DNP3 Device Profile
Based on DNP XML Schema version 2.10.00

Document Name: gs6000DeviceProfile v6.xml

Document Description: DNP3 Device Profile for GRIDSCAN 6000

Revision History

Date	Time	Version	Reason for change	Edited by
2024-07-12	12:00:00	7	Add ObjGrp1, Point #s: 36,37	H2scan

Reference Device:

1 Device Properties

This document is intended to be used for several purposes, including:

- Identifying the capabilities of a DNP3 device (Master Station or Outstation)

- Recording the settings of a specific instance of a device (parameter settings for a specific instance of the device in the user's total DNP3 estate)

- Matching user requirements to product capabilities when procuring a DNP3 device

The document is therefore structured to show, for each technical feature, the capabilities of the device (or capabilities required by the device when procuring).

It is also structured to show the current value (or setting) of each of the parameters that describe a specific instance of the device. This "current value" may also show a functional limitation of the device. For example when implementing secure authentication it is not required that all DNP3 devices accept aggressive mode requests during critical exchanges (see Device Profile 1.12.4), in which case a vendor would mark this current value as "No - does not accept aggressive mode requests".

Additionally, the current value may sometimes be used to show a value that a device can achieve because of hardware or software dependencies. An example of this is in section 1.6.8 of the Device Profile (Maximum error in the time that the Master issues freeze requests) where the value may well depend upon tolerances of hardware components and interactions between software tasks. When the Device Profile current value is used in this way the corresponding entry in the capabilities column is grayed-out. Users should note that if an entry in the capabilities column of the Device Profile is grayed-out then there may be information in the current value column that is pertinent to the device's capabilities.

Unless otherwise noted, multiple boxes in the second column below are selected for each parameter to indicate all capabilities supported or required. Parameters without checkboxes in the second column do not have capabilities and are included so that the current value may be shown in the third column.

The items listed in the capabilities column below may be configurable to any of the options selected, or set to a fixed value when the device was designed. Item 1.1.10 contains a list of abbreviations for the possible ways in which the configurable parameters may be set. Since some parameters may not be accessible by each of these methods supported, an abbreviation for the configuration method supported by each parameter is shown in the fourth column of the tables below.

If this document is used to show the current values, the third column should be filled in even if a fixed parameter is selected in the capabilities section ("NA" may be entered for parameters that are Not Applicable).

If the document is used to show the current values of parameters, then column 3 applies to a single connection between a master and an outstation.

1.1 Device Identification	Capabilities	Current Value	If configurable list methods
1.1.1 Device Function: *Masters send DNP requests, while Outstations send DNP responses. If a single physical device can perform both functions, a separate Device Profile Document must be provided for each function.*	○ Master ◉ Outstation	○ Master ◉ Outstation	
1.1.2 Vendor Name: *The name of the organization producing the device.* *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 252.*		H2scan	
1.1.3 Device Name: *The model and name of the device, sufficient to distinguish it from any other device from the same organization.* *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 250.*		GRIDSCAN 6000	
1.1.4 Device manufacturer's hardware version string: *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 243.*		100	
1.1.5 Device manufacturer's software version string: *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 242.*		3:63:A and newer	
1.1.6 Device Profile Document Version Number: *Version of the Device Profile Document is indicated by a whole number incremented with each new release. This should match the latest version shown in the Revision History at the beginning of this document.*		5	
1.1.7 DNP Levels Supported for: *Indicate each DNP3 Level to which the device conforms fully. For Masters, requests and responses can be indicated independently.*	Outstations Only Requests and Responses ☐ None ☑ Level 1 ☑ Level 2 ☑ Level 3 ☑ Level 4	Level 1 Level 2 Level 3 Level 4	

1.1.8 Supported Function Blocks:	☑ Self Address Support ☐ Data Sets ☑ File Transfer ☐ Virtual Terminal ☐ Mapping to IEC 61850 Object Models defined in a DNP3 XML file ☐ Function code 31, activate configuration ☐ Secure Authentication (if checked then see 1.12)	Self Address File Transfer	
1.1.9 Notable Additions: *A brief description intended to quickly identify (for the reader) the most obvious features the device supports in addition to the Highest DNP Level Supported. The complete list of features is described in the Implementation Table.*			
1.1.10 Methods to set Configurable Parameters:	☐ XML - Loaded via DNP3 File Transfer ☐ XML - Loaded via other transport mechanism ☐ Terminal - ASCII Terminal Command Line ☑ Software - Vendor software named Triangle MicroWorks3.30.0000 ☐ Proprietary file loaded via DNP3 File Transfer ☐ Proprietary file loaded via other transport mechanism ☐ Direct - Keypad on device front panel ☑ Factory - Specified when device is ordered ☐ Protocol - Set via DNP3 (e.g. assign class) ☐ Other - explain:		
1.1.11 DNP3 XML files available On-line: *XML configuration file names that can be read or written through DNP3 File Transfer to a device.* *A device's currently running configuration is returned by DNP3 on-line XML file read from the device.* *DNP3 on-line XML file write to a device will update the device's configuration when the Activate Configuration (function code 31) is received.*	Rd Wr Filename — Description of Contents ☐ dnpDP.xml — Complete Device Profile ☐ dnpDPCap.xml — Device Profile Capabilities ☐ dnpDPCfg.xml — Device Profile config values	Rd Wr Filename ☐ dnpDP.xml ☐ dnpDPCap.xml ☐ dnpDPCfg.xml	
1.1.12 External DNP3 XML files available Off-line: *XML configuration file names that can be read or written from an external system, typically from a system that maintains the outstation configuration.* *External off-line XML file read permits an XML definition of a new configuration to be supplied from off-line configuration tools.* *External off-line XML file write permits an XML definition of a new configuration to be supplied to off-line configuration tools.*	Rd Wr Filename — Description of Contents ☑ ☐ dnpDP.xml — Complete Device Profile ☐ ☐ dnpDPCap.xml — Device Profile Capabilities ☐ ☐ dnpDPCfg.xml — Device Profile config values	Rd Wr Filename ☑ ☐ dnpDP.xml ☐ ☐ dnpDPCap.xml ☐ ☐ dnpDPCfg.xml	
1.1.13 Connections Supported:	☑ Serial (complete section 1.2) ☐ IP Networking (complete section 1.3) ☐ Other, explain	Serial	
1.1.14 Conformance Testing: *Where conformance testing has been completed for the outstation or master station, specify the version of the published DNP3 test procedures that was successfully passed. If independently tested, identify the organization that performed the test.*	☑ Self-tested, version 1 ☐ Independently tested, version		

1.2 Serial Connections	**Capabilities**	**Current Value**	**If configurable list methods**
1.2.1 Port Name: *Name used to reference the communications port defined in this section.*		RS485	
1.2.2 Serial Connection Parameters:	☑ Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bit, No Parity ☐ Other, explain Note: Implemented in Target Layer	Asynchronous	
1.2.3 Baud Rate:	☐ Fixed at ☑ Configurable, range **9600** to **115200** ☐ Configurable, selectable from ☐ Configurable, other, describe Note: Implemented in Target Layer	19200	

