failure
15.1	Bit	S1 2E– ADC Failure
15.2	Bit	S1 2E– Memory Failure
15.3	Bit	S1 2E– Undefined
15.4	Bit	S1 2E– Polarization
15.5	Bit	S1 2E– Undefined
15.6	Bit	S1 2E– Temperature Failure
15.7	Bit	S1 2E– Undefined
16.0	Bit	S2 2E– Calibrating
16.1	Bit	S2 2E– Recovery
16.2	Bit	S2 2E– Undefined
16.3	Bit	S2 2E– Undefined
16.4	Bit	S2 2E– Undefined
16.5	Bit	S2 2E– Undefined

16.6	Bit	S2 2E- Undefined
16.7	Bit	S2 2E- Undefined
17.0	Bit	S2 2E- Undefined
17.1	Bit	S2 2E- Undefined
17.2	Bit	S2 2E- Undefined
17.3	Bit	S2 2E- Undefined
17.4	Bit	S2 2E- Undefined
17.5	Bit	S2 2E- Undefined
17.6	Bit	S2 2E- Out of Solution
17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined
18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure

23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined
24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined
24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined

29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined
30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired
31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery

36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed
37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined
37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.193. Command #193: Write Diagnostics Simulation Block 2

Sets state of individual diagnostics in block 2 when simulated diagnostics are enabled.

Enum	Masking
0	Inactive
1	Active

Request Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined
3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined
4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined

5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits
10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure
11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined

11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined
16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined
17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined

18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined
23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined
24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined

24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined
29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined
30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined

31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined
36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined
37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined

37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Response Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined

3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined
4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined
5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits

10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure
11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined
11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined

16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined
17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined
18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined

23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined
24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined
24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined

29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined
30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined
31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined

36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined
37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined
37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.194. Command #194: Read Diagnostics Masking Block 1

Reads state of diagnostics mask in block 1.

Enum	Diagnostic State
0	Unmasked
1	Masked

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range
3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined

4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined
5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits
10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure

11.3	Bit	S2 pH - Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure
11.7	Bit	S2 pH - Undefined
12.0	Bit	S1 2E– Calibrating
12.1	Bit	S1 2E– Recovery
12.2	Bit	S1 2E– Undefined
12.3	Bit	S1 2E– Undefined
12.4	Bit	S1 2E– Undefined
12.5	Bit	S1 2E– Undefined
12.6	Bit	S1 2E– Undefined
12.7	Bit	S1 2E– Undefined
13.0	Bit	S1 2E– Undefined
13.1	Bit	S1 2E– Undefined
13.2	Bit	S1 2E– Undefined
13.3	Bit	S1 2E– Undefined
13.4	Bit	S1 2E– Undefined
13.5	Bit	S1 2E– Undefined
13.6	Bit	S1 2E– Out of Solution
13.7	Bit	S1 2E– Undefined
14.0	Bit	S1 2E– Calibration Failed
14.1	Bit	S1 2E– PV Outside Sensor Limits
14.2	Bit	S1 2E– Undefined
14.3	Bit	S1 2E– Undefined
14.4	Bit	S1 2E– Process Temperature Out of Range
14.5	Bit	S1 2E– Undefined
14.6	Bit	S1 2E– Undefined
14.7	Bit	S1 2E– Internal Temperature out of Range
15.0	Bit	S1 2E– PV Failure
15.1	Bit	S1 2E– ADC Failure
15.2	Bit	S1 2E– Memory Failure
15.3	Bit	S1 2E– Undefined
15.4	Bit	S1 2E– Polarization
15.5	Bit	S1 2E– Undefined
15.6	Bit	S1 2E– Temperature Failure
15.7	Bit	S1 2E– Undefined
16.0	Bit	S2 2E– Calibrating
16.1	Bit	S2 2E– Recovery
16.2	Bit	S2 2E– Undefined
16.3	Bit	S2 2E– Undefined
16.4	Bit	S2 2E– Undefined
16.5	Bit	S2 2E– Undefined
16.6	Bit	S2 2E– Undefined
16.7	Bit	S2 2E– Undefined
17.0	Bit	S2 2E– Undefined
17.1	Bit	S2 2E– Undefined
17.2	Bit	S2 2E– Undefined
17.3	Bit	S2 2E– Undefined
17.4	Bit	S2 2E– Undefined
17.5	Bit	S2 2E– Undefined
17.6	Bit	S2 2E– Out of Solution

17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined
18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure
23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined

24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined
24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined
29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined

30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired
31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery
36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed

37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined
37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.195. Command #195: Read Diagnostics Masking Block 2

Reads state of diagnostics mask in block 2.

Enum	Diagnostic State
0	Unmasked
1	Masked

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined
3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined

4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined
5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits
10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure

11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined
11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined
16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined

17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined
18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined
23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined

24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined
24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined
29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined

30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined
31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined
36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined

37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined
37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.196. Command #196: Read Diagnostics Simulation Block 1

Reads state of simulated diagnostics in block 1.

Enum	Diagnostic State
0	Inactive
1	Active

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0.0	Bit	Transmitter – Undefined
0.1	Bit	Transmitter – Undefined
0.2	Bit	Transmitter – Undefined
0.3	Bit	Transmitter – Undefined
0.4	Bit	Transmitter – Undefined
0.5	Bit	Transmitter – Undefined
0.6	Bit	Transmitter – Undefined
0.7	Bit	Transmitter – Undefined
1.0	Bit	Transmitter – Before Cation Conductivity High
1.1	Bit	Transmitter – After Cation Conductivity High
1.2	Bit	Transmitter – Before Cation Conductivity Low
1.3	Bit	Transmitter – Clean 1 in Progress
1.4	Bit	Transmitter – Clean 2 in Progress
1.5	Bit	Transmitter – Undefined
1.6	Bit	Transmitter – Undefined
1.7	Bit	Transmitter – Undefined
2.0	Bit	Transmitter – Alarm Active
2.1	Bit	Transmitter – Memory Write Error
2.2	Bit	Transmitter – S1 Write Error
2.3	Bit	Transmitter – S2 Write Error
2.4	Bit	Transmitter – S1: PV Out of Range
2.5	Bit	Transmitter – S2: PV Out of Range
2.6	Bit	Transmitter – Simulation Active
2.7	Bit	Transmitter – Inferred pH Invalid
3.0	Bit	Transmitter – S1 Communications Error
3.1	Bit	Transmitter – S2 Communications Error
3.2	Bit	Transmitter – Analog Output 1 Out of Range
3.3	Bit	Transmitter – Analog Output 2 Out of Range
3.4	Bit	Transmitter – Analog Output 3 Out of Range
3.5	Bit	Transmitter – Analog Output 4 Out of Range
3.6	Bit	Transmitter – SD Card Nearly Full
3.7	Bit	Transmitter – SD Card Full
4.0	Bit	S1 pH – Undefined
4.1	Bit	S1 pH – Undefined
4.2	Bit	S1 pH – Undefined
4.3	Bit	S1 pH – Undefined
4.4	Bit	S1 pH – Undefined
4.5	Bit	S1 pH – Undefined
4.6	Bit	S1 pH – Undefined

4.7	Bit	S1 pH – Undefined
5.0	Bit	S1 pH – Undefined
5.1	Bit	S1 pH – Undefined
5.2	Bit	S1 pH – Undefined
5.3	Bit	S1 pH – Reference Blocked
5.4	Bit	S1 pH – Reference Electrode Warning
5.5	Bit	S1 pH – Low pH Slope
5.6	Bit	S1 pH – Out of Solution
5.7	Bit	S1 pH – Low Electrolyte
6.0	Bit	S1 pH – Calibration Failed
6.1	Bit	S1 pH – PV Outside Sensor Limits
6.2	Bit	S1 pH – Undefined
6.3	Bit	S1 pH – Undefined
6.4	Bit	S1 pH – Temperature Outside Sensor Limits
6.5	Bit	S1 pH – Undefined
6.6	Bit	S1 pH – Undefined
6.7	Bit	S1 pH – Ambient Temperature Out of Range
7.0	Bit	S1 pH – Undefined
7.1	Bit	S1 pH – ADC Failure
7.2	Bit	S1 pH – Memory Failure
7.3	Bit	S1 pH – Undefined
7.4	Bit	S1 pH – Broken Glass
7.5	Bit	S1 pH – Reference Electrode Failure
7.6	Bit	S1 pH – Temperature Failure
7.7	Bit	S1 pH – Undefined
8.0	Bit	S2 pH – Undefined
8.1	Bit	S2 pH – Undefined
8.2	Bit	S2 pH – Undefined
8.3	Bit	S2 pH – Undefined
8.4	Bit	S2 pH – Undefined
8.5	Bit	S2 pH – Undefined
8.6	Bit	S2 pH – Undefined
8.7	Bit	S2 pH – Undefined
9.0	Bit	S2 pH – Undefined
9.1	Bit	S2 pH – Undefined
9.2	Bit	S2 pH – Undefined
9.3	Bit	S2 pH – Reference Blocked
9.4	Bit	S2 pH – Reference Electrode Warning
9.5	Bit	S2 pH – Low pH Slope
9.6	Bit	S2 pH – Out of Solution
9.7	Bit	S2 pH – Low Electrolyte
10.0	Bit	S2 pH – Calibration Failed
10.1	Bit	S2 pH – PV Outside Sensor Limits
10.2	Bit	S2 pH – Undefined
10.3	Bit	S2 pH – Undefined
10.4	Bit	S2 pH – Temperature Outside Sensor Limits
10.5	Bit	S2 pH – Undefined
10.6	Bit	S2 pH – Undefined
10.7	Bit	S2 pH – Ambient Temperature Out of Range
11.0	Bit	S2 pH – Undefined
11.1	Bit	S2 pH – ADC Failure
11.2	Bit	S2 pH – Memory Failure

11.3	Bit	S2 pH - Undefined
11.4	Bit	S2 pH – Broken Glass
11.5	Bit	S2 pH – Reference Electrode Failure
11.6	Bit	S2 pH – Temperature Failure
11.7	Bit	S2 pH - Undefined
12.0	Bit	S1 2E– Calibrating
12.1	Bit	S1 2E– Recovery
12.2	Bit	S1 2E– Undefined
12.3	Bit	S1 2E– Undefined
12.4	Bit	S1 2E– Undefined
12.5	Bit	S1 2E– Undefined
12.6	Bit	S1 2E– Undefined
12.7	Bit	S1 2E– Undefined
13.0	Bit	S1 2E– Undefined
13.1	Bit	S1 2E– Undefined
13.2	Bit	S1 2E– Undefined
13.3	Bit	S1 2E– Undefined
13.4	Bit	S1 2E– Undefined
13.5	Bit	S1 2E– Undefined
13.6	Bit	S1 2E– Out of Solution
13.7	Bit	S1 2E– Undefined
14.0	Bit	S1 2E– Calibration Failed
14.1	Bit	S1 2E– PV Outside Sensor Limits
14.2	Bit	S1 2E– Undefined
14.3	Bit	S1 2E– Undefined
14.4	Bit	S1 2E– Process Temperature Out of Range
14.5	Bit	S1 2E– Undefined
14.6	Bit	S1 2E– Undefined
14.7	Bit	S1 2E– Internal Temperature out of Range
15.0	Bit	S1 2E– PV Failure
15.1	Bit	S1 2E– ADC Failure
15.2	Bit	S1 2E– Memory Failure
15.3	Bit	S1 2E– Undefined
15.4	Bit	S1 2E– Polarization
15.5	Bit	S1 2E– Undefined
15.6	Bit	S1 2E– Temperature Failure
15.7	Bit	S1 2E– Undefined
16.0	Bit	S2 2E– Calibrating
16.1	Bit	S2 2E– Recovery
16.2	Bit	S2 2E– Undefined
16.3	Bit	S2 2E– Undefined
16.4	Bit	S2 2E– Undefined
16.5	Bit	S2 2E– Undefined
16.6	Bit	S2 2E– Undefined
16.7	Bit	S2 2E– Undefined
17.0	Bit	S2 2E– Undefined
17.1	Bit	S2 2E– Undefined
17.2	Bit	S2 2E– Undefined
17.3	Bit	S2 2E– Undefined
17.4	Bit	S2 2E– Undefined
17.5	Bit	S2 2E– Undefined
17.6	Bit	S2 2E– Out of Solution

