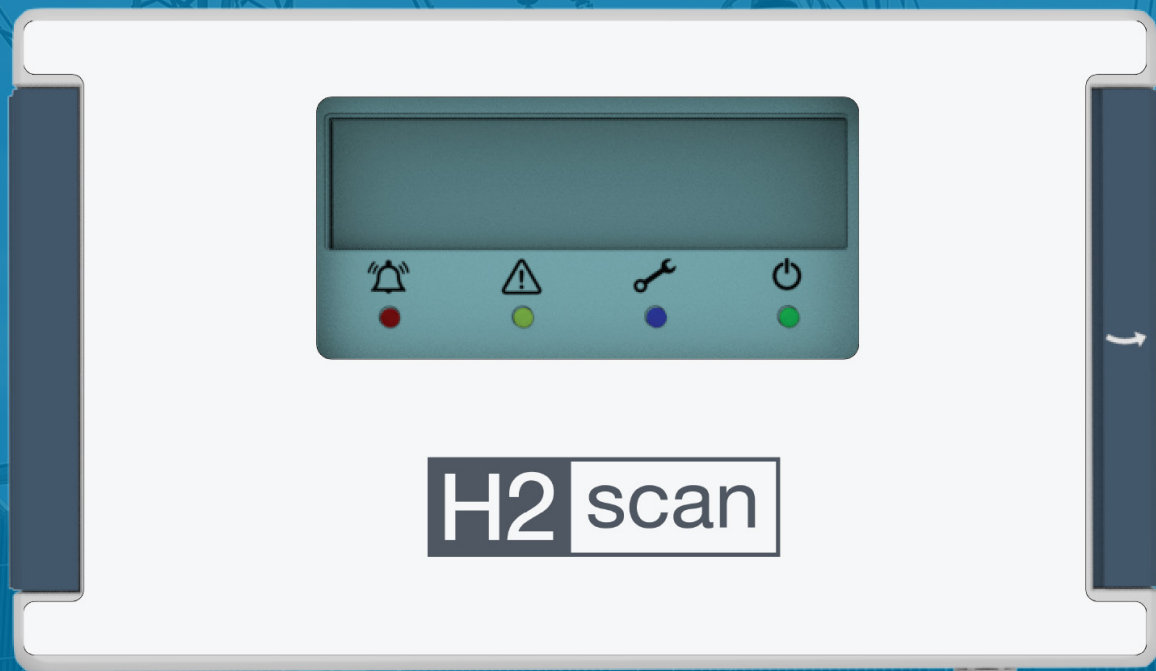


# H2 scan<sup>®</sup>

Advanced Hydrogen Sensing



DNP3 PROFILE

## GRIDSCAN<sup>®</sup> AO-2

Control Hub

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**DNP3 Device Profile**  
*Based on DNP XML Schema version 2.10.00*

**Document Name: gsao2DeviceProfile v1.xml**

**Document Description: DNP3 Device Profile for GSAO2 Control Hub**

**Revision History**

Date	Time	Version	Reason for change	Edited by
2026-02-06	12:00:00	1	Initial Revision	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
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<p>1.1.1 Device Function:</p> <p><i>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.</i></p>	<p><input type="radio"/> Master <input checked="" type="radio"/> Outstation</p>	<p><input type="radio"/> Master <input checked="" type="radio"/> Outstation</p>	
<p>1.1.2 Vendor Name:</p> <p><i>The name of the organization producing the device.</i></p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 252.</i></p>		H2scan	
<p>1.1.3 Device Name:</p> <p><i>The model and name of the device, sufficient to distinguish it from any other device from the same organization.</i></p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 250.</i></p>		GSAO2 CONTROL HUB	
<p>1.1.4 Device manufacturer's hardware version string:</p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 243.</i></p>		N/A	
<p>1.1.5 Device manufacturer's software version string:</p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 242.</i></p>		2.5.1 and newer	
<p>1.1.6 Device Profile Document Version Number:</p> <p><i>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.</i></p>		1	
<p>1.1.7 DNP Levels Supported for:</p> <p><i>Indicate each DNP3 Level to which the device conforms fully. For Masters, requests and responses can be indicated independently.</i></p>	<p>Outstations Only Requests and Responses</p> <p><input type="checkbox"/> None <input checked="" type="checkbox"/> Level 1 <input checked="" type="checkbox"/> Level 2 <input checked="" type="checkbox"/> Level 3 <input checked="" type="checkbox"/> Level 4</p>	<p>Level 1 Level 2 Level 3 Level 4</p>	
<p>1.1.8 Supported Function Blocks:</p>	<p><input checked="" type="checkbox"/> Self Address Support <input type="checkbox"/> Data Sets <input type="checkbox"/> File Transfer <input type="checkbox"/> Virtual Terminal <input type="checkbox"/> Mapping to IEC 61850 Object Models defined in a DNP3 XML file <input type="checkbox"/> Function code 31, activate configuration <input type="checkbox"/> Secure Authentication (if checked then see 1.12)</p>	Self Address	