1.2.4 Hardware Flow Control (Handshaking): *Describe hardware signaling requirements of the interface.* *Where a transmitter or receiver is inhibited until a given control signal is asserted, it is considered to require that signal prior to sending or receiving characters.* *Where a signal is asserted prior to transmitting, that signal will be maintained active until after the end of transmission.* *Where a signal is asserted to enable reception, any data sent to the device when the signal is not active could be discarded.*	☑ None **RS-232 / V.24 / V.28 Options:** Asserts: ☐ RTS Before Tx ☐ DTR Before Tx ☐ RTS Before Rx ☐ DTR Before Rx ☐ Always RTS ☐ Always DTR Requires Before Tx: CTS ☐ Asserted ☐ Deasserted DCD ☐ Asserted ☐ Deasserted DSR ☐ Asserted ☐ Deasserted RI ☐ Asserted ☐ Deasserted ☐ Requires Rx Inactive before Tx Requires Before Rx: CTS ☐ Asserted ☐ Deasserted DCD ☐ Asserted ☐ Deasserted DSR ☐ Asserted ☐ Deasserted RI ☐ Asserted ☐ Deasserted Always Ignores: ☐ CTS ☐ DCD ☐ DSR ☐ RI ☐ Other, explain **RS-422 / V.11 Options:** ☐ Requires Indication before Rx ☐ Asserts Control before Tx ☐ Other, explain **RS-485 Options:** ☐ Requires Rx inactive before Tx ☑ Other, explain **Half-Duplex** ☑ Other, explain **Sofware**	None **RS-232 / V.24 / V.28 Options:** **RS-422 / V.11 Options:** **RS-485Options:** Other, **Half-Duplex**	
1.2.5 Interval to Request Link Status: *Indicates how often to send Data Link Layer status requests on a serial connection. This parameter is separate from the TCP Keep-alive timer.*	☐ Not Supported ☑ Fixed at seconds **0** ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐ Configurable, other, describe	0 seconds	
1.2.6 Supports DNP3 Collision Avoidance: *Indicates whether an Outstation uses a collision avoidance algorithm.* *Collision avoidance may be implemented by a back-off timer with two parameters that define the back-off time range or by some other vendor-specific mechanism.* *The recommended back-off time is specified as being a fixed minimum delay plus a random delay, where the random delay has a maximum value specified. This defines a range of delay times that are randomly distributed between the minimum value and the minimum plus the maximum of the random value.* *If a back-off timer is implemented with only a fixed or only a random value, select the Back-off time method and set the parameter that is not supported to "Fixed at 0 ms".*	☑ No ☐ Yes, using Back-off time = (Min + Random) method ☐ Other, explain	No	
1.2.7 Receiver Inter-character Timeout: *When serial interfaces with asynchronous character framing are used, this parameter indicates if the receiver makes a check for gaps between characters. (i.e. extensions of the stop bit time of one character prior to the start bit of the following character within a message). If the receiver performs this check and the timeout is exceeded then the receiver discards the current data link frame. A receiver that does not discard data link frames on the basis of inter-character gaps is considered not to perform this check.* *Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options shall be selected.*	☑ Not Checked ☐ No gap permitted ☐ Fixed at bit times ☐ Fixed at ms ☐ Configurable, range to bit times ☐ Configurable, range to ms ☐ Configurable, selectable from bit times ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	Not Checked	
1.2.8 Inter-character gaps in transmission: *When serial interfaces with asynchronous character framing are used, this parameter indicates whether extra delay is ever introduced between characters in the message, and if so, the maximum width of the gap.* *Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options shall be selected.*	☑ None (always transmits with no inter-character gap) ☐ Maximumbit times ☐ Maximumms	None	

1.4 Link Layer	Capabilities	Current Value	If configurable list methods
1.4.1 Data Link Address: *Indicates if the link address is configurable over the entire valid range of 0 to 65,519. Data link addresses 0xFFF0 through 0xFFFF are reserved for broadcast or other special purposes.*	☐ Fixed at ☑ Configurable, range to **1 65519** ☐ Configurable, selectable from ☐ Configurable, other, describe	4	
1.4.2 DNP3 Source Address Validation: *Indicates whether the Outstation will filter out requests not from a specific source address.*	☑ Never ☐ Always, one address allowed (shown in 1.4.3) ☐ Always, any one of multiple addresses allowed (each selectable as shown in 1.4.3) ☐ Sometimes, explain	Never	
1.4.3 DNP3 Source Address(es) expected when Validation is Enabled: *Selects the allowed source address(es)*	☐ Configurable to any 16 bit DNP Data Link Address value ☑ Configurable, range to **1 65519** ☐ Configurable, selectable from ☐ Configurable, other, describe	4	
1.4.4 Self Address Support using address 0xFFFC: *If an Outstation receives a message with a destination address of 0xFFFC it shall respond normally with its own source address. It must be possible to diasble this feature if supported.*	☑ Yes (only allowed if configurable) ☐ No	Yes	
1.4.5 Sends Confirmed User Data Frames: *A list of conditions under which the device transmits confirmed link layer services (TEST_LINK_STATES, RESET_LINK_STATES, CONFIRMED_USER_DATA).*	☐ Never ☑ Always ☐ Sometimes, explain	Always	
1.4.6 Data Link Layer Confirmation Timeout: *This timeout applies to any secondary data link message that requires a confirm or response (link reset, link status, user data, etc).*	☐ None ☑ Fixed at ms **2000** ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	2000ms	
1.4.7 Maximum Data Link Retries: *The number of times the device will retransmit a frame that requests Link Layer confirmation.*	☐ None ☑ Fixed at **3** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	3	
1.4.8 Maximum number of octets Transmitted in a Data Link Frame: *This number includes the CRCs. With a length field of 255, the maximum size would be 292.*	☑ Fixed at **292** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	292	
1.4.9 Maximum number of octets that can be Received in a Data Link Frame: *This number includes the CRCs. With a field length of 255, the maximum size would be 292. The device must be able to receive 292 octets to be compliant.*	☑ Fixed at **292** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	292	

1.5 Application Layer	Capabilities	Current Value	If configurable list methods
1.5.1 Maximum number of octets Transmitted in an Application Layer Fragment other than File Transfer: *This size does not include any transport or frame octets.* *- Masters must provide a setting less than or equal to 249 to be compliant.* *- Outstations must provide a setting less than or equal to 2048 to be compliant.* *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 240.*	☑ Fixed at **2048** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	2048	
1.5.2 Maximum number of octets Transmitted in an Application Layer Fragment containing File Transfer:	☑ Fixed at **2048** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	2048	
1.5.3 Maximum number of octets that can be received in an Application Layer Fragment: *This size does not include any transport or frame octets.* *- Masters must provide a setting greater than or equal to 2048 to be compliant.* *- Outstations must provide a setting greater than or equal to 249 to be compliant.* *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 241.*	☑ Fixed at **2048** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	2048	