17.7	Bit	S2 2E- Undefined
18.0	Bit	S2 2E- Calibration Failed
18.1	Bit	S2 2E- PV Outside Sensor Limits
18.2	Bit	S2 2E- Undefined
18.3	Bit	S2 2E- Undefined
18.4	Bit	S2 2E- Process Temperature Out of Range
18.5	Bit	S2 2E- Undefined
18.6	Bit	S2 2E- Undefined
18.7	Bit	S2 2E- Internal Temperature out of Range
19.0	Bit	S2 2E- PV Failure
19.1	Bit	S2 2E- ADC Failure
19.2	Bit	S2 2E- Memory Failure
19.3	Bit	S2 2E- Undefined
19.4	Bit	S2 2E- Polarization
19.5	Bit	S2 2E- Undefined
19.6	Bit	S2 2E- Temperature Failure
19.7	Bit	S2 2E- Undefined
20.0	Bit	S1 4E- Calibrating
20.1	Bit	S1 4E- Recovery
20.2	Bit	S1 4E- Undefined
20.3	Bit	S1 4E- Undefined
20.4	Bit	S1 4E- Undefined
20.5	Bit	S1 4E- Undefined
20.6	Bit	S1 4E- Undefined
20.7	Bit	S1 4E- Undefined
21.0	Bit	S1 4E- Undefined
21.1	Bit	S1 4E- Undefined
21.2	Bit	S1 4E- Undefined
21.3	Bit	S1 4E- Undefined
21.4	Bit	S1 4E- Dirty Sensor
21.5	Bit	S1 4E- Undefined
21.6	Bit	S1 4E- Out of Solution
21.7	Bit	S1 4E- Undefined
22.0	Bit	S1 4E- Calibration Failed
22.1	Bit	S1 4E- PV Outside Sensor Limits
22.2	Bit	S1 4E- Undefined
22.3	Bit	S1 4E- Undefined
22.4	Bit	S1 4E- Process Temperature Out of Range
22.5	Bit	S1 4E- Undefined
22.6	Bit	S1 4E- Undefined
22.7	Bit	S1 4E- Internal Temperature out of Range
23.0	Bit	S1 4E- PV Failure
23.1	Bit	S1 4E- ADC Failure
23.2	Bit	S1 4E- Memory Failure
23.3	Bit	S1 4E- Undefined
23.4	Bit	S1 4E- Undefined
23.5	Bit	S1 4E- Undefined
23.6	Bit	S1 4E- Temperature Failure
23.7	Bit	S1 4E- Undefined
24.0	Bit	S2 4E- Calibrating
24.1	Bit	S2 4E- Recovery
24.2	Bit	S2 4E- Undefined

24.3	Bit	S2 4E- Undefined
24.4	Bit	S2 4E- Undefined
24.5	Bit	S2 4E- Undefined
24.6	Bit	S2 4E- Undefined
24.7	Bit	S2 4E- Undefined
25.0	Bit	S2 4E- Undefined
25.1	Bit	S2 4E- Undefined
25.2	Bit	S2 4E- Undefined
25.3	Bit	S2 4E- Undefined
25.4	Bit	S2 4E- Dirty Sensor
25.5	Bit	S2 4E- Undefined
25.6	Bit	S2 4E- Out of Solution
25.7	Bit	S2 4E- Undefined
26.0	Bit	S2 4E- Calibration Failed
26.1	Bit	S2 4E- PV Outside Sensor Limits
26.2	Bit	S2 4E- Undefined
26.3	Bit	S2 4E- Undefined
26.4	Bit	S2 4E- Process Temperature Out of Range
26.5	Bit	S2 4E- Undefined
26.6	Bit	S2 4E- Undefined
26.7	Bit	S2 4E- Internal Temperature out of Range
27.0	Bit	S2 4E- PV Failure
27.1	Bit	S2 4E- ADC Failure
27.2	Bit	S2 4E- Memory Failure
27.3	Bit	S2 4E- Undefined
27.4	Bit	S2 4E- Undefined
27.5	Bit	S2 4E- Undefined
27.6	Bit	S2 4E- Temperature Failure
27.7	Bit	S2 4E- Undefined
28.0	Bit	S1 RDO – Undefined
28.1	Bit	S1 RDO – Undefined
28.2	Bit	S1 RDO – Undefined
28.3	Bit	S1 RDO – Undefined
28.4	Bit	S1 RDO – Undefined
28.5	Bit	S1 RDO – Undefined
28.6	Bit	S1 RDO – Undefined
28.7	Bit	S1 RDO – Undefined
29.0	Bit	S1 RDO – Undefined
29.1	Bit	S1 RDO – Undefined
29.2	Bit	S1 RDO – Undefined
29.3	Bit	S1 RDO – Undefined
29.4	Bit	S1 RDO – Undefined
29.5	Bit	S1 RDO – Undefined
29.6	Bit	S1 RDO – Undefined
29.7	Bit	S1 RDO – Undefined
30.0	Bit	S1 RDO – % Saturation Measurement Error
30.1	Bit	S1 RDO – Temperature Measurement Error
30.2	Bit	S1 RDO – Cap Expired
30.3	Bit	S1 RDO – Replace Cap
30.4	Bit	S1 RDO – Cap Removed
30.5	Bit	S1 RDO – Calibration Failed
30.6	Bit	S1 RDO – Undefined

30.7	Bit	S1 RDO – Undefined
31.0	Bit	S1 RDO – Undefined
31.1	Bit	S1 RDO – User Calibration Expired
31.2	Bit	S1 RDO – Factory Calibration Expired
31.3	Bit	S1 RDO – Dissolved Oxygen Concentration Measurement Error
31.4	Bit	S1 RDO – Sensor Warm Up
31.5	Bit	S1 RDO – Sensor Warning
31.6	Bit	S1 RDO – Calibrating
31.7	Bit	S1 RDO – Internal Communication Error
32.0	Bit	S2 RDO – Undefined
32.1	Bit	S2 RDO – Undefined
32.2	Bit	S2 RDO – Undefined
32.3	Bit	S2 RDO – Undefined
32.4	Bit	S2 RDO – Undefined
32.5	Bit	S2 RDO – Undefined
32.6	Bit	S2 RDO – Undefined
32.7	Bit	S2 RDO – Undefined
33.0	Bit	S2 RDO – Undefined
33.1	Bit	S2 RDO – Undefined
33.2	Bit	S2 RDO – Undefined
33.3	Bit	S2 RDO – Undefined
33.4	Bit	S2 RDO – Undefined
33.5	Bit	S2 RDO – Undefined
33.6	Bit	S2 RDO – Undefined
33.7	Bit	S2 RDO – Undefined
34.0	Bit	S2 RDO – % Saturation Measurement Error
34.1	Bit	S2 RDO – Temperature Measurement Error
34.2	Bit	S2 RDO – Cap Expired
34.3	Bit	S2 RDO – Replace Cap
34.4	Bit	S2 RDO – Cap Removed
34.5	Bit	S2 RDO – Calibration Failed
34.6	Bit	S2 RDO – Undefined
34.7	Bit	S2 RDO – Undefined
35.0	Bit	S2 RDO – Undefined
35.1	Bit	S2 RDO – User Calibration Expired
35.2	Bit	S2 RDO – Factory Calibration Expired
35.3	Bit	S2 RDO – Dissolved Oxygen Concentration Measurement Error
35.4	Bit	S2 RDO – Sensor Warm Up
35.5	Bit	S2 RDO – Sensor Warning
35.6	Bit	S2 RDO – Calibrating
35.7	Bit	S2 RDO – Internal Communication Error
36.0	Bit	S1 TSS – Calibrating
36.1	Bit	S1 TSS – Recovery
36.2	Bit	S1 TSS – Undefined
36.3	Bit	S1 TSS – Clean Inhibited
36.4	Bit	S1 TSS – Undefined
36.5	Bit	S1 TSS – Undefined
36.6	Bit	S1 TSS – Undefined
36.7	Bit	S1 TSS – Undefined
37.0	Bit	S1 TSS – Flow Error
37.1	Bit	S1 TSS – Service Due
37.2	Bit	S1 TSS – Wiper Failed

37.3	Bit	S1 TSS – Replace Wiper
37.4	Bit	S1 TSS – Undefined
37.5	Bit	S1 TSS – Undefined
37.6	Bit	S1 TSS – Undefined
37.7	Bit	S1 TSS – Undefined
38.0	Bit	S1 TSS – Calibration Failed
38.1	Bit	S1 TSS – PV Out of Sensor Limits
38.2	Bit	S1 TSS – Wiper Expired
38.3	Bit	S1 TSS – Service Overdue
38.4	Bit	S1 TSS – Temperature Out of Sensor Limits
38.5	Bit	S1 TSS – LED Expired
38.6	Bit	S1 TSS – Excess Light
38.7	Bit	S1 TSS – Undefined
39.0	Bit	S1 TSS – PV Failure
39.1	Bit	S1 TSS – ADC Failure
39.2	Bit	S1 TSS – Memory Failure
39.3	Bit	S1 TSS – Commissioning Error
39.4	Bit	S1 TSS – Undefined
39.5	Bit	S1 TSS – Undefined
39.6	Bit	S1 TSS – Undefined
39.7	Bit	S1 TSS – Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.197. Command #197: Read Diagnostics Simulation Block 2

Reads state of simulated diagnostics in block 2.