<p>1.1.9 Notable Additions:</p> <p><i>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.</i></p>																															
<p>1.1.10 Methods to set Configurable Parameters:</p>	<p><input type="checkbox"/> XML - Loaded via DNP3 File Transfer  <input type="checkbox"/> XML - Loaded via other transport mechanism  <input type="checkbox"/> Terminal - ASCII Terminal Command Line  <input checked="" type="checkbox"/> Software - Vendor software named Triangle MicroWorks3.30.0000  <input type="checkbox"/> Proprietary file loaded via DNP3 File Transfer  <input type="checkbox"/> Proprietary file loaded via other transport mechanism  <input checked="" type="checkbox"/> Direct - Keypad on device front panel  <input checked="" type="checkbox"/> Factory - Specified when device is ordered  <input type="checkbox"/> Protocol - Set via DNP3 (e.g. assign class)  <input type="checkbox"/> Other - explain:</p>																														
<p>1.1.11 DNP3 XML files available On-line:</p> <p><i>XML configuration file names that can be read or written through DNP3 File Transfer to a device.</i></p> <p><i>A device's currently running configuration is returned by DNP3 on-line XML file read from the device.</i></p> <p><i>DNP3 on-line XML file write to a device will update the device's configuration when the Activate Configuration (function code 31) is received.</i></p>	<table border="1"> <thead> <tr> <th>Rd</th> <th>Wr</th> <th>Filename</th> <th>Description of Contents</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td></td> <td>dnpDP.xml</td> <td>Complete Device Profile</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>dnpDPCap.xml</td> <td>Device Profile Capabilities</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>dnpDPCfg.xml</td> <td>Device Profile config values</td> </tr> </tbody> </table>	Rd	Wr	Filename	Description of Contents	<input type="checkbox"/>		dnpDP.xml	Complete Device Profile	<input type="checkbox"/>		dnpDPCap.xml	Device Profile Capabilities	<input type="checkbox"/>		dnpDPCfg.xml	Device Profile config values	<table border="1"> <thead> <tr> <th>Rd</th> <th>Wr</th> <th>Filename</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td></td> <td>dnpDP.xml</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>dnpDPCap.xml</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>dnpDPCfg.xml</td> </tr> </tbody> </table>	Rd	Wr	Filename	<input type="checkbox"/>		dnpDP.xml	<input type="checkbox"/>		dnpDPCap.xml	<input type="checkbox"/>		dnpDPCfg.xml	
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<p>1.1.12 External DNP3 XML files available Off-line:</p> <p><i>XML configuration file names that can be read or written from an external system, typically from a system that maintains the outstation configuration.</i></p> <p><i>External off-line XML file read permits an XML definition of a new configuration to be supplied from off-line configuration tools.</i></p> <p><i>External off-line XML file write permits an XML definition of a new configuration to be supplied to off-line configuration tools.</i></p>	<table border="1"> <thead> <tr> <th>Rd</th> <th>Wr</th> <th>Filename</th> <th>Description of Contents</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>dnpDP.xml</td> <td>Complete Device Profile</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>dnpDPCap.xml</td> <td>Device Profile Capabilities</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>dnpDPCfg.xml</td> <td>Device Profile config values</td> </tr> </tbody> </table>	Rd	Wr	Filename	Description of Contents	<input type="checkbox"/>	<input type="checkbox"/>	dnpDP.xml	Complete Device Profile	<input type="checkbox"/>	<input type="checkbox"/>	dnpDPCap.xml	Device Profile Capabilities	<input type="checkbox"/>	<input type="checkbox"/>	dnpDPCfg.xml	Device Profile config values	<table border="1"> <thead> <tr> <th>Rd</th> <th>Wr</th> <th>Filename</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>dnpDP.xml</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>dnpDPCap.xml</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>dnpDPCfg.xml</td> </tr> </tbody> </table>	Rd	Wr	Filename	<input type="checkbox"/>	<input type="checkbox"/>	dnpDP.xml	<input type="checkbox"/>	<input type="checkbox"/>	dnpDPCap.xml	<input type="checkbox"/>	<input type="checkbox"/>	dnpDPCfg.xml	
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<input type="checkbox"/>	<input type="checkbox"/>	dnpDPCfg.xml																													
<p>1.1.13 Connections Supported:</p>	<p><input checked="" type="checkbox"/> Serial (complete section 1.2)  <input type="checkbox"/> IP Networking (complete section 1.3)  <input type="checkbox"/> Other, explain</p>	Serial																													
<p>1.1.14 Conformance Testing:</p> <p><i>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.</i></p>	<p><input checked="" type="checkbox"/> Self-tested, version 1   <input type="checkbox"/> Independently tested, version</p>																														