1.5.4 Timeout waiting for Complete Application Layer Fragment: *Timeout if all frames of a message fragment are not received in the specified time. Measured from time first frame of a fragment is received until the last frame is received.*	☑ None ☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	None	
1.5.5 Maximum number of objects allowed in a single control request for CROB (Group 12): *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 216.*	☑ Fixed at **10** (enter 0 if controls are not supported for CROB) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain	10	
1.5.6 Maximum number of objects allowed in a single control request for Analog Outputs (Group 41):	☑ Fixed at **10** (enter 0 if controls are not supported for Analog Outputs) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain	10	
1.5.7 Maximum number of objects allowed in a single control request for Data Sets (Groups 85, 86, 87):	☑ Fixed at **8** (enter 0 if controls are not supported for Data Sets) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain	8	
1.5.8 Supports mixed object groups (AOBs, CROBs and Data Sets) in the same control request:	☑ Not applicable - controls are not supported ☐ Yes ☐ No	N/A	
1.5.9 Control Status Codes Supported: *Indicates which control status codes are supported by the device:* *- Masters must indicate which control status codes they accept in outstation responses.* *- Outstations must indicate which control status codes they generate in responses.* *Control status code 0 (success) must be supported by Masters and Outstations.*	☑ 1 - TIMEOUT ☑ 2 - NO_SELECT ☑ 3 - FORMAT_ERROR ☑ 4 - NOT_SUPPORTED ☑ 5 - ALREADY_ACTIVE ☑ 6 - HARDWARE_ERROR ☑ 7 - LOCAL ☑ 8 - TOO_MANY_OBJS ☑ 9 - NOT_AUTHORIZED ☑ 10 - AUTOMATION_INHIBIT ☑ 11 - PROCESSING_LIMITED ☑ 12 - OUT_OF_RANGE ☑ 13 - DOWNSTREAM_LOCAL ☑ 14 - ALREADY_COMPLETE ☑ 15 - BLOCKED ☑ 16 - CANCELLED ☑ 17 - BLOCKED_OTHER_MASTER ☑ 18 - DOWNSTREAM_FAIL ☑ 126 - RESERVED ☑ 127 - UNDEFINED		

1.7 Fill Out The Following Items For Outstations Only	**Capabilities**	**Current Value**	**If configurable list methods**
1.7.1 Timeout waiting for Application Confirm of solicited response message:	☐ None ☑ Fixed at **10000** ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	10000ms	
1.7.2 How often is time synchronization required from the master: *Details of when the master needs to perform a time synchronization to ensure that the outstation clock does not drift outside of an acceptable tolerance. If the option to relate this to IIN1.4 is used then details of when IIN1.4 is asserted are in section 1.10.2.*	☐ Never needs time ☐ Within seconds after IIN1.4 is set ☑ Periodically, fixed at **1800** seconds ☐ Periodically, between and seconds	Periodically, every 1800 seconds.	
1.7.3 Device Trouble Bit IIN1.6: *If IIN1.6 device trouble bit is set under certain conditions, explain the possible causes.*	☑ Never used ☐ Reason for setting	Never used	

1.7.4 File Handle Timeout: *If there is no activity referencing a file handle for a configurable length of time, the outstation must do an automatic close on the file. The timeout value must be configurable up to 1 hour. When this condition occurs the outstation will send a File Transport Status Object (obj grp 70 var 6) using a status code value of handle expired (0x02).*	☐ Not applicable, files not supported ☑ Fixed at ms **60000** ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	60000 ms	
1.7.5 Event Buffer Overflow Behavior:	☐ Discard the oldest event ☑ Discard the newest event ☐ Other, explain	Discard newest	
1.7.6 Event Buffer Organization: *Explain how event buffers are arranged (per Object Group, per Class, single buffer, etc) and specify the number of events that can be buffered.*	☐ Per Object Group (see part 3) ☐ Per Class Class 1: ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe Class 2: ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe Class 3: ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Single Buffer ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☑ Other, describe**Not supported by the device**	Other: Not supported by the device	
1.7.7 Sends Multi-Fragment Responses: *Indicates whether an Outstation sends multi-fragment responses (Masters do not send multi-fragment requests).*	☑ Yes ☐ No	Yes	
1.7.8 Last Fragment Confirmation: *Indicates whether the Outstation requests confirmation of the last fragment of a multi-fragment response.*	☐ Always ☑ Sometimes, explain **Only when it contains events** ☐ Never	Sometimes	
1.7.9 DNP Command Settings preserved through a device restart: *If any of these settings are written through the DNP protocol and they are not preserved through a restart of the Outstation, the Master will have to write them again after it receives a response in which the Restart IIN bit is set.*	☐ Assign Class ☐ Analog Deadbands ☐ Data Set Prototypes ☐ Data Set Descriptors ☐ Function Code 31 Activate Configuration		
1.7.10 Supports configuration signature: *Indicates whether an Outstation supports the Group 0 device attribute "Configuration signature" (variation 200). If yes, list the vendor-defined name(s) of the algorithm(s) available to calculate the signature.* *Note: The algorithm used for calculating the signature is identified by name in a string that can be determined remotely using protocol object Group 0 Variation 201. If only a single algorithm is available, identifying that algorithm in this object is optional.*	☐ Configuration signature supported If configuration signature is supported, then the following algorithm(s) are available for calculating the signature:	Not Supported	
1.7.11 Requests Application Confirmation: *Indicate if application confirmation is requested:* *- when responding with events* *- when sending non-final fragments of multi-fragment responses* *Note: to be compliant both must be selected as "yes".*	For event responses: ◉ Yes ○ No ○ Configurable For non-final fragments: ◉ Yes ○ No ○ Configurable	Event responses: Yes Non-final fragments: Yes	

1.8 Outstation Unsolicited Response Support	**Capabilities**	**Current Value**	**If configurable list methods**

1.8.1 Supports Unsolicited Reporting: *When the unsolicited response mode is configured "off", the device is to behave exactly like an equivalent device that has no support for unsolicited responses. If set to "on", the Outstation will send a null Unsolicited Response after it restarts, then wait for an Enable Unsolicited Response command from the master before sending additional Unsolicited Responses containing event data.*	☐ Yes ☐ No ☐ Configurable, selectable from On and Off		
1.8.2 Master Data Link Address: *The destination address of the master device where the unsolicited responses will be sent.*	☐ Fixed at ☑ Configurable, range to **1 65519** ☐ Configurable, selectable from ☐ Configurable, other, describe	3	
1.8.3 Unsolicited Response Confirmation Timeout: *This is the amount of time that the outstation will wait for an Application Layer confirmation back from the master indicating that the master received the unsolicited response message. As a minimum, the range of configurable values must include times from one second to one minute. This parameter may be the same one that is used for normal, solicited, application confirmation timeouts, or it may be a separate parameter.*	☑ Fixed at ms **10000** ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	10000 ms	
1.8.4 Number of Unsolicited Retries: *This is the number of retries that an outstation transmits in each unsolicited response series if it does not receive confirmation back from the master. The configured value includes identical and regenerated retry messages. One of the choices must provide for an indefinite (and potentially infinite) number of transmissions.*	☐ None ☑ Fixed at **3** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Always infinite, never gives up	3	

1.9 Outstation Unsolicited Response Trigger Conditions	**Capabilities**	**Current Value**	**If configurable list methods**
1.9.1 Number of class 1 events:	☐ Class 1 not used to trigger Unsolicited Responses ☑ Fixed at **5** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	5	
1.9.2 Number of class 2 events:	☐ Class 2 not used to trigger Unsolicited Responses ☑ Fixed at **5** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	5	
1.9.3 Number of class 3 events:	☐ Class 3 not used to trigger Unsolicited Responses ☑ Fixed at **5** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	5	
1.9.4 Total number of events from any class:	☑ Total Number of Events not used to trigger Unsolicited Responses ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe		
1.9.5 Hold time after class 1 event: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☐ Class 1 not used to trigger Unsolicited Responses ☑ Fixed at ms **5** ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe	5 ms	
1.9.6 Hold time after class 2 event: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☐ Class 2 not used to trigger Unsolicited Responses ☑ Fixed at ms **5** ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe	5 ms	
1.9.7 Hold time after class 3 event: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☐ Class 3 not used to trigger Unsolicited Responses ☑ Fixed at ms **5** ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe	5 ms	