Enum	Diagnostic State
0	Inactive
1	Active

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0.0	Bit	S2 TSS – Calibrating
0.1	Bit	S2 TSS – Recovery
0.2	Bit	S2 TSS – Undefined
0.3	Bit	S2 TSS – Clean Inhibited
0.4	Bit	S2 TSS – Undefined
0.5	Bit	S2 TSS – Undefined
0.6	Bit	S2 TSS – Undefined
0.7	Bit	S2 TSS – Undefined
1.0	Bit	S2 TSS – Flow Error
1.1	Bit	S2 TSS – Service Due
1.2	Bit	S2 TSS – Wiper Failed
1.3	Bit	S2 TSS – Replace Wiper
1.4	Bit	S2 TSS – Undefined
1.5	Bit	S2 TSS – Undefined
1.6	Bit	S2 TSS – Undefined
1.7	Bit	S2 TSS – Undefined
2.0	Bit	S2 TSS – Calibration Failed
2.1	Bit	S2 TSS – PV Out of Sensor Limits
2.2	Bit	S2 TSS – Wiper Expired
2.3	Bit	S2 TSS – Service Overdue
2.4	Bit	S2 TSS – Temperature Out of Sensor Limits
2.5	Bit	S2 TSS – LED Expired
2.6	Bit	S2 TSS – Excess Light
2.7	Bit	S2 TSS – Undefined
3.0	Bit	S2 TSS – PV Failure
3.1	Bit	S2 TSS – ADC Failure
3.2	Bit	S2 TSS – Memory Failure
3.3	Bit	S2 TSS – Commissioning Error
3.4	Bit	S2 TSS – Undefined
3.5	Bit	S2 TSS – Undefined
3.6	Bit	S2 TSS – Undefined
3.7	Bit	S2 TSS – Undefined
4.0	Bit	S1 Turbidity - Calibrating
4.1	Bit	S1 Turbidity - Recovery
4.2	Bit	S1 Turbidity - Clean Inhibited
4.3	Bit	S1 Turbidity - Undefined
4.4	Bit	S1 Turbidity - Undefined
4.5	Bit	S1 Turbidity - Undefined
4.6	Bit	S1 Turbidity - Undefined

4.7	Bit	S1 Turbidity - Undefined
5.0	Bit	S1 Turbidity - Replace Wiper
5.1	Bit	S1 Turbidity - Undefined
5.2	Bit	S1 Turbidity - Undefined
5.3	Bit	S1 Turbidity - Undefined
5.4	Bit	S1 Turbidity - Undefined
5.5	Bit	S1 Turbidity - Undefined
5.6	Bit	S1 Turbidity - Undefined
5.7	Bit	S1 Turbidity - Undefined
6.0	Bit	S1 Turbidity - Calibration Failed
6.1	Bit	S1 Turbidity - PV Out of Limits
6.2	Bit	S1 Turbidity - Undefined
6.3	Bit	S1 Turbidity - Undefined
6.4	Bit	S1 Turbidity - Undefined
6.5	Bit	S1 Turbidity - Replace wiper
6.6	Bit	S1 Turbidity - Undefined
6.7	Bit	S1 Turbidity - Undefined
7.0	Bit	S1 Turbidity - Undefined
7.1	Bit	S1 Turbidity - Memory Failure
7.2	Bit	S1 Turbidity - ADC Failure
7.3	Bit	S1 Turbidity - Wiper Failed
7.4	Bit	S1 Turbidity - Undefined
7.5	Bit	S1 Turbidity - Undefined
7.6	Bit	S1 Turbidity - Undefined
7.7	Bit	S1 Turbidity - Undefined
8.0	Bit	S2 Turbidity - Calibrating
8.1	Bit	S2 Turbidity - Recovery
8.2	Bit	S2 Turbidity - Clean Inhibited
8.3	Bit	S2 Turbidity - Undefined
8.4	Bit	S2 Turbidity - Undefined
8.5	Bit	S2 Turbidity - Undefined
8.6	Bit	S2 Turbidity - Undefined
8.7	Bit	S2 Turbidity - Undefined
9.0	Bit	S2 Turbidity - Replace Wiper
9.1	Bit	S2 Turbidity - Undefined
9.2	Bit	S2 Turbidity - Undefined
9.3	Bit	S2 Turbidity - Undefined
9.4	Bit	S2 Turbidity - Undefined
9.5	Bit	S2 Turbidity - Undefined
9.6	Bit	S2 Turbidity - Undefined
9.7	Bit	S2 Turbidity - Undefined
10.0	Bit	S2 Turbidity - Calibration Failed
10.1	Bit	S2 Turbidity - PV Out of Limits
10.2	Bit	S2 Turbidity - Undefined
10.3	Bit	S2 Turbidity - Undefined
10.4	Bit	S2 Turbidity - Undefined
10.5	Bit	S2 Turbidity - Replace wiper
10.6	Bit	S2 Turbidity - Undefined
10.7	Bit	S2 Turbidity - Undefined
11.0	Bit	S2 Turbidity - Undefined
11.1	Bit	S2 Turbidity - Memory Failure
11.2	Bit	S2 Turbidity - ADC Failure

11.3	Bit	S2 Turbidity - Wiper Failed
11.4	Bit	S2 Turbidity - Undefined
11.5	Bit	S2 Turbidity - Undefined
11.6	Bit	S2 Turbidity - Undefined
11.7	Bit	S2 Turbidity - Undefined
12.0	Bit	Undefined
12.1	Bit	Undefined
12.2	Bit	Undefined
12.3	Bit	Undefined
12.4	Bit	Undefined
12.5	Bit	Undefined
12.6	Bit	Undefined
12.7	Bit	Undefined
13.0	Bit	Undefined
13.1	Bit	Undefined
13.2	Bit	Undefined
13.3	Bit	Undefined
13.4	Bit	Undefined
13.5	Bit	Undefined
13.6	Bit	Undefined
13.7	Bit	Undefined
14.0	Bit	Undefined
14.1	Bit	Undefined
14.2	Bit	Undefined
14.3	Bit	Undefined
14.4	Bit	Undefined
14.5	Bit	Undefined
14.6	Bit	Undefined
14.7	Bit	Undefined
15.0	Bit	Undefined
15.1	Bit	Undefined
15.2	Bit	Undefined
15.3	Bit	Undefined
15.4	Bit	Undefined
15.5	Bit	Undefined
15.6	Bit	Undefined
15.7	Bit	Undefined
16.0	Bit	Undefined
16.1	Bit	Undefined
16.2	Bit	Undefined
16.3	Bit	Undefined
16.4	Bit	Undefined
16.5	Bit	Undefined
16.6	Bit	Undefined
16.7	Bit	Undefined
17.0	Bit	Undefined
17.1	Bit	Undefined
17.2	Bit	Undefined
17.3	Bit	Undefined
17.4	Bit	Undefined
17.5	Bit	Undefined
17.6	Bit	Undefined

17.7	Bit	Undefined
18.0	Bit	Undefined
18.1	Bit	Undefined
18.2	Bit	Undefined
18.3	Bit	Undefined
18.4	Bit	Undefined
18.5	Bit	Undefined
18.6	Bit	Undefined
18.7	Bit	Undefined
19.0	Bit	Undefined
19.1	Bit	Undefined
19.2	Bit	Undefined
19.3	Bit	Undefined
19.4	Bit	Undefined
19.5	Bit	Undefined
19.6	Bit	Undefined
19.7	Bit	Undefined
20.0	Bit	Undefined
20.1	Bit	Undefined
20.2	Bit	Undefined
20.3	Bit	Undefined
20.4	Bit	Undefined
20.5	Bit	Undefined
20.6	Bit	Undefined
20.7	Bit	Undefined
21.0	Bit	Undefined
21.1	Bit	Undefined
21.2	Bit	Undefined
21.3	Bit	Undefined
21.4	Bit	Undefined
21.5	Bit	Undefined
21.6	Bit	Undefined
21.7	Bit	Undefined
22.0	Bit	Undefined
22.1	Bit	Undefined
22.2	Bit	Undefined
22.3	Bit	Undefined
22.4	Bit	Undefined
22.5	Bit	Undefined
22.6	Bit	Undefined
22.7	Bit	Undefined
23.0	Bit	Undefined
23.1	Bit	Undefined
23.2	Bit	Undefined
23.3	Bit	Undefined
23.4	Bit	Undefined
23.5	Bit	Undefined
23.6	Bit	Undefined
23.7	Bit	Undefined
24.0	Bit	Undefined
24.1	Bit	Undefined
24.2	Bit	Undefined

24.3	Bit	Undefined
24.4	Bit	Undefined
24.5	Bit	Undefined
24.6	Bit	Undefined
24.7	Bit	Undefined
25.0	Bit	Undefined
25.1	Bit	Undefined
25.2	Bit	Undefined
25.3	Bit	Undefined
25.4	Bit	Undefined
25.5	Bit	Undefined
25.6	Bit	Undefined
25.7	Bit	Undefined
26.0	Bit	Undefined
26.1	Bit	Undefined
26.2	Bit	Undefined
26.3	Bit	Undefined
26.4	Bit	Undefined
26.5	Bit	Undefined
26.6	Bit	Undefined
26.7	Bit	Undefined
27.0	Bit	Undefined
27.1	Bit	Undefined
27.2	Bit	Undefined
27.3	Bit	Undefined
27.4	Bit	Undefined
27.5	Bit	Undefined
27.6	Bit	Undefined
27.7	Bit	Undefined
28.0	Bit	Undefined
28.1	Bit	Undefined
28.2	Bit	Undefined
28.3	Bit	Undefined
28.4	Bit	Undefined
28.5	Bit	Undefined
28.6	Bit	Undefined
28.7	Bit	Undefined
29.0	Bit	Undefined
29.1	Bit	Undefined
29.2	Bit	Undefined
29.3	Bit	Undefined
29.4	Bit	Undefined
29.5	Bit	Undefined
29.6	Bit	Undefined
29.7	Bit	Undefined
30.0	Bit	Undefined
30.1	Bit	Undefined
30.2	Bit	Undefined
30.3	Bit	Undefined
30.4	Bit	Undefined
30.5	Bit	Undefined
30.6	Bit	Undefined

30.7	Bit	Undefined
31.0	Bit	Undefined
31.1	Bit	Undefined
31.2	Bit	Undefined
31.3	Bit	Undefined
31.4	Bit	Undefined
31.5	Bit	Undefined
31.6	Bit	Undefined
31.7	Bit	Undefined
32.0	Bit	Undefined
32.1	Bit	Undefined
32.2	Bit	Undefined
32.3	Bit	Undefined
32.4	Bit	Undefined
32.5	Bit	Undefined
32.6	Bit	Undefined
32.7	Bit	Undefined
33.0	Bit	Undefined
33.1	Bit	Undefined
33.2	Bit	Undefined
33.3	Bit	Undefined
33.4	Bit	Undefined
33.5	Bit	Undefined
33.6	Bit	Undefined
33.7	Bit	Undefined
34.0	Bit	Undefined
34.1	Bit	Undefined
34.2	Bit	Undefined
34.3	Bit	Undefined
34.4	Bit	Undefined
34.5	Bit	Undefined
34.6	Bit	Undefined
34.7	Bit	Undefined
35.0	Bit	Undefined
35.1	Bit	Undefined
35.2	Bit	Undefined
35.3	Bit	Undefined
35.4	Bit	Undefined
35.5	Bit	Undefined
35.6	Bit	Undefined
35.7	Bit	Undefined
36.0	Bit	Undefined
36.1	Bit	Undefined
36.2	Bit	Undefined
36.3	Bit	Undefined
36.4	Bit	Undefined
36.5	Bit	Undefined
36.6	Bit	Undefined
36.7	Bit	Undefined
37.0	Bit	Undefined
37.1	Bit	Undefined
37.2	Bit	Undefined

37.3	Bit	Undefined
37.4	Bit	Undefined
37.5	Bit	Undefined
37.6	Bit	Undefined
37.7	Bit	Undefined
38.0	Bit	Undefined
38.1	Bit	Undefined
38.2	Bit	Undefined
38.3	Bit	Undefined
38.4	Bit	Undefined
38.5	Bit	Undefined
38.6	Bit	Undefined
38.7	Bit	Undefined
39.0	Bit	Undefined
39.1	Bit	Undefined
39.2	Bit	Undefined
39.3	Bit	Undefined
39.4	Bit	Undefined
39.5	Bit	Undefined
39.6	Bit	Undefined
39.7	Bit	Undefined

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.198. Command #198: Read Current Date and Time
Reads date and time from unit.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.199. Command #199: Write Current Date and Time

Writes date and time to unit.