1.9.8 Hold time after event assigned to any class: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☑ Class events not used to trigger Unsolicited Responses ☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe		
1.9.9 Retrigger Hold Time: *The hold-time timer may be retriggered for each new event detected (increased possibility of capturing all the changes in a single response) or not retriggered (giving the master a guaranteed update time).*	☐ Hold-time timer will be retriggered for each new event detected (may get more changes in next response) ☑ Hold-time timer will not be retriggered for each new event detected (guaranteed update time)	Not retriggered	
1.9.10 Other Unsolicited Response Trigger Conditions:	☑ **Not supported by the device**	Other, **Not supported by the device**	

1.10 Outstation Performance	**Capabilities**	**Current Value**	**If configurable list methods**
1.10.1 Maximum Time Base Drift (milliseconds per minute): *If the device is synchronized by DNP, what is the clock drift rate over the full operating temperature range.*	☐ Fixed at ms ☐ Range to ms ☐ Selectable from ms ☑ Other, describe **not supported in the device**	Other,	
1.10.2 When does outstation set IIN1.4: *When does the outstation set the internal indication IIN1.4 NEED_TIME*	☐ Never ☑ Asserted at startup until first Time Synchronization request received ☑ Periodically every **1800** seconds ☐ Periodically, range to seconds ☐ Periodically, selectable from seconds ☐ seconds after last time sync ☑ Range **1** to **2147483** seconds after last time sync ☐ Selectable from seconds after last time sync ☐ When time error may have drifted by ms ☐ When time error may have drifted by range to ms ☐ When time error may have drifted by selectable from ms		
1.10.3 Maximum Internal Time Reference Error when set via DNP (ms): *The difference between the time set in DNP Write Time message, and the time actually set in the outstation.*	☑ Fixed at **0** ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	0 ms	
1.10.4 Maximum Delay Measurement Error (ms): *The difference between the time reported in the delay measurement response and the actual time between receipt of the delay measurement request and issuing the delay measurement reply.*	☐ Fixed at ms ☐ Range to ms ☐ Selectable from ms ☑ Other, describe **Not supported by the device**	Other,	
1.10.5 Maximum Response Time (ms): *The amount of time an outstation will take to respond upon receipt of a valid request. This does not include the message transmission time.*	☑ Fixed at **0** ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	0 ms	
1.10.6 Maximum time from start-up to IIN 1.4 assertion (ms):	☐ Fixed at ms ☐ Range to ms ☐ Selectable from ms ☑ Other, describe **not supported by the device**	Other,	
1.10.7 Maximum Event Time-tag error for local Binary and Double Bit I/O (ms): *The error between the time-tag reported and the absolute time of the physical event. This error includes the Internal Time Reference Error. Note: The current value of this parameter is available remotely using protocol object Group 0 Variation 217.*	☐ Fixed at ms ☐ Range to ms ☐ Selectable from ms ☑ Other, describe **not supported by the device**	Other,	
1.10.8 Maximum Event Time-tag error for local I/O other than Binary and Double Bit data types (ms):	☐ Fixed at ms ☐ Range to ms ☐ Selectable from ms ☑ Other, describe **not supported by the device**	Other,	

1.11 Individual Field Outstation Parameters	**Value of Current Setting**	**If configurable list methods**
1.11.1 User-assigned location name or code string (same as g0v245):		
1.11.2 User-assigned ID code/number string (same as g0v246):		
1.11.3 User-assigned name string for the outstation (same as g0v247):		
1.11.4 Device Serial Number string (same as g0v248):		

1.13 Broadcast Functionality	Capabilities	Current Value	If configurable list methods
This section indicates which functions are supported by the device when using broadcast addresses. Note that this section shows only entries that may have a meaningful purpose when used with broadcast requests.			
1.13.1 Support for broadcast functionality:	◯ Disabled ◉ Enabled ◯ Configurable	Enabled	
1.13.2 Write functions (FC = 2) supported with broadcast requests:	Write clock (g50v1 with qualifier code 07) ◯ Disabled ◉ Enabled ◯ Configurable, other (described elsewhere) Write last recorded time (g50v3 with qualifier code 07) ◯ Disabled ◉ Enabled ◯ Configurable, other (described elsewhere) Clear restart (g80v1 with qualifier code 00 and index = 7, value = 0) ◯ Disabled ◉ Enabled ◯ Configurable, other (described elsewhere) Write to any other group / variation / qualifier code ◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Write clock: Enabled Write last recorded time: Enabled Clear restart: Enabled Write any other: Disabled	Clock: Time: Restart: Other:
1.13.3 Direct operate functions (FC = 5) supported with broadcast requests:	◯ Disabled ◉ Enabled ◯ Configurable, other (described elsewhere)	Enabled	
1.13.4 Direct operate, no acknowledgement functions (FC = 6) supported with broadcast requests:	◯ Disabled ◉ Enabled ◯ Configurable, other (described elsewhere)	Enabled	
1.13.5 Immediate freeze functions (FC = 7) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.6 Immediate freeze, no acknowledgement functions (FC = 8) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.7 Freeze and clear functions (FC = 9) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.8 Freeze and clear, no acknowledgement functions (FC = 10) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.9 Freeze at time functions (FC = 11) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.10 Freeze at time, no acknowledgement functions (FC = 12) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.11 Cold restart functions (FC = 13) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.12 Warm restart functions (FC = 14) supported with broadcast requests:	◯ Disabled ◉ Enabled ◯ Configurable, other (described elsewhere)	Enabled	
1.13.13 Initialize data functions (FC = 15) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.14 Initialize application functions (FC = 16) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	
1.13.15 Start application functions (FC = 17) supported with broadcast requests:	◉ Disabled ◯ Enabled ◯ Configurable, other (described elsewhere)	Disabled	

1.13.16 Stop application functions (FC = 18) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.17 Save configuration functions (FC = 19) supported with broadcast requests:	○ Disabled ○ Enabled ◉ Configurable, other (described elsewhere)	Enabled	
1.13.18 Enable unsolicited functions (FC = 20) supported with broadcast requests:	Enable unsolicited by event Class (g60v2, g60v3 and g60v4 with qualifier code 06) ◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere) Enable unsolicited for any other group / variation / qualifier code ◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	By event class: Disabled By any other: Disabled	Class: Other:
1.13.19 Disable unsolicited functions (FC = 21) supported with broadcast requests:	Disable unsolicited by event Class (g60v2, g60v3 and g60v4 with qualifier code 06) ◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere) Disable unsolicited for any other group / variation / qualifier code ◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	By event class: Disabled By any other: Disabled	Class: Other:
1.13.20 Assign class functions (FC = 22) supported with broadcast requests:	○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	Enabled	
1.13.21 Record current time functions (FC = 24) supported with broadcast requests:	○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	Enabled	
1.13.22 Activate configuration functions (FC = 31) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	

2 Mapping between DNP3 and IEC 61850 Objects

This optional section allows each configuration parameter or point in the DNP Data map to be tied to an attribute in the IEC 61850 object models (and vice-versa).

Earlier versions of this section (up to version 2.07) used mappings based on an "access point" (section 2.1.1 and then a series of XPath references (section 2.1.2). Section 2.1.2 has been superseded in version 2.08 onwards with mappings defined using either predefined rules (section 2.1.3) or specified as an equation (section 2.1.4). The list of pre-defined rules is found in the IEEE 1815-1 document.

The following display has been selected to be in a tabular form.

Mapping between DNP3 and IEC 61850 Objects

3 Capabilities and Current Settings for Device Database (Outstation only)

The following tables identify the capabilities and current settings for each DNP3 data type. Details defining the data points available in the device are shown in part 5 of this Device Profile.