Request Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year (Years since 1900)

Response Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.200. Command #200: Read Clean 1 Date and Time

Reads date and time of next clean on clean 1.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.201. Command #201: Write Clean 1 Date and Time

Writes clean 1 next clean date and time to unit.

Request Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year (Years since 1900)

Response Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.202. Command #202: Read Clean 2 Date and Time

Reads date and time of next clean on clean 2 from unit.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.203. Command #203: Write clean 2 Date and Time

Writes date and time of next clean on clean 2 to unit.

Request Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year (Years since 1900)

Response Data Bytes

Byte	Format	Description
0 - 3	Unsigned-32	Timestamp
4	Unsigned-8	Day
5	Unsigned-8	Month
6	Unsigned-8	Year

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.204. Command #204: Read Diagnostics simulation status
Reads diagnostic simulation status.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.205. Command #205: Write Diagnostics simulation status

Writes diagnostics simulation status to unit.

Request Data Bytes

Byte	Format	Description
0	Enumeration	Enable

Response Data Bytes

Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.206. Command #206: Read Alarm Current Option

Reads HART current output alarm state

Enum	Alarm Selection
0	High
1	Low

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Alarm Selection

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.207. Command #207: Write Alarm Current Option

Reads HART current output alarm state

Enum	Alarm Selection
0	High
1	Low

Request Data Bytes

Byte	Format	Description
0	Enumeration	Alarm Selection

Response Data Bytes

Byte	Format	Description
0	Enumeration	Alarm Selection

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.208. Command #208: Read Operator Control Enable

Reads state of operator control.

Enum	Enable
0	Operator Control Disabled
1	Operator Control Enabled

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.209. Command #209: Write Operator Control Enable

Writes state of operator control.

Enum	Enable
0	Operator Control Disabled
1	Operator Control Enabled

Request Data Bytes

Byte	Format	Description
0	Enumeration	Enable

Response Data Bytes

Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.210. Command #210: Read S1 Control Action

Reads action and mode for S1 control.

Enum	Action	Enum	Mode
0	Off	0	Automatic
1	Direct Action	1	Manual
2	Reverse Action		
3	Dual Action		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Action
1	Enumeration	Mode

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.211. Command #211: Write S1 Control Action

Writes action and mode for S1 control.

Enum	Action	Enum	Mode
0	Off	0	Automatic
1	Direct Action	1	Manual
2	Reverse Action		
3	Dual Action		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Action
1	Enumeration	Mode

Response Data Bytes

Byte	Format	Description
0	Enumeration	Action
1	Enumeration	Mode

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.212. Command #212: Read S2 Control Action

Reads action and mode for S2 control.

Enum	Action	Enum	Mode
0	Off	0	Automatic
1	Direct Action	1	Manual
2	Reverse Action		
3	Dual Action		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Action
1	Enumeration	Mode

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.213. Command #213: Write S2 Control Action

Writes action and mode for S2 control.

Enum	Action	Enum	Mode
0	Off	0	Automatic
1	Direct Action	1	Manual
2	Reverse Action		
3	Dual Action		

Request Data Bytes

Byte	Format	Description
0	Enumeration	Action
1	Enumeration	Mode

Response Data Bytes

Byte	Format	Description
0	Enumeration	Action
1	Enumeration	Mode

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.214. Command #214: Read S1 Direct Control Setup

Reads direct control setup of S1.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.215. Command #215: Write S1 Direct Control Setup

Writes direct control setup of S1.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.216. Command #216: Read S2 Direct Control Setup

Reads direct control setup of S2.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.217. Command #217: Write S2 Direct Control Setup

Writes direct control setup of S2.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.218. Command #218: Read S1 Reverse Control Setup

Reads reverse control setup of S1.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.219. Command #219: Write S1 Reverse Control Setup

Writes reverse control setup of S1.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.220. Command #220: Read S2 Reverse Control Setup

Reads setup of reverse control on S2

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.221. Command #221: Write S2 Reverse Control Setup

Writes state of operator control.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)

Response Data Bytes

Byte	Format	Description
0-3	Float	Setpoint
4	Enumeration	Control Type
5-8	Float	Proportional Band (%)
9-10	16-bit integer	Integral Time (Seconds)
11-14	Float	Derivative Time (Seconds)
15-18	Float	Manual Reset (%)
19	Enumeration	Output Method
20-23	Float	Cycle Time (Seconds)
24	Unsigned-8	Pulse Frequency (Pulses/Second)
Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.222. Command #222: Read S1 Dual Control Setup

Reads Setup for Dual Control on S1.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Acid Controller: Setpoint
4	Enumeration	Acid Controller: Control Type
5-8	Float	Acid Controller: Proportional Band (%)
9-10	16-bit integer	Acid Controller: Integral Time (Seconds)
11-14	Float	Acid Controller: Derivative Time (Seconds)
15-18	Float	Acid Controller: Manual Reset (%)
19	Enumeration	Acid Controller: Output Method
20-23	Float	Acid Controller: Cycle Time (Seconds)
24	Unsigned-8	Acid Controller: Pulse Frequency (Pulses/Second)
25-28	Float	Base Controller: Setpoint
29	Enumeration	Base Controller: Control Type
30-33	Float	Base Controller: Proportional Band (%)
34-35	16-bit integer	Base Controller: Integral Time (Seconds)
36-39	Float	Base Controller: Derivative Time (Seconds)
40-43	Float	Base Controller: Manual Reset (%)
44	Enumeration	Base Controller: Output Method
45-48	Float	Base Controller: Cycle Time (Seconds)
49	Unsigned-8	Base Controller: Pulse Frequency (Pulses/Second)
Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.223. Command #223: Write S1 Dual Control Setup

Writes setup for Dual Control on S1.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0-3	Float	Acid Controller: Setpoint
4	Enumeration	Acid Controller: Control Type
5-8	Float	Acid Controller: Proportional Band (%)
9-10	16-bit integer	Acid Controller: Integral Time (Seconds)
11-14	Float	Acid Controller: Derivative Time (Seconds)
15-18	Float	Acid Controller: Manual Reset (%)
19	Enumeration	Acid Controller: Output Method
20-23	Float	Acid Controller: Cycle Time (Seconds)
24	Unsigned-8	Acid Controller: Pulse Frequency (Pulses/Second)
25-28	Float	Base Controller: Setpoint
29	Enumeration	Base Controller: Control Type
30-33	Float	Base Controller: Proportional Band (%)
34-35	16-bit integer	Base Controller: Integral Time (Seconds)
36-39	Float	Base Controller: Derivative Time (Seconds)
40-43	Float	Base Controller: Manual Reset (%)
44	Enumeration	Base Controller: Output Method
45-48	Float	Base Controller: Cycle Time (Seconds)
49	Unsigned-8	Base Controller: Pulse Frequency (Pulses/Second)

Response Data Bytes

Byte	Format	Description
0-3	Float	Acid Controller: Setpoint
4	Enumeration	Acid Controller: Control Type
5-8	Float	Acid Controller: Proportional Band (%)
9-10	16-bit integer	Acid Controller: Integral Time (Seconds)
11-14	Float	Acid Controller: Derivative Time (Seconds)
15-18	Float	Acid Controller: Manual Reset (%)
19	Enumeration	Acid Controller: Output Method
20-23	Float	Acid Controller: Cycle Time (Seconds)
24	Unsigned-8	Acid Controller: Pulse Frequency (Pulses/Second)
25-28	Float	Base Controller: Setpoint
29	Enumeration	Base Controller: Control Type
30-33	Float	Base Controller: Proportional Band (%)
34-35	16-bit integer	Base Controller: Integral Time (Seconds)
36-39	Float	Base Controller: Derivative Time (Seconds)
40-43	Float	Base Controller: Manual Reset (%)
44	Enumeration	Base Controller: Output Method
45-48	Float	Base Controller: Cycle Time (Seconds)
49	Unsigned-8	Base Controller: Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.224. Command #224: Read S2 Dual Control Setup

Reads setup for Dual Control on S2.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Acid Controller: Setpoint
4	Enumeration	Acid Controller: Control Type
5-8	Float	Acid Controller: Proportional Band (%)
9-10	16-bit integer	Acid Controller: Integral Time (Seconds)
11-14	Float	Acid Controller: Derivative Time (Seconds)
15-18	Float	Acid Controller: Manual Reset (%)
19	Enumeration	Acid Controller: Output Method
20-23	Float	Acid Controller: Cycle Time (Seconds)
24	Unsigned-8	Acid Controller: Pulse Frequency (Pulses/Second)
25-28	Float	Base Controller: Setpoint
29	Enumeration	Base Controller: Control Type
30-33	Float	Base Controller: Proportional Band (%)
34-35	16-bit integer	Base Controller: Integral Time (Seconds)
36-39	Float	Base Controller: Derivative Time (Seconds)
40-43	Float	Base Controller: Manual Reset (%)
44	Enumeration	Base Controller: Output Method
45-48	Float	Base Controller: Cycle Time (Seconds)
49	Unsigned-8	Base Controller: Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.225. Command #225: Write S2 Dual Control Setup

Writes setup for Dual Control on S2.

Enum	Control Type	Enum	Output Method
0	Proportional Control	0	Analog Output
1	Proportional Integral Control	1	Time Proportioning Output
2	Proportional Integral Derivative Control	2	Pulse Frequency Output
3	Proportional Derivative Control		

Request Data Bytes

Byte	Format	Description
0-3	Float	Acid Controller: Setpoint
4	Enumeration	Acid Controller: Control Type
5-8	Float	Acid Controller: Proportional Band (%)
9-10	16-bit integer	Acid Controller: Integral Time (Seconds)
11-14	Float	Acid Controller: Derivative Time (Seconds)
15-18	Float	Acid Controller: Manual Reset (%)
19	Enumeration	Acid Controller: Output Method
20-23	Float	Acid Controller: Cycle Time (Seconds)
24	Unsigned-8	Acid Controller: Pulse Frequency (Pulses/Second)
25-28	Float	Base Controller: Setpoint
29	Enumeration	Base Controller: Control Type
30-33	Float	Base Controller: Proportional Band (%)
34-35	16-bit integer	Base Controller: Integral Time (Seconds)
36-39	Float	Base Controller: Derivative Time (Seconds)
40-43	Float	Base Controller: Manual Reset (%)
44	Enumeration	Base Controller: Output Method
45-48	Float	Base Controller: Cycle Time (Seconds)
49	Unsigned-8	Base Controller: Pulse Frequency (Pulses/Second)

Response Data Bytes

Byte	Format	Description
0-3	Float	Acid Controller: Setpoint
4	Enumeration	Acid Controller: Control Type
5-8	Float	Acid Controller: Proportional Band (%)
9-10	16-bit integer	Acid Controller: Integral Time (Seconds)
11-14	Float	Acid Controller: Derivative Time (Seconds)
15-18	Float	Acid Controller: Manual Reset (%)
19	Enumeration	Acid Controller: Output Method
20-23	Float	Acid Controller: Cycle Time (Seconds)
24	Unsigned-8	Acid Controller: Pulse Frequency (Pulses/Second)
25-28	Float	Base Controller: Setpoint
29	Enumeration	Base Controller: Control Type
30-33	Float	Base Controller: Proportional Band (%)
34-35	16-bit integer	Base Controller: Integral Time (Seconds)
36-39	Float	Base Controller: Derivative Time (Seconds)
40-43	Float	Base Controller: Manual Reset (%)
44	Enumeration	Base Controller: Output Method
45-48	Float	Base Controller: Cycle Time (Seconds)
49	Unsigned-8	Base Controller: Pulse Frequency (Pulses/Second)

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.226. Command #226: Read S1 Control Configuration

Reads control power recovery and PV failure response configuration.

Enum	Power Recovery Mode	Enum	PV Failure Action
0	Automatic	0	None
1	Manual – Default Output	1	Hold
2	Last Known	2	Manual – Default Output

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Power Recovery Mode
1-4	Float	Power Recovery Default Output Value
5	Enumeration	PV Failure Action
6-9	Float	PV Failure Default Output Value
Byte	Format	Description
0	Enumeration	Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.227. Command #227: Write S1 Control Configuration

Writes S1 control power recovery and PV failure response configuration.

Enum	Power Recovery Mode	Enum	PV Failure Action
0	Automatic	0	None
1	Manual – Default Output	1	Hold
2	Last Known	2	Manual – Default Output

Request Data Bytes

Byte	Format	Description
0	Enumeration	Power Recovery Mode
1-4	Float	Power Recovery Default Output Value
5	Enumeration	PV Failure Action
6-9	Float	PV Failure Default Output Value

Response Data Bytes

Byte	Format	Description
0	Enumeration	Power Recovery Mode
1-4	Float	Power Recovery Default Output Value
5	Enumeration	PV Failure Action
6-9	Float	PV Failure Default Output Value

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.228. Command #228: Read S2 Control Configuration

Read S2 control power recovery and PV failure response configuration.

Enum	Power Recovery Mode	Enum	PV Failure Action
0	Automatic	0	None
1	Manual – Default Output	1	Hold
2	Last Known	2	Manual – Default Output

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0	Enumeration	Power Recovery Mode
1-4	Float	Power Recovery Default Output Value
5	Enumeration	PV Failure Action
6-9	Float	PV Failure Default Output Value

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.229. Command #229: Write S2 Control Configuration

Writes S2 control power recovery and PV failure response configuration.

Enum	Power Recovery Mode	Enum	PV Failure Action
0	Automatic	0	None
1	Manual – Default Output	1	Hold
2	Last Known	2	Manual – Default Output

Request Data Bytes

Byte	Format	Description
0	Enumeration	Power Recovery Mode
1-4	Float	Power Recovery Default Output Value
5	Enumeration	PV Failure Action
6-9	Float	PV Failure Default Output Value

Response Data Bytes

Byte	Format	Description
0	Enumeration	Power Recovery Mode
1-4	Float	Power Recovery Default Output
5	Enumeration	PV Failure Action
6-9	Float	PV Failure Default Output

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.230. Command #230: Read S1 Control Manual Output
Reads S1 control manual output value.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	S1 Control Manual Output

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.231. Command #231: Write S1 Control Manual Output

Writes S1 control manual output value.

Request Data Bytes

Byte	Format	Description
0-3	Float	S1 Control Manual Output

Response Data Bytes

Byte	Format	Description
0-3	Float	S1 Control Manual Output

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.232. Command #232: Read S2 Control Manual Output
Reads S2 control manual output value.

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	S2 Control Manual Output

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.233. Command #233: Write S2 Control Manual Output

Writes S2 control manual output value.

Request Data Bytes

Byte	Format	Description
0-3	Float	S2 Control Manual Output

Response Data Bytes

Byte	Format	Description
0-3	Float	S2 Control Manual Output

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.234. Command #234: Read Control Output Signals

Signal value and status of Control outputs.

Enum	Signal	Enum	Signal
0	OK	9	Manually Set
1	Over range	10	Constant
2	Under range	11	Failure
3	Accuracy Poor	12	Not Processed
4	Held	13	Not Available
5	Held to Low Limit	14	Configuration Error
6	Held to High Limit	15	Error

Request Data Bytes

Byte	Format	Description
0		

Response Data Bytes

Byte	Format	Description
0-3	Float	Control Output 1 Value
4	Enumeration	Control Output 1 Status
5-8	Float	Acid Control Output 1 Value
9	Enumeration	Acid Control Output 1 Status
10-13	Float	Base Control Output 1 Value
14	Enumeration	Base Control Output 1 Status
15-18	Float	Control Output 2 Value
19	Enumeration	Control Output 2 Status
20-23	Float	Acid Control Output 2 Value
24	Enumeration	Acid Control Output 2 Status
25-28	Float	Base Control Output 2 Value
29	Enumeration	Base Control Output 2 Status

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1-31		Undefined
32	Error	Busy
33-255		Undefined

11.235. Command #235: Read pH Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Sensor Model Type	0: 100 GP Digital 1: 100 Ultra Digital 2: 500 Pro Digital 3: 700 Ultra Digital 4: 500X Digital 5: 700S Digital 6: 700M Digital 7: Analogue
2	1	ENUM8	Measurement Type	0: pH 1: Redox ORP
3	4	FLOAT	PV Range High	-2.0 to 16.0 pH or -2000 to 2000mV
7	4	FLOAT	PV Range Low	-2.0 to 16.0 pH or -2000 to 2000mV
11	1	ENUM8	Filter Type	0: Off 1: Low 2: Medium 3: High
12	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 2: Auto Solution
13	4	FLOAT	Solution Coefficient	-1.99 to 1.99
17	4	FLOAT	Manual Temperature	-20.0 to 150.0°C in temperature units
21	4	FLOAT	Low Slope Warning	40.0 to 70.0%
25	1	ENUM8	Enable Broken Glass Diagnostic	0: Disable 1: Enable
26	1	ENUM8	Enable Out of Solution Diagnostic	0: Disable 1: Enable
27	1	ENUM8	Enable Reference Poisoning diagnostic	0: Disable 1: Enable
28	1	ENUM8	Enable Reference Failure diagnostic	0: Disable 1: Enable
29	1	ENUM8	Enable Reference Blocked diagnostic	0: Disable 1: Enable
30	4	FLOAT	Reference Impedance Warning Limit	20.0 to 100.0 kΩ

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection

3-31		Undefined
32	Error	Busy
33-255		Undefined

11.236. Command #236: Write pH Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: pH 1: Redox ORP
2	4	FLOAT	PV Range High	-2.0 to 16.0 pH or -2000 to 2000mV
6	4	FLOAT	PV Range Low	-2.0 to 16.0 pH or -2000 to 2000mV
10	1	ENUM8	Filter Type	0: Off 1: Low 2: Medium 3: High
11	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 2: Auto Solution
12	4	FLOAT	Solution Coefficient	-1.99 to 1.99
16	4	FLOAT	Manual Temperature	-20.0 to 150.0°C in temperature units (cmd134)
20	4	FLOAT	Low Slope Warning	40.0 to 70.0%
24	1	ENUM8	Enable Broken Glass Diagnostic	0: Disable 1: Enable
25	1	ENUM8	Enable Out of Solution Diagnostic	0: Disable 1: Enable
26	1	ENUM8	Enable Reference Poisoning diagnostic	0: Disable 1: Enable
27	1	ENUM8	Enable Reference Failure diagnostic	0: Disable 1: Enable
28	1	ENUM8	Enable Reference Blocked diagnostic	0: Disable 1: Enable
29	4	FLOAT	Reference Impedance Warning Limit	20.0 to 100.0 kΩ

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: pH 1: Redox ORP
2	4	FLOAT	PV Range High	-2.0 to 16.0 pH or -2000 to 2000mV
6	4	FLOAT	PV Range Low	-2.0 to 16.0 pH or -2000 to 2000mV
10	1	ENUM8	Filter Type	0: Off 1: Low 2: Medium 3: High
11	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 2: Auto Solution
12	4	FLOAT	Solution Coefficient	-1.99 to 1.99

16	4	FLOAT	Manual Temperature	-20.0 to 150.0°C in temperature units (cmd134)
20	4	FLOAT	Low Slope Warning	40.0 to 70.0%
24	1	ENUM8	Enable Broken Glass Diagnostic	0: Disable 1: Enable
25	1	ENUM8	Enable Out of Solution Diagnostic	0: Disable 1: Enable
26	1	ENUM8	Enable Reference Poisoning diagnostic	0: Disable 1: Enable
27	1	ENUM8	Enable Reference Failure diagnostic	0: Disable 1: Enable
28	1	ENUM8	Enable Reference Blocked diagnostic	0: Disable 1: Enable
29	4	FLOAT	Reference Impedance Warning Limit	20.0 to 100.0 kΩ

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.237. Command #237: Read 2-Electrode Cond. Sensor Config.

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Conductivity 1: Concentration 2: Resistivity
2	4	FLOAT	Cell Constant	0.003 to 1.999
6	1	ENUM8	Conductivity Units	1: mS/cm 2: μ S/cm
7	1	ENUM8	Concentration Units	0: None 5: ppm 6: mg/l 7: ppb 8: μ g/l 25: % 254: Custom S1 255: Custom S1
8	4	FLOAT	PV Range High	Conductivity: 0.0 to 20000.0 Concentration: 0 to 2000 Resistivity: 0 to 20.0
12	4	FLOAT	PV Range Low	Conductivity: 0.0 to 20000.0 Concentration: 0 to 2000 Resistivity: 0 to 20.0
16	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
17	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 3: None
18	4	FLOAT	Manual Temperature	-40 to 200.0°C in temperature units
22	4	FLOAT	Temperature Compensation Coefficient	0.0 to 9.99
26	1	ENUM8	Temperature Compensation Solution	0: TC Coefficient 1: Standard KCl 2: Ultra-Pure Water Low TC 3: Ultra-Pure Water High TC 9: Pure H2O Neutral 10: Pure H2O Acid 11: Pure H2O Base 12: NaOH 13: HCl 14: NaCl 15: NH3 17: User Defined
27	1	ENUM8	Enable Polarization Diagnostic	0: Disable 1: Enable
28	1	ENUM8	Enable Out of Solution Diagnostic	0: Disable 1: Enable
29	6	ASCII	Custom Concentration Units	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.238. Command #238: Write 2-Electrode Cond. Sensor Config.