3.1 Binary Inputs
Static (Steady-State) Object Number: 1
Event Object Number: 2

	Capabilities (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.1.1 Static Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - packed format ☑ Variation 2 - with flag ☐ Based on point index (add column to table in part 5)	Two	
3.1.2 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for binary input events can be determined remotely using protocol object Group 0 Variation 237.*	☐ Variation 1 - without time ☐ Variation 2 - with absolute time ☐ Variation 3 - with relative time ☐ Based on point index (add column to table in part 5)		
3.1.3 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.* *"All events" must be checked to be compliant.*	☐ Only most recent ☐ All events ☐ Based on point index (add column to table in part 5)		

3.1.4 Binary Inputs included in Class 0 response:	☑ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)	Always	
3.1.5 Binary Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Binary Inputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☑ Fixed at **100** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events = 100	

3.5 ANALOG INPUTS **Static (Steady-State) Object Number: 30** **Event Object Number: 32** **Deadband Object Number: 34**			
	Capabilities (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.5.1 Static Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☑ Variation 3 - 32-bit without flag ☐ Variation 4 - 16-bit without flag ☐ Variation 5 - single-precision floating point with flag ☐ Variation 6 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)	Three	
3.5.2 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for analog input events can be determined remotely using protocol object Group 0 Variation 231.*	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)		
3.5.3 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. Only the most recent event is typically reported for Analog Inputs. When reporting only the most recent event the analog value returned in the response may be either the value at the time that the event is queued or it may be the value at the time of the response.*	☐ A: Only most recent (value at time of event) ☐ B: Only most recent (value at time of response) ☐ C: All events ☐ Based on point index (add column to table in part 5)		
3.5.4 Analog Inputs included in Class 0 response:	☑ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)	Always	
3.5.5 How Deadbands are set:	☐ A. Global Fixed ☑ B. Configurable through DNP ☐ C. Configurable via other means ☐ D. Other, explain: ☐ Based on point index - column in part 5 specifies which of the options applies, B, C, or D	B	
3.5.6 Analog Deadband Algorithm: simple- just compares the difference from the previous reported value integrating- keeps track of the accumulated change other- indicating another algorithm	☑ Simple ☐ Integrating ☑ Other, explain: ☐ Based on point index (add column to table in part 5)	Simple	
3.5.7 Static Frozen Analog Input Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 3 - 32-bit with time-of-freeze ☐ Variation 4 - 16-bit with time-of-freeze ☐ Variation 5 - 32-bit without flag ☐ Variation 6 - 16-bit without flag ☐ Variation 7 - single-precision floating point with flag ☐ Variation 8 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)		

3.5.8 Frozen Analog Input Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for frozen analog input events can be determined remotely using protocol object Group 0 Variation 230.*	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)		
3.5.9 Frozen Analog Inputs included in Class 0 response:	☐ Always ☑ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)	Never	
3.5.10 Frozen Analog Input Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. All events are typically reported for Frozen Analog Inputs.*	☐ Only most recent frozen value ☐ All frozen values ☐ Based on point index (add column to table in part 5)		
3.5.11 Analog Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Analog Inputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☑ Fixed at **30** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events = 30	
3.5.12 Frozen Analog Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Frozen Analog Inputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☑ Fixed at **0** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events = 0	

3.6 Analog Outputs and Analog Output Commands

Analog Output Status Group Number: 40
Analog Outputs Group Number: 41
Analog Output Events Group Number: 42
Analog Output Command Events Group Number: 43

	Capabilities (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.6.1 Static Analog Output Status Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☑ Variation 3 - single-precision floating point with flag ☐ Variation 4 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)	Three	
3.6.2 Analog Output Status included in Class 0 response:	☑ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)	Always	
3.6.3 Reports Output Command Event Objects:	☑ Never ☐ Only upon a successful Control ☐ Upon all control attempts	Never	
3.6.4 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for analog output events can be determined remotely using protocol object Group 0 Variation 219.*	☑ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)	One	

3.6.5 Command Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)		
3.6.6 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		
3.6.7 Command Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		
3.6.8 Maximum Time between Select and Operate:	☐ Not Applicable ☑ Fixed at seconds **5** ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐ Configurable, other, describe ☐ Variable, explain ☐ Based on point index (add column to table in part 5)	5 seconds	
3.6.9 Analog Outputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Analog Outputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events = 100	
3.6.10 Analog Output Commands Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Analog Output Commands. If event buffers are not allocated per object group then set "Fixed at 0".*	☑ Fixed at **100** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events = 100	

3.7 File Control
Object Number: 70

	Capabilities	**Current Value**	**If configurable list methods**
3.7.1 File Transfer Supported:	☑ Yes ☐ No (set 3.7.6 to "Fixed at 0" and do not complete other entries in section 3.7)	Yes	
3.7.2 File Authentication: *Indicates whether a valid authentication key must be obtained prior to open and delete requests.*	☐ Always ☐ Sometimes, explain ☑ Never	Never	
3.7.3 File Append Mode: *Indicates if a file can be opened and appended to versus just overwritten.*	☐ Always ☐ Sometimes, explain ☑ Never	Never	
3.7.4 Permissions Support: *Indicates the device is capable of using the indicated permissions.*	☑ Owner Read Allowed: 0x0100 ☑ Owner Write Allowed: 0x0080 ☐ Owner Execute Allowed: 0x0040 ☐ Group Read Allowed: 0x0020 ☐ Group Write Allowed: 0x0010 ☐ Group Execute Allowed: 0x0008 ☐ World Read Allowed: 0x0004 ☐ World Write Allowed: 0x0002 ☐ World Execute Allowed: 0x0001	Owner Read Owner Write	
3.7.5 Multiple Blocks in a Fragment: *File data is transferred in a series of blocks of a maximum specified size. This indicates whether only a single block or multiple blocks will be sent in fragment.*	☐ Yes ☑ No	No	
3.7.6 Max number of Files Open at one time:	☑ Fixed at **1** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	1	

3.8 Octet String and Extended Octet String Points
Static (Steady-State) Object Number: 110, 114
Event Object Number: 111, 115

	Capabilities	Current Value	If configurable list methods
3.8.1 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events ☐ Based on point index (add column to table in part 5)		
3.8.2 Octet Strings included in Class 0 response:	☐ Always ☑ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)	Never	
3.8.3 Octet Strings Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Octet Strings. If event buffers are not allocated per object group then set "Fixed at 0".*	☑ Fixed at **10** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events = 10	
3.8.4 Object Group Selection: *Indicate which object group is used to transport octet string objects.*	☑ Fixed, group 110 for all objects ☐ Fixed, group 114 for all objects ☐ Configurable, group 110 or 114 for all objects ☐ Based on point Index (add column to table in part 5)	g110	

3.10 Data Set Prototype
Object Number: 85
Variation Number: 1

	Capabilities	Current Value	If configurable list methods

This version of the Device Profile has no requirement for describing Data Set Prototype capabilities and current settings. This page is intentionally left blank, existing as placeholder for future use.

3.11 Data Set Descriptor Contents and Characteristics
Object Number: 86
Variation Numbers: 1 and 2

This version of the Device Profile has no requirement for describing Data Set Descriptor capabilities and current settings. This page is intentionally left blank, existing as placeholder for future use.

4 Implementation Table

The following implementation table identifies which object groups and variations, function codes and qualifiers the device supports in both requests and responses. The *Request* columns identify all requests that may be sent by a Master, or all requests that must be parsed by an Outstation. The *Response* columns identify all responses that must be parsed by a Master, or all responses that may be sent by an Outstation.