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Conductivity 1: Concentration 2: Resistivity
2	4	FLOAT	Cell Constant	0.003 to 1.999
6	1	ENUM8	Conductivity Units	1: mS/cm 2: μ S/cm
7	1	ENUM8	Concentration Units	0: None 5: ppm 6: mg/l 7: ppb 8 μ g/l 25: % 254: Custom S1 255: Custom S1
8	4	FLOAT	PV Range High	Conductivity: 0.0 to 20000.0 Concentration: 0 to 2000 Resistivity: 0 to 20.0
12	4	FLOAT	PV Range Low	Conductivity: 0.0 to 20000.0 Concentration: 0 to 2000 Resistivity: 0 to 20.0
16	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
17	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 3: None
18	4	FLOAT	Manual Temperature	-40 to 200.0°C in temperature units
22	4	FLOAT	Temperature Compensation Coefficient	0.0 to 9.99
26	1	ENUM8	Temperature Compensation Solution	0: TC Coefficient 1: Standard KCl 2: Ultra-Pure Water Low TC 3: Ultra-Pure Water High TC 9: Pure H2O Neutral 10: Pure H2O Acid 11: Pure H2O Base 12: NaOH 13: HCl 14: NaCl 15: NH3 17: User Defined
27	1	ENUM8	Enable Polarization Diagnostic	0: Disable 1: Enable
28	1	ENUM8	Enable Out of Solution Diagnostic	0: Disable 1: Enable
29	6	ASCII	Custom Concentration Units	

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Conductivity 1: Concentration 2: Resistivity
2	4	FLOAT	Cell Constant	0.003 to 1.999
6	1	ENUM8	Conductivity Units	1: mS/cm 2: µS/cm
7	1	ENUM8	Concentration Units	0: None 5: ppm 6: mg/l 7: ppb 8 µg/l 25: % 254: Custom S2 255: Custom S1
8	4	FLOAT	PV Range High	Conductivity: 0.0 to 20000.0 Concentration: 0 to 2000 Resistivity: 0 to 20.0
12	4	FLOAT	PV Range Low	Conductivity: 0.0 to 20000.0 Concentration: 0 to 2000 Resistivity: 0 to 20.0
16	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
17	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 3: None
18	4	FLOAT	Manual Temperature	-40 to 200.0°C in temperature units
22	4	FLOAT	Temperature Compensation Coefficient	0.0 to 9.99
26	1	ENUM8	Temperature Compensation Solution	0: TC Coefficient 1: Standard KCl 2: Ultra-Pure Water Low TC 3: Ultra-Pure Water High TC 9: Pure H2O Neutral 10: Pure H2O Acid 11: Pure H2O Base 12: NaOH 13: HCl 14: NaCl 15: NH3 17: User Defined
27	1	ENUM8	Enable Polarization Diagnostic	0: Disable 1: Enable
28	1	ENUM8	Enable Out of Solution Diagnostic	0: Disable 1: Enable
29	6	ASCII	Custom Concentration Units	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.239. Command #239: Read 4-Electrode Cond. Sensor Config.

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Conductivity 1: Concentration
2	1	ENUM8	Sensor Group	0: Sensor Group A 1: Sensor Group B
3	1	ENUM8	Conductivity Units	1: mS/cm 2: μ S/cm
4	1	ENUM8	Concentration Units	0: None 5: ppm 6: mg/l 7: ppb 8: μ g/l 25: % 254: Custom S2 255: Custom S1
5	1	ENUM8	Concentration Solution	0: Sodium Hydroxide 1: Hydrochloric Acid 2: Sulfuric Acid 3: Phosphoric Acid 4: Sodium Chloride 5: Custom 10: Potassium Hydroxide
6	4	FLOAT	PV Range High	Cond: 0.0 to 2,000,000 μ S/cm Conc: 0 to 2000
10	4	FLOAT	PV Range Low	Cond: 0.0 to 2,000,000 μ S/cm Conc: 0 to 2000
14	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
15	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 2: None
16	4	FLOAT	Manual Temperature	-40 to 200°C
20	4	FLOAT	Temperature Compensation Coefficient	0.0 to 9.99
24	1	ENUM8	Temperature Compensation Solution	0: TC Coefficient 1: Standard KCl 4: Sodium Hydroxide 5: Sodium Chloride 6: Hydrochloric Acid 7: Sulfuric Acid 8: Phosphoric Acid 16: Potassium Hydroxide 17: User Defined
25	1	ENUM8	Enable Dirty Sensor Diagnostic	0: Disabled 1: Enabled
26	1	ENUM8	Enable Out of Solution Diagnostic	0: Disabled 1: Enabled
27	6	ASCII	Custom Concentration Units	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.240. Command #240: Write 4-Electrode Cond. Sensor Config.

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Conductivity 1: Concentration
2	1	ENUM8	Sensor Group	0: Sensor Group A 1: Sensor Group B
3	1	ENUM8	Conductivity Units	1: mS/cm 2: μ S/cm
4	1	ENUM8	Concentration Units	0: None 5: ppm 6: mg/l 7: ppb 8: μ g/l 25: % 254: Custom S2 255: Custom S1
5	1	ENUM8	Concentration Solution	0: Sodium Hydroxide 1: Hydrochloric Acid 2: Sulfuric Acid 3: Phosphoric Acid 4: Sodium Chloride 5: Custom 10: Potassium Hydroxide
6	4	FLOAT	PV Range High	Cond: 0.0 to 2,000,000 μ S/cm Conc: 0 to 2000
10	4	FLOAT	PV Range Low	Cond: 0.0 to 2,000,000 μ S/cm Conc: 0 to 2000
14	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
15	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 2: None
16	4	FLOAT	Manual Temperature	-40 to 200°C
20	4	FLOAT	Temperature Compensation Coefficient	0.0 to 9.99
24	1	ENUM8	Temperature Compensation Solution	0: TC Coefficient 1: Standard KCl 4: Sodium Hydroxide 5: Sodium Chloride 6: Hydrochloric Acid 7: Sulfuric Acid 8: Phosphoric Acid 16: Potassium Hydroxide 17: Custom
25	1	ENUM8	Enable Dirty Sensor Diagnostic	0: Disabled 1: Enabled
26	1	ENUM8	Enable Out of Solution Diagnostic	0: Disabled 1: Enabled
27	6	ASCII	Custom Concentration Units	

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Conductivity 1: Concentration
2	1	ENUM8	Sensor Group	0: Sensor Group A 1: Sensor Group B
3	1	ENUM8	Conductivity Units	1: mS/cm 2: μ S/cm
4	1	ENUM8	Concentration Units	0: None 5: ppm 6: mg/l 7: ppb 8: μ g/l 25: % 254: Custom S2 255: Custom S1
5	1	ENUM8	Concentration Solution	0: Sodium Hydroxide 1: Hydrochloric Acid 2: Sulfuric Acid 3: Phosphoric Acid 4: Sodium Chloride 5: Custom 10: Potassium Hydroxide
6	4	FLOAT	PV Range High	Cond: 0.0 to 2,000,000 μ S/cm Conc: 0 to 2000
10	4	FLOAT	PV Range Low	Cond: 0.0 to 2,000,000 μ S/cm Conc: 0 to 2000
14	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
15	1	ENUM8	Temperature Compensation Type	0: Manual 1: Automatic 2: None
16	4	FLOAT	Manual Temperature	-40 to 200°C
20	4	FLOAT	Temperature Compensation Coefficient	0.0 to 9.99
24	1	ENUM8	Temperature Compensation Solution	0: TC Coefficient 1: Standard KCl 4: Sodium Hydroxide 5: Sodium Chloride 6: Hydrochloric Acid 7: Sulfuric Acid 8: Phosphoric Acid 16: Potassium Hydroxide 17: Custom
25	1	ENUM8	Enable Dirty Sensor Diagnostic	0: Disabled 1: Enabled
26	1	ENUM8	Enable Out of Solution Diagnostic	0: Disabled 1: Enabled
27	6	ASCII	Custom Concentration Units	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.241. Command #241: Read RDO Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Dissolved Oxygen 1: % Saturation
2	1	ENUM8	Units	5: ppm 6: mg/l
3	1	ENUM8	Signal Resolution	0: Normal Resolution 1: Resolution High
4	4	FLOAT	PV Range High	DO: 0 to 50 %Sat: 0 to 1000
8	4	FLOAT	PV Range Low	DO: 0 to 50 %Sat: 0 to 1000
12	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Salinity Unit	30: PSU 31: PPT
14	4	FLOAT	Salinity Correction	0.0 to 42.0
18	1	ENUM8	Pressure Correction Unit	32: Millibars 33:MMHG
19	4	FLOAT	Barometric Pressure	506.625 to 1114.675 mBar 380.0 to 836.0 MMHG
23	4	UNSIGN32	Cap Expiry Time	seconds
27	3	USIGN8[3]	Cap Expiry Date	DD, MM, YY
30	14	USIGN8[14]	Cap Serial Number	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.242. Command #242: Write RDO Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Dissolved Oxygen 1: % Saturation
2	1	ENUM8	Units	5: ppm 6: mg/l
3	1	ENUM8	Signal Resolution	0: Normal Resolution 1: Resolution High
4	4	FLOAT	PV Range High	DO: 0 to 50 %Sat: 0 to 1000
8	4	FLOAT	PV Range Low	DO: 0 to 50 %Sat: 0 to 1000
12	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Salinity Unit	30: PSU 31: PPT
14	4	FLOAT	Salinity Correction	0.0 to 42.0
18	1	ENUM8	Pressure Correction Unit	32: Millibars 33:MMHG
19	4	FLOAT	Barometric Pressure	506.625 to 1114.675 mBar 380.0 to 836.0 MMHG

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Measurement Type	0: Dissolved Oxygen 1: % Saturation
2	1	ENUM8	Units	5: ppm 6: mg/l
3	1	ENUM8	Signal Resolution	0: Normal Resolution 1: Resolution High
4	4	FLOAT	PV Range High	DO: 0 to 50 %Sat: 0 to 1000
8	4	FLOAT	PV Range Low	DO: 0 to 50 %Sat: 0 to 1000
12	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Salinity Unit	30: PSU 31: PPT
14	4	FLOAT	Salinity Correction	0.0 to 42.0
18	1	ENUM8	Pressure Correction Unit	32: Millibars 33:MMHG
19	4	FLOAT	Barometric Pressure	506.625 to 1114.675 mBar 380.0 to 836.0 MMHG

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.243. Command #243: Read TSS Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: Slot 1 1: Slot 2
1	1	ENUM8	Measurement Type	0: Turbidity 1: Suspended Solids
2	1	ENUM8	Turbidity Units	1: NTU 2: FNU
3	1	ENUM8	Suspended Solids Units	5: PPM 6: mg/l
4	4	FLOAT	PV Range High	Turb: 0 to 4000 NTU SS: 0 to 99999.0 ppm
8	4	FLOAT	PV Range Low	Turb: 0 to 4000 NTU SS: 0 to 99999.0 ppm
12	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Wiper Fitted	0: Not Fitted 1: Fitted
14	1	ENUM8	Clean Frequency	0: Off 3: 5 mins 4: 15 mins 5: 30 mins 6: 45 mins 7: 1 hour 8: 2 hours 9: 3 hours 10: 4 hours 11: 5 hours 12: 6 hours 13: 7 hours 14: 8 hours 15: 9 hours 16: 10 hours 17: 11 hours 18: 12 hours 19: 13 hours 20: 14 hours 21: 15 hours 22: 16 hours 23: 17 hours 24: 18 hours 25: 19 hours 26: 20 hours 27: 21 hours 28: 22 hours 29: 23 Hours
15	4	DATETIME	Next Clean	
19	1	ENUM8	Range Switching	0: Automatic 1: High Range switching 2: Low Range switching

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.244. Command #244: Write TSS Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: Slot 1 1: Slot 2
1	1	ENUM8	Measurement Type	0: Turbidity 1: Suspended Solids
2	1	ENUM8	Turbidity Units	1: NTU 2: FNU
3	1	ENUM8	Suspended Solids Units	5: PPM 6: mg/l
4	4	FLOAT	PV Range High	Turb: 0 to 4000 NTU SS: 0 to 99999.0 ppm
8	4	FLOAT	PV Range Low	Turb: 0 to 4000 NTU SS: 0 to 99999.0 ppm
12	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Wiper Fitted	0: Not Fitted 1: Fitted
14	1	ENUM8	Clean Frequency	0: Off 3: 5 mins 4: 15 mins 5: 30 mins 6: 45 mins 7: 1 hour 8: 2 hours 9: 3 hours 10: 4 hours 11: 5 hours 12: 6 hours 13: 7 hours 14: 8 hours 15: 9 hours 16: 10 hours 17: 11 hours 18: 12 hours 19: 13 hours 20: 14 hours 21: 15 hours 22: 16 hours 23: 17 hours 24: 18 hours 25: 19 hours 26: 20 hours 27: 21 hours 28: 22 hours 29: 23 Hours
15	4	DATETIME	Next Clean	
19	1	ENUM8	Range Switching	0: Automatic 1: High Range switching 2: Low Range switching

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.245. Command #245: Read Turbidity Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Sensor Type	0: 7998/011 1: 7998/012 2: 7998/016
2	1	ENUM8	Turbidity Units	0: NTU 1: FNU
3	4	FLOAT	PV Range High	1.0 to 40.0 NTU or 40.0 to 400.0 NTU
7	4	FLOAT	PV Range Low	0.0 NTU
11	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
12	1	ENUM8	Bubble Rejection	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Wiper Fitted	0: Not Fitted 1: Fitted
14	1	ENUM8	Clean Frequency	0: Off 4: 15 mins 5: 30 mins 6: 45 mins 7: 1 hour 8: 2 hours 9: 3 hours 10: 4 hours 11: 5 hours 12: 6 hours 13: 7 hours 14: 8 hours 15: 9 hours 16: 10 hours 17: 11 hours 18: 12 hours 19: 13 hours 20: 14 hours 21: 15 hours 22: 16 hours 23: 17 hours 24: 18 hours 25: 19 hours 26: 20 hours 27: 21 hours 28: 22 hours 29: 23 Hours 30: 24 hours
15	4	DATETIME	Next Clean	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.246. Command #246: Write Turbidity Sensor Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Sensor Type	0: 7998/011 1: 7998/012 2: 7998/016
2	1	ENUM8	Turbidity Units	0: NTU 1: FNU
3	4	FLOAT	PV Range High	1.0 to 40.0 NTU or 40.0 to 400.0 NTU
7	4	FLOAT	PV Range Low	0.0 NTU
11	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
12	1	ENUM8	Bubble Rejection	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Clean Frequency	0: Off 4: 15 mins 5: 30 mins 6: 45 mins 7: 1 hour 8: 2 hours 9: 3 hours 10: 4 hours 11: 5 hours 12: 6 hours 13: 7 hours 14: 8 hours 15: 9 hours 16: 10 hours 17: 11 hours 18: 12 hours 19: 13 hours 20: 14 hours 21: 15 hours 22: 16 hours 23: 17 hours 24: 18 hours 25: 19 hours 26: 20 hours 27: 21 hours 28: 22 hours 29: 23 Hours 30: 24 hours

Response Data Bytes

Byte	Size	Data Type	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	1	ENUM8	Sensor Type	0: 7998/011 1: 7998/012 2: 7998/016
2	1	ENUM8	Turbidity Units	0: NTU 1: FNU
3	4	FLOAT	PV Range High	1.0 to 40.0 NTU or 40.0 to 400.0 NTU
7	4	FLOAT	PV Range Low	0.0 NTU
11	1	ENUM8	Filter Type	0: None 1: Low 2: Medium 3: High
12	1	ENUM8	Bubble Rejection	0: None 1: Low 2: Medium 3: High
13	1	ENUM8	Clean Frequency	0: Off 4: 15 mins 5: 30 mins 6: 45 mins 7: 1 hour 8: 2 hours 9: 3 hours 10: 4 hours 11: 5 hours 12: 6 hours 13: 7 hours 14: 8 hours 15: 9 hours 16: 10 hours 17: 11 hours 18: 12 hours 19: 13 hours 20: 14 hours 21: 15 hours 22: 16 hours 23: 17 hours 24: 18 hours 25: 19 hours 26: 20 hours 27: 21 hours 28: 22 hours 29: 23 Hours 30: 24 hours

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.247. Command #247: Read Sensor Tag

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	16	ASCII[16]	Sensor Tag	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.248. Command #248: Write Sensor Tag

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	16	ASCII[16]	Sensor Tag	

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Sensor Slot	0: Sensor 1 1: Sensor 2
1	16	ASCII[16]	Sensor Tag	

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8 -12		Undefined
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.249. Command #249: Read Custom Tables

Concentration

Conductivity (o to 20000000 μ S/cm)	Concentration (0 to 20000)	Enable
Table Input 0	Table Output 0	Table Enable 0
Table Input 1	Table Output 1	Table Enable 1
Table Input 2	Table Output 2	Table Enable 2
Table Input 3	Table Output 3	Table Enable 3
Table Input 4	Table Output 4	Table Enable 4
Table Input 5	Table Output 5	Table Enable 5

Temperature Compensation

Temperature (-40 to 200°C)	Coefficient (0.0 to 20.0)	Enable
Table Input 0	Table Output 0	Table Enable 0
Table Input 1	Table Output 1	Table Enable 1
Table Input 2	Table Output 2	Table Enable 2
Table Input 3	Table Output 3	Table Enable 3
Table Input 4	Table Output 4	Table Enable 4
Table Input 5	Table Output 5	Table Enable 5

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: S1 2E Concentration 1: S1 2E Temp Comp 2: S2: 2E Concentration 3: S2 2E Temp Comp 4: S1 4E Concentration 5: S1 4E Temp Comp 6: S2 4E Concentration 7: S2 4E Temp Comp

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: S1 2E Concentration 1: S1 2E Temp Comp 2: S2: 2E Concentration 3: S2 2E Temp Comp 4: S1 4E Concentration 5: S1 4E Temp Comp 6: S2 4E Concentration 7: S2 4E Temp Comp
1	4	FLOAT	Table Input 0	
5	4	FLOAT	Table Input 1	
9	4	FLOAT	Table Input 2	
13	4	FLOAT	Table Input 3	
17	4	FLOAT	Table Input 4	
21	4	FLOAT	Table Input 5	
25	4	FLOAT	Table Output 0	
29	4	FLOAT	Table Output 1	
33	4	FLOAT	Table Output 2	
37	4	FLOAT	Table Output 3	

41	4	FLOAT	Table Output 4	
45	4	FLOAT	Table Output 5	
49	1	USIGN8	Table Enable 0	0: Disable 1: Enable
50	1	USIGN8	Table Enable 1	0: Disable 1: Enable
51	1	USIGN8	Table Enable 2	0: Disable 1: Enable
52	1	USIGN8	Table Enable 3	0: Disable 1: Enable
53	1	USIGN8	Table Enable 4	0: Disable 1: Enable
54	1	USIGN8	Table Enable 5	0: Disable 1: Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-11		Undefined
12	Error	Invalid Slot Index
13-31		Undefined
32	Error	Busy
33-255		Undefined

11.250. Command #250: Write Custom Tables

Concentration

Conductivity (o to 20000000 μ S/cm)	Concentration (0 to 20000)	Enable
Table Input 0	Table Output 0	Table Enable 0
Table Input 1	Table Output 1	Table Enable 1
Table Input 2	Table Output 2	Table Enable 2
Table Input 3	Table Output 3	Table Enable 3
Table Input 4	Table Output 4	Table Enable 4
Table Input 5	Table Output 5	Table Enable 5

Temperature Compensation

Temperature (-40 to 200°C)	Coefficient (0.0 to 20.0)	Enable
Table Input 0	Table Output 0	Table Enable 0
Table Input 1	Table Output 1	Table Enable 1
Table Input 2	Table Output 2	Table Enable 2
Table Input 3	Table Output 3	Table Enable 3
Table Input 4	Table Output 4	Table Enable 4
Table Input 5	Table Output 5	Table Enable 5

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: S1 2E Concentration 1: S1 2E Temp Comp 2: S2: 2E Concentration 3: S2 2E Temp Comp 4: S1 4E Concentration 5: S1 4E Temp Comp 6: S2 4E Concentration 7: S2 4E Temp Comp
1	4	FLOAT	Table Input 0	
5	4	FLOAT	Table Input 1	
9	4	FLOAT	Table Input 2	
13	4	FLOAT	Table Input 3	
17	4	FLOAT	Table Input 4	
21	4	FLOAT	Table Input 5	
25	4	FLOAT	Table Output 0	
29	4	FLOAT	Table Output 1	
33	4	FLOAT	Table Output 2	
37	4	FLOAT	Table Output 3	
41	4	FLOAT	Table Output 4	
45	4	FLOAT	Table Output 5	
49	1	USIGN8	Table Enable 0	0: Disable 1: Enable
50	1	USIGN8	Table Enable 1	0: Disable 1: Enable
51	1	USIGN8	Table Enable 2	0: Disable 1: Enable
52	1	USIGN8	Table Enable 3	0: Disable 1: Enable
53	1	USIGN8	Table Enable 4	0: Disable 1: Enable
54	1	USIGN8	Table Enable 5	0: Disable 1: Enable

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: S1 2E Concentration 1: S1 2E Temp Comp 2: S2: 2E Concentration 3: S2 2E Temp Comp 4: S1 4E Concentration 5: S1 4E Temp Comp 6: S2 4E Concentration 7: S2 4E Temp Comp
1	4	FLOAT	Table Input 0	
5	4	FLOAT	Table Input 1	
9	4	FLOAT	Table Input 2	
13	4	FLOAT	Table Input 3	
17	4	FLOAT	Table Input 4	
21	4	FLOAT	Table Input 5	
25	4	FLOAT	Table Output 0	
29	4	FLOAT	Table Output 1	
33	4	FLOAT	Table Output 2	
37	4	FLOAT	Table Output 3	
41	4	FLOAT	Table Output 4	
45	4	FLOAT	Table Output 5	
49	1	USIGN8	Table Enable 0	0: Disable 1: Enable
50	1	USIGN8	Table Enable 1	0: Disable 1: Enable
51	1	USIGN8	Table Enable 2	0: Disable 1: Enable
52	1	USIGN8	Table Enable 3	0: Disable 1: Enable
53	1	USIGN8	Table Enable 4	0: Disable 1: Enable
54	1	USIGN8	Table Enable 5	0: Disable 1: Enable

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

11.251. Command #251: Reset Sensor to Defaults (All Sensors)

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: S1 pH 1: S2 PH 2: S1 2E Conductivity 3: S2 2E Conductivity 4: S1 4E Conductivity 5: S2 4E Conductivity 6: S1 RDO 7: S2 RDO 8: S1 TSS 9: S2 TSS 10: S1 Turbidity 11: S2 Turbidity