DNP OBJECT GROUP & VARIATION			REQUEST Master may issue Outstation must parse		RESPONSE Master must parse Outstation may issue	
Object Group Number	**Variation Number**	**Description**	**Function Codes (dec)**	**Qualifier Codes (hex)**	**Function Codes (dec)**	**Qualifier Codes (hex)**
0	197	Device Attributes - Configuration version	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	198	Device Attributes - Configuration build date	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	208	Device Attributes - User-assigned system name	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	220	Device Attributes - Maximum analog output index	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	221	Device Attributes - Number of analog outputs	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	232	Device Attributes - Maximum analog input index	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	233	Device Attributes - Number of analog input points	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	238	Device Attributes - Maximum binary input index	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	239	Device Attributes - Number of binary input points	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	240	Device Attributes - Maximum transmit fragment size	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	241	Device Attributes - Maximum receive fragment size	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	242	Device Attributes - Device manufacturer's software version	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	243	Device Attributes - Device manufacturer's hardware version	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*

0	246	Device Attributes - User assigned ID code/number	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	246	Device Attributes - User assigned ID code/number (max len =31)	2*(write)*	00 *(start-stop)*, 01 *(start-stop)*		
0	248	Device Attributes - Device serial number	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	250	Device Attributes - Device manufacturer's product name and model	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	252	Device Attributes - Device manufacturer's name	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
0	254	Device Attributes - Non-specific all attributes request	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*		
0	255	Device Attributes - List of attribute variations	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*
1	0	Binary Input - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*		
1	1	Binary Input - Single-bit packed	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
1	2	Binary Input - Single-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
30	0	Analog Input - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*		
30	1	Analog Input - 32-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
30	2	Analog Input - 16-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
30	3	Analog Input - 32-bit without flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
30	4	Analog Input - 16-bit without flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
30	5	Analog Input - single-precision, floating-point with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
40	0	Analog Output Status - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*		
40	1	Analog Output Status - 32-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
40	2	Analog Output Status - 16-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
40	3	Analog Output Status - single-precision, floating-point with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
41	1	Analog Output Block - 32-bit	3*(select)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	1	Analog Output Block - 32-bit	4*(operate)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	1	Analog Output Block - 32-bit	5*(direct op.)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	1	Analog Output Block - 32-bit	6*(direct op. no ack)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	3*(select)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	4*(operate)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	5*(direct op.)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	6*(direct op. no ack)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	3*(select)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	4*(operate)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	5*(direct op.)*	17, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	6*(direct op. no ack)*	17, 28 *(index)*	129 *(Response)*	echo of request
50	1	Time and Date - absolute time	1*(read)*	07 *(limited qty = 1)*	129 *(Response)*	07 *(limited qty = 1)*
50	1	Time and Date - absolute time	2*(write)*	07 *(limited qty = 1)*		
50	3	Time and Date - absolute time at last recorded time	2*(write)*	07 *(limited qty = 1)*		
51	1	Time and Date CTO - absolute time, synchronized			129 *(Response)*	07 *(limited qty = 1)*
51	1	Time and Date CTO - absolute time, synchronized			130 *(Unsol. Resp.)*	07 *(limited qty = 1)*
51	2	Time and Date CTO - absolute time, un-synchronized			129 *(Response)*	07 *(limited qty = 1)*
51	2	Time and Date CTO - absolute time, un-synchronized			130 *(Unsol. Resp.)*	07 *(limited qty = 1)*
52	1	Time Delay - coarse			129 *(Response)*	07 *(limited qty = 1)*
52	2	Time Delay - fine			129 *(Response)*	07 *(limited qty = 1)*
60	1	Class Objects - class 0 data	1*(read)*	06 *(no range, or all)*		

110	31	Octet String	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
110	31	Octet String	2*(write)*	00, 01 *(start-stop)*		
110	15	Octet String	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
110	15	Octet String	2*(write)*	00, 01 *(start-stop)*		

5 Data Points List (outstation only)

This part of the Device Profile shows, for each data type, a table defining the data points available in the device or a description of how this information can be obtained if the database is configurable.

5.1 Definition of Binary Input Point List:

List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.

Note: the number of binary inputs present in the device, and the maximum binary input index, are available remotely using object Group 0 Variations 239 and 238.

- [x] Fixed, list shown in table below
- [ ] Configurable (current list may be shown in table below)
- [ ] Other, explain:

Binary Input points list:

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Name for State when value is 0	Name for State when value is 1	Description
0	Hydrogen Data Ready	none	False	True	Hydrogen reading is valid and available for reading in AI #2.
1	New Data	none	False	True	New Hydrogen data
2	Error Status	none	No Error	Error	Error - If the value is set to 1 see BI #7 to BI #13 or read AI #1 for details.
3	Sensor A T1 Meas	none	False	True	Sensor A - T1 measurement
4	Sensor A Liquid Temp Measurement	none	False	True	Sensor A - Liquid temperature measurement
5	Sensor A T2 Meas	none	False	True	Sensor A - T2 measurement
6	Sensor A Over Temp	none	False	True	Sensor A - Over temperature
7	Heater Fault	none	False	True	SensorA - Heater Fault
8	Sensor A Temp Fault	none	False	True	Sensor A - Temperature Sensor Fault
9	Sensor A Hydrogen Fault	none	False	True	Sensor A - Hydrogen Sensor Fault
10	RTC Date and Time Is Not Valid	none	False	True	RTC reading is not valid and may need to set.
11	PCB Temp Too High	none	False	True	PCB Temperature greater than 105C
12	Required Data Not Available	none	False	True	Required system configuration is not valid. Contact support@h2scan.com for more information.
13	Configuration Error	none	False	True	Configuration save error detected. May need to retry configuration.
14	PPMH2 Is Valid	none	False	True	Hydrogen reading is valid and available for reading. This is the same as BI #0.
15	ROC Daily Is Valid	none	False	True	Rate Of Change Daily Hydrogen reading is valid and available for reading in AI #3.
16	ROC Weekly Is Valid	none	False	True	Rate Of Change Weekly Hydrogen reading is valid and available for reading in AI #4.
17	ROC Monthly Is Valid	none	False	True	Rate Of Change Monthly Hydrogen reading is valid and available for reading in AI #5.
18	PCB Temp Is Valid	none	False	True	PCB Temperature reading is valid and available for reading in AI #6.
19	Liquid Temp Is Valid	none	False	True	Liquid Temperature is valid and available for reading in AI #7.
20	Liquid Type Selection Is Valid	none	False	True	Liquid Type Selection is supported and may be changed in AI #1.
21	DGA Calibration Date Is Valid	none	False	True	DGA Calibration Date is valid and available for reading in Octet String Point Index #4.
22	Model Number Is Valid	none	False	True	Model Number is configured and available for reading in Octet String Point Index #0.
23	Product Serial Number Is Valid	none	False	True	Product Serial Number is is configured and available for reading in Octet String Point Index #1.
24	MFG Date Is Valid	none	False	True	Manufacturing Date is updated and available for reading in Octet String Point Index #2.
25	Factory Cal Date Is Valid	none	False	True	Factory Calibration Date is updated and available for reading in Octet String Point Index #3.
26	Owner ID Is Valid	none	False	True	Owner ID is configured and available for reading in Octet String Point Index #5.
27	Substation ID Is Valid	none	False	True	Substation ID is configured and available for reading in Octet String Point Index #6.
28	Transformer ID Is Valid	none	False	True	Transformer ID is configured and available for reading in Octet String Point Index #7.
29	User-Defined Liquid Type Name	none	False	True	User-Defined Liquid Type Name string is configured and available for reading in Octet String Point Index #8.
30	Firmware Version	none	False	True	Firmware Version string is available for reading in Octet String Point Index #9.
31	BI #31	none	False	True	Reserved
32	Moisture Is Valid	none	False	True	Moisture reading is configured. The data is valid and available for reading in AI #9.
33	Pressure Is Valid	none	False	True	Pressure is configured. The data is valid and available for reading in AI #10.
34	Water Content Is Valid	none	False	True	Water Content is configured. The data is valid and available for reading in AI #11.
35	Pressure Calibration Offset Is Valid	none	false	true	Pressure Calibration Offset is configured. The data is valid and available for reading in AI #12.