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	USIGN8	Slot Index	0: S1 pH 1: S2 PH 2: S1 2E Conductivity 3: S2 2E Conductivity 4: S1 4E Conductivity 5: S2 4E Conductivity 6: S1 RDO 7: S2 RDO 8: S1 TSS 9: S2 TSS 10: S1 Turbidity 11: S2 Turbidity

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-4		Undefined
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8-11		Undefined
12	Error	Invalid Slot Number
13-15		Undefined
16	Error	Access Restricted
17-31		Undefined
32	Error	Busy
33-127		Undefined

11.252. Command #252: Read Calculated Values Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0				

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	ENUM8	Calculation Type	0: None 1: Inferred pH (NaOH) 2: Inferred pH (NaOH + NaCl) 3: Inferred pH (NH3) 4: Inferred pH (NH3 + NaCl) 5: Difference 6: Ratio 7: % Passage 8: % Rejection
1	4	Float	Before Cation Limit	0-100.0 μ S/cm
5	4	Float	After Cation Limit	0.06-100 μ S/cm
9	1	ENUM8	pH Range	0: 7.0pH to 10.0pH 1: 7.0pH to 11.0pH
10	1	ENUM8	Signal arrangement	0: A = S1, B = S2 1: A = S2, B = S1

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3-31		Undefined
32	Error	Busy
33-255		Undefined

11.253. Command #253: Write Calculated Values Configuration

Request Data Bytes

Byte	Size	DataType	Description	Value
0	1	ENUM8	Calculation Type	0: None 1: Inferred pH (NaOH) 2: Inferred pH (NaOH + NaCl) 3: Inferred pH (NH3) 4: Inferred pH (NH3 + NaCl) 5: Difference 6: Ratio 7: % Passage 8: % Rejection
1	4	Float	Before Cation Limit	0-100.0 μ S/cm
5	4	Float	After Cation Limit	0.06-100 μ S/cm
9	1	ENUM8	pH Range	0: 7.0pH to 10.0pH 1: 7.0pH to 11.0pH
10	1	ENUM8	Signal arrangement	0: A = S1, B = S2 1: A = S2, B = S1

Response Data Bytes

Byte	Size	DataType	Description	Value
0	1	ENUM8	Calculation Type	0: None 1: Inferred pH (NaOH) 2: Inferred pH (NaOH + NaCl) 3: Inferred pH (NH3) 4: Inferred pH (NH3 + NaCl) 5: Difference 6: Ratio 7: % Passage 8: % Rejection
1	4	Float	Before Cation Limit	0-100.0 μ S/cm
5	4	Float	After Cation Limit	0.06-100 μ S/cm
9	1	ENUM8	pH Range	0: 7.0pH to 10.0pH 1: 7.0pH to 11.0pH
10	1	ENUM8	Signal arrangement	0: A = S1, B = S2 1: A = S2, B = S1

Command-Specific Response Codes

Code	Class	Description
0	Success	No Command-Specific Errors
1		Undefined
2	Error	Invalid Selection
3	Error	Passed parameter too large
4	Error	Passed parameter too small
5	Error	Too few data bytes received
6		Undefined
7	Error	In Write Protect Mode
8		Undefined
9	Error	Lower Range Value Too High
10	Error	Lower Range Value Too Low
11	Error	Upper Range Value Too High
12	Error	Upper Range Value Too Low
12	Error	Invalid Slot Number
13	Error	Upper and Lower Range Values out of Limits
14	Error	Span Too Small
15		Undefined
16	Error	Access Restricted
17	Error	Invalid Device Variable Index
18	Error	Invalid Units Code
19-31		Undefined
32	Error	Busy
33-63		Undefined
64	Error	Command Not Implemented
64-127		Undefined

12. Tables

12.1. Unit Codes

12.1.1. pH

Unit Code	Description	Measurement Type
59	pH	pH
36	mV	Redox/ORP

12.1.2. Conductivity

Unit Code	Description	Measurement Type
66	mS/cm	Conductivity
67	µS/cm	Conductivity
173	MΩ-cm	Resistivity
57	%	Concentration
139	ppm	Concentration
169	ppb	Concentration
170	mg/l	Concentration
146	µg/l	Concentration

12.1.3. Turbidity/Total Suspended Solids

Unit Code	Description	Measurement Type
171	FTU	Turbidity
172	NTU	Turbidity
139	ppm	Total Suspended Solids
170	mg/l	Total Suspended Solids

12.1.4. Dissolved Oxygen/Saturation

Unit Code	Description	Measurement Type
139	ppm	Dissolved Oxygen
170	mg/l	Dissolved Oxygen
57	%	Saturation

12.1.5. Temperature

Unit Code	Description	Measurement Type
32	Degrees Celsius	Temperature
33	Degrees Fahrenheit	Temperature

12.2. Unit Conversion

12.2.1. Conductivity

Internally the transmitter uses microsiemens per centimeter, which are converted to millisiemens per centimeter if conductivity unit is mS/cm, or if conductivity unit is Auto and the value of PV exceeds 1999 µS/cm.

If Concentration is selected the micro siemens per centimeter is converted into concentration units (% , ppm, ppb, mg/l µg/l) using either predefined or user defined functions, dependent on the solution used.

12.2.2. Temperature

Internally, the transmitter uses degrees Celsius. Conversion to and from degrees Fahrenheit is made using the equation:

$$C = (F - 32) \times 5/9.$$

13. Performance

13.1. Sampling Rates

Measurement	Typical Sampling Rate
Primary Variable	1s
Secondary Variable	1s
Output Current	500ms

13.2. Power-Up

On power up the transmitter performs a system check and checks the status of the non-volatile memory, which takes approximately 2.5 seconds. Including the system check the transmitter takes up to 10 seconds to power up and display a steady signal.

13.3. Reset

13.3.1. Device Reset

Command 42 causes the device to reset its microprocessor, mimicking a power cycle and so initiating the normal power up sequence

13.3.2. Reset to Defaults

Reset to defaults can be performed via the Advanced level of the HMI menu, or via the bootloader (SW1 on power up)

13.4. Self-Test

Self-Test (Command 41) is not implemented on this device.

Error checking is performed on start-up and throughout device operation.

13.5. Command Response Times

Minimum	20 ms
Typical	100 ms
Maximum	200 ms

13.6. Busy and Delayed-Response

The Transmitter does not return a "Busy" status because it does not perform a self-test function. Delayed response is also not supported.

13.7. Long Messages

Command 21 returns the full 32byte Long Message field with two status bytes – 34 bytes in total.

13.8. Non-Volatile Memory

EEPROM is used to hold the device's configuration parameters. New data is written to this memory immediately on execution of a write command.

13.9. Modes

Fixed current mode is implemented by sending command 40 with the desired current output (mA) as a floating-point value (4.00 to 20.0).

Fixed Current Mode is cleared by sending 0.0, returning the device to its normal operation.

13.10. Write Protection

Write protection is provided via the HMI or HART Command #133 (Write Device Setup Parameters)

13.11. Damping

Damping is configurable by the user and affects only the PV and thus also the loop current signal.

14. Annex A. Capability Check List

Manufacturer, model and revision	ABB AWT420
Device type	Transmitter
HART revision	7.0
Device Description available	Yes
Number and type of sensors	Up to 2 sensors with 6 types – EC, TE, pH, RDO, TSS & Turbidity
Number and type of actuators	0
Number and type of host side signals	1: 4 - 20mA analog
Number of Device Variables	25
Number of Dynamic Variables	4
Mappable Dynamic Variables	No
Number of common-practice commands	16
Number of device-specific commands	103
Bits of additional device status	16 (Command 48)
Alternative operating modes?	
Burst mode?	No
Write-protection?	Yes

15. Annex B. Default Configuration

15.1. Device

Parameter	Default Value
Language	English
Instrument Tag	AWT420
Temperature Unit	°C
Chart View	Enabled
Chart View Channel 1	S1 PV
Chart View Channel 2	S2 PV
Chart Duration	1 Hour
All Logs/View Enables	Enabled
Date Format	YYYY-MM-DD
Daylight Savings Region	Disabled
Write Protection	Disabled

15.2. Communications (HART)

Parameter	Default Value
Device Address	0
HART Tag	AWT420@@
HART Long Tag	????????????????????????????
HART Descriptor	????????????
HART Message	????????????????????????????
HART Manufacturers ID	26 (0x1A)
HART Find	Off (Disarmed)
Response Preambles	5

15.3. Input/Output

Parameter	Default Value
Analog Output (1 or 2): Source	None
Analog Output (1 or 2): Type	Linear
Analog Output (1 or 2): Elect High	20.0 mA
Analog Output (1 or 2): Elect Low	4.0 mA
Analog Output (1 or 2): Eng. High	Source Signal Range High
Analog Output (1 or 2): Eng. Low	Source Signal Range Low
Output Failure	Enabled
Output Failure Current	22.0 mA
Digital IO: Type	Off
Digital IO: Source	None
Digital IO: Polarity	Non-Inverted
Relay (1 – 4): Source	None
Relay (1 – 4): Polarity	Non-Inverted
Cleaning 1: Sensor	S1
Cleaning 2: Sensor	S2
Cleaning (1 or 2): Output Assignment	None
Cleaning (1 or 2): Clean Interval	Off

15.4. Process Alarm

Parameter	Default Value
Alarm (1 – 8): Source	None
Alarm (1 – 8): Type	High Process
Alarm (1 – 8): Tag	Alarm 1(..8)
Alarm (1 – 8): Trip	0.0
Alarm (1 – 8): Hysteresis	0.0
Alarm (1 – 8): Time Hysteresis	0 Seconds

15.5. Control

Parameter	Default Value
Control Action	Off
Control Mode	Manual
Direct Control – Setpoint	PV Range High Value
Direct Control – Control Type	P only (Proportional Control)
Direct Control – Proportional Band	100.0%
Direct Control – Manual Reset	0.0%
Direct Control – Output Type	Analog
Reverse Control – Setpoint	PV Range Low Value
Reverse Control – Control Type	P only (Proportional Control)
Reverse Control – Proportional Band	100.0%
Reverse Control – Manual Reset	0.0%
Reverse Control – Output Type	Analog
Power Recovery – Action	Auto
Power Recovery – Default Output	0.0%
Sensor Failure – Action	None
Sensor Failure – Default Output	0.0%
Operator Control	Disabled

16. Annex C. Revision History

Revision	Changes Made	Date	Name
0.1	Created	14/06/2018	James Philp
0.2	Device Specific Commands Added	21/06/2018	James Philp
0.3	Tables/Sensor Specific Details Added	20/06/2018	James Philp
0.4	Further Device Specific Commands Added	12/07/2018	James Philp
0.5	Duplicate Commands Removed	18/07/2018	James Philp
0.6	PID Control Commands Added	06/08/2018	James Philp
0.7	Preparation for Release	28/08/2018	James Philp
1.0	Release Version	05/09/2018	James Philp
2.0	AWT420 Revision 2	01/10/2020	James Philp
	Sensor Specific Commands Added		
	Turbidity Sensor Type Added		
	Turbidity Diagnostics Added		

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