36	Over Pressure Error	none	False	True	Pressure reading from the pressure sensor is over 30 psia to 60 psia. Report over pressure reading data.
37	Burst Pressure Error	none	False	True	Pressure reading from pressure sensor is over 60 psia. Set H2 to Not Ready. Pressure data is not valid.

5.2 Definition of Double-bit Input Point List:

List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.

Note: the number of double-bit inputs present in the device, and the maximum double-bit input index, are available remotely using object Group 0 Variations 236 and 235.

- ☐ Fixed, list shown in table below
- ☐ Configurable (current list may be shown in table below)
- ☐ Other, explain:

Double-bit Input points list:

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Name for State when value is 0 (intermediate)	Name for State when value is 1 (off)	Name for State when value is 2 (on)	Name for State when value is 3 (indeterminate)	Description

5.3 Definition of Binary Output Status / Control Relay Output Block Points List:

List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.

Note: the number of binary outputs present in the device, and the maximum binary output index, are available remotely using object Group 0 Variations 224 and 223.

- ☑ Fixed, list shown in table below
- ☑ Configurable (current list may be shown in table below)
- ☐ Other, explain:

Binary Output Status and CROB points list:

		Supported Control Operations												Event Class Assigned (1,2,3 or none)		
Point Index	Name	Select/Operate	Direct Operate	Direct Operate - No Ack	Pulse On	Pulse Off	Latch On	Latch Off	Trip	Close	Count > 1	Cancel Currently Running Operation	Name for State when value is 0	Name for State when value is 1	Change	Command	Description

5.4 Definition of Counter / Frozen Counter Point List:

List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.

Note: the number of counters present in the device, and the maximum counter index, are available remotely using object Group 0 Variations 229 and 228.

- ☑ Fixed, list shown in table below
- ☑ Configurable (current list may be shown in table below)
- ☐ Other, explain:

Counter / Frozen Counter points list:

Point Index	Name	Event Class Assigned to Counter Events (1, 2, 3 or none)	Frozen Counter Exists (Yes or No)	Event Class Assigned to Frozen Counter Events (1, 2, 3 or none)	Description

5.5 Definition of Analog Input Point List:

List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.

Note: the number of analog inputs present in the device, and the maximum analog input index, are available remotely using object Group 0 Variations 233 and 232.

- ☑ Fixed, list shown in table below
- ☐ Configurable (current list may be shown in table below)
- ☐ Other, explain:

Analog Input points list:

			Transmitted Value		Scaling				
Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Min int / flt	Max int / flt	Multiplier	Offset	Units	Resolution	Description
0	Unit Status	none	/	/			short		Unit Status is a 16-bit value (Variation 2). If Bit 12 of Unit Status is set to 1 then read AI #1.
1	Error Status	none	/	/			long		Error Status is a 32-bit value (Variation 1).
2	PPM H2	none	/	/	1	0	PPM		Hydrogen PPM in single precision floating point (Variation 5). Read BI #14 if valid.
3	ROC Daily	none	/	/	1	0	PPM		Rate of change daily PPM is a single precision floating point value (Variation 5). Read BI #15 if valid.
4	ROC Weekly	none	/	/	1	0	PPM		Rate of change weekly PPM is a single precision floating point value ((Variation 5). Read BI #16 if valid.
5	ROC Monthly	none	/	/	1	0	PPM		Rate of change monthly PPM is a single precision floating point value ((Variation 5). Read BI #17 if valid.
6	PCB Temperature	none	/	/ 105	1	0	Celsius		PCB Temperature in degree Celsius is a single precision floating point (Variation 5). Read BI #18 if valid.
7	Liquid Temperature	none	/ 0	/ 105	1	0	Celsius		Liquid Temperature degree Celsius is a single precision floating point ((Variation 5). Read BI #19 if valid.
8	AI #8	none	/	/	1	0			Reserved
9	Moisture	none	/	/	1	0	%RH		Moisture reading in %RH is a single precision floating point (Variation 5). This is valid for reading if BI #32 is set to 1.
10	Pressure	none	/ 0	/ 30			PSI		Pressure Gauge reading in single precision floating point (Variation 5). The pressure unit may be: atm, psi, bar, kPascal, or inH2O depending on configuration. Read AI #13 to determine pressure unit. This is valid for reading if BI #33 is set to 1.
11	Water Content	none	0 /	10000 /	1	0	PPM		Water Content reading is in PPM. It is reported as a 32-bit number (Variation 1). This is valid for reading if BI #34 is set to 1.

12	Pressure Calibration Offset	none	/	/		0	PSI		Pressure Calibration Offset is a single precision floating point number (Variation 5) and is reported in unit of pressure. Read AI #13 to determine pressure unit. This is valid for reading if BI #35 is set to 1.
13	Pressure Unit	none	0 /	4 /		0	short		Unit of Pressure in the configuration is reported as a 16-bit number (Variation 2). 0:atm, 1:psi (default), 2:bar, 3:kpa, 4:inH2O

5.6 Definition of Analog Output Status / Analog Output Block Point List:

List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.

Note: the number of analog outputs present in the device, and the maximum analog output index, are available remotely using object Group 0 Variations 221 and 220.

- [x] Fixed, list shown in table below
- [ ] Configurable (current list may be shown in table below)
- [ ] Other, explain:

Analog Output points list:

		Supported Control Operations			Transmitted Value		Scaling				Event Class Assigned (1, 2, 3 or none)		
Point Index	Name	Select/Operate	Direct Operate	Direct Operate - No Ack	Min	Max	Min	Max	Units	Resolution	Change	Command	Description
0	User-Defined Liquid Type Operation	Y	Y	Y	1	3	1	0	short		none	none	User-Defined Liquid Type Operation selections (Variation 2): 1=Opens up the configuration for edit (User-Defined Ostwald Slope m (AO #13) and Offset b (AO #14)); 2=Save the configuration; 3=Abort. Use Octet String Point Index #8 to change the User-Define Liquid Type name.
1	Liquid Type Selection	Y	Y	Y	0	3	1	0	short		none	none	Liquid Type Selection selections (Variation 2): 0 = mineral; 1 = silicone; 2 = natural ester; 3 = synthetic ester
2	Uart Stop Bit/Parity Selection	Y	Y	Y	1	6			short		none	none	Uart Stop Bit/Parity Selection (Variation 2): 1 = 8N1; 2 = 8N2; 3 = 8E1; 4 = 8E2; 5 = 8O1; 6 = 8O2. This is a configuration change. Use AO #3 to apply the new Stop/Parity Bits setting to the UART connection.
3	Uart Baud Rate Selection	Y	Y	Y	1	6			short		none	none	Uart Baud Rate Selection (Variation 2): 1 = 9600; 2 = 14400; 3 = 19200; 4 = 38400; 5 = 57600; 6 = 115200. This is a configuration change. This is an immediate change to the Uart connection.
4	Change DNP3 Source Address	Y	Y	Y	1	65519	1	0	long		none	none	DNP3 Source Address address range is [1 to 65519] (Variation 1). This change is saved in the configuration. Use AO #17 to apply the new Source Address.
5	DA Command	Y	Y	Y					short		none	none	DA Command (Variation 2) is the first step in making adjustment to the hydrogen measurement based on laboratory DGA test results. This command should be issued when and liquid sample is taken so that certain internal values are saved to be used when the DGA results are entered later. Do not issue the DA command less than 24 hours after installation or since the last DC command.

6	DB Command	Y	Y	Y					short		none	none	The DB command (Variation 2) is the second step in adjusting the hydrogen measurement based on laboratory DGA test results. Note that DA command must have been executed prior to issuing a DB. Recommended sequence of operations to execute the DB command: 1) Read Date and Time; 2) Write the Date to AO#11; 3) Write the DGA results in ppmH2 to AO#12; 4) Send DB command in AO#6. This will take up to 10 seconds to respond.
7	DC Command	Y	Y	Y					short		none	none	Clear DGA Calibration. DC Command (Variation 2) allows the user to clear the DGA adjustment set by a DB command. Wait at least 24 hours before issuing a DA command.
8	Operating Mode	Y	Y	Y	0		1	0	short		none	none	Operating Mode is a 16-bit value (Variation 2) : 0 = field mode; 1 = lab mode
9	AO #9	Y	Y	Y							none	none	Reserved
10	Change DNP3 Destination Address	Y	Y	Y	1	65519	1	0	long		none	none	DNP3 Destination Address address range is [1 to 65519] (Variation 1) . This is a configuration change. Use AO #17 to apply the new Destination Address.
11	DGA Calibration Date	Y	Y	Y					long		none	none	The calibration date (Variation 1) must match the Outstation internal realtime clock for the DB command (AO#6) to be accepted. Format: month[bits 31:24]; day[23:16]; year[15:0]
12	DGA Calibration Gas	Y	Y	Y			1	0	PPM		none	none	The actual hydrogen value in PPM (Variation 1) used by the DB command (AO#6).
13	User-Defined Ostwald Slope (m)	Y	Y	Y			1	0	float		none	none	User-Defined Ostwald Slope (m) is a single precision floation point value (Variation 3) . Must set AO #1 to value 1 for configuration edit. Set AO #0 to value 2 for configuration save.
14	User-Defined Ostwald Offset (b)	Y	Y	Y			1	0	float		none	none	User-Defined Ostwald Offset (b) is a single precision floation point value (Variation 3). Must set AO #1 to value 2 for configuration save.
15	Software Reset	Y	Y	Y					short		none	none	Requires a 16-bit reset code (Variation 2). Perform a read operation to obtain a 16-bit value. Perform a write operation with the 16-bit value obtained from the read operation. If the data matches a software reset is issued.

16	RS485 Termination Enable/Disable				0	1	1	0	short		none	none	Write a value 0 (Variation 2) to disable RS485 TE. A write a non-zero value will enable RS485 TE. The application is immediate upon successful completion. This is a configuration change.
17	Apply new DNP3 Source and Destination Addresses	Y	Y	Y					short		none	none	This (Variation 2) updates the DNP3 session with the new Source and Destination addresses. Use AO #4 to change the Source address of the RTU. Use AO #10 to change the destination address.
18	Change Modbus Device ID	Y	Y	Y	1	247	1	0	short		none	none	Modify the unit's Modbus Device ID (Variation 2). This is a configuration change.
19	Switch to Modbus Protocol	Y	Y	Y					short		none	none	Switches to Modbus Protocol (Variation 2). Requires a passcode.
20	AO #20	Y	Y	Y							none	none	Reserved
21	AO #21	Y	Y	Y							none	none	Reserved
22	AO #22	Y	Y	Y							none	none	Reserved
23	Pressure Unit Selection	Y	Y	Y	0	4		0	Short		none	none	Pressure Unit Selection (Variation 2): 0:atm, 1:psi, 2:bar, 3:kpa, 4:inH2O. This is a configuration change.
24	Pressure Calibration Offset	Y	Y	Y				0	float		none	none	Pressure Calibration Offset in unit of pressure (Variation 3).
25	Setup Partial Data Log	Y	Y	Y					number of days(float)		none	none	Specify the most recent number of days (Variation 3) from the data log to read.

5.7 Definition of File Names that may be read or written:	☑ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:

Sequential Files list:

		Authentication Required for:			
File Name	Event Class Assigned (1, 2, 3 or none)	Read	Write	Delete	Description
datalog.bin		Y		Y	Readthe data log. Delete data log would require authentication code.
g5code.bin			Y		Update the firmware.

5.8 Definition of Octet String and Extended Octet String Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☑ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:

Octet String and Extended Octet String points list:

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Group Number used to transport the object	Description
0	Model Number	none	g110	Model Number (Read-Only). This is valid and available for reading if BI #22 is set to 1.
1	Product Serial Number	none	g110	Product Serial Number (Read-Only). This is valid and available for reading if BI #23 is set to 1.
2	Manufacturing Date	none	g110	Manufacturing Date (Read-Only). This is valid and available for reading if BI #24 is set to 1.
3	Factory Calibration Date	none	g110	Factory Calibration Date (Read-Only). This is valid and available for reading if BI #25 is set to 1.
4	DGA Calibration Date	none	g110	DGA Calibration Date (Read-Only). This is valid and available for reading if BI #21 is set to 1.
5	Owner ID	none	g110	Owner ID (R/W). Maximum string length is 31. Must be NULL terminated. This is valid and available for reading if BI #26 is set to 1.
6	Substation ID	none	g110	Substation ID (R/W). Maximum string length is 31. Must be NULL terminated. This is valid and available for reading if BI #27 is set to 1.
7	Transformer ID	none	g110	Transformer ID (R/W). Maximum string length is 31. Must be NULL terminated. This is valid and available for reading if BI #28 is set to 1.
8	User Defined Liquid Type Name	none	g110	User Defined Liquid Type Name (R/W). Maximum string length is 15. Must be NULL terminated. This is valid and available for reading if BI #29 is set to 1.
9	Firmware Version	none	g110	Firmware Version Number. This is valid and available for reading if BI #30 is set to 1.
10	Data Log Information	none	g110	Information about the Data Log: log rate: record size (number of bytes), total size (number of bytes), and enabled/disabled. If no string, it means data log is not configured.

5.9 Definition of Virtual Terminal Port Numbers: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☑ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐ Other, explain:

Ports list:

Virtual Port Number (Point Index)	Name	Event Class Assigned (1, 2, 3 or none)	Description

5.10 Definition of Data Set Prototypes: *List of all data set prototypes. The following table is repeated for each Data Set Prototype defined.* *Note: the number of data set prototypes known to the device are available remotely using object Group 0 Variations 212 and 213.*	☐ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:

5.11 Definition of Data Set Descriptors: *List of all data set descriptors. The following table is repeated for each Data Set Descriptor defined.* *Note: the number of data sets known to the device are available remotely using object Group 0 Variations 214 and 215.*	☐ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:

5.12 Data Set Descriptors - Point Index Attributes

The following table is optional and correlates data set elements to point indexes of standard DNP3 Data Objects. The element number below refers to the position in the present value object (object 87) or event (object 88) data set and will not match the element number in the data set descriptor or data set prototype tables above.

--------- End of Device Profile for Reference Device ---------

------------------------------ End of Complete Device Profile ------------------------------