1.2 SERIAL CONNECTIONS	Capabilities	Current Value	If configurable list methods
1.2.1 Port Name:  <i>Name used to reference the communications port defined in this section.</i>		RS485	
1.2.2 Serial Connection Parameters:	<input checked="" type="checkbox"/> Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bit, No Parity <input type="checkbox"/> Other, explain  <div style="background-color: #e0ffe0; padding: 2px;">Note: Implemented in Target Layer</div>	Asynchronous	
1.2.3 Baud Rate:	<input type="checkbox"/> Fixed at <input checked="" type="checkbox"/> Configurable, range <b>9600</b> to <b>19200</b> <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe  <div style="background-color: #e0ffe0; padding: 2px;">Note: Implemented in Target Layer</div>	19200	
1.2.4 Hardware Flow Control (Handshaking):  <i>Describe hardware signaling requirements of the interface.</i>  <i>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.</i>  <i>Where a signal is asserted prior to transmitting, that signal will be maintained active until after the end of transmission.</i>  <i>Where a signal is asserted to enable reception, any data sent to the device when the signal is not active could be discarded.</i>	<input checked="" type="checkbox"/> None <b>RS-232 / V.24 / V.28 Options:</b> <u>Asserts:</u> <input type="checkbox"/> RTS Before Tx <input type="checkbox"/> DTR Before Tx <input type="checkbox"/> RTS Before Rx <input type="checkbox"/> DTR Before Rx <input type="checkbox"/> Always RTS <input type="checkbox"/> Always DTR <u>Requires Before Tx:</u> CTS <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted DCD <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted DSR <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted RI <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted <input type="checkbox"/> Requires Rx Inactive before Tx <u>Requires Before Rx:</u> CTS <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted DCD <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted DSR <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted RI <input type="checkbox"/> Asserted <input type="checkbox"/> Deasserted <u>Always Ignores:</u> <input type="checkbox"/> CTS <input type="checkbox"/> DCD <input type="checkbox"/> DSR <input type="checkbox"/> RI <input type="checkbox"/> Other, explain  <b>RS-422 / V.11 Options:</b> <input type="checkbox"/> Requires Indication before Rx <input type="checkbox"/> Asserts Control before Tx <input type="checkbox"/> Other, explain  <b>RS-485 Options:</b> <input type="checkbox"/> Requires Rx inactive before Tx <input checked="" type="checkbox"/> Other, explain <b>Half-Duplex</b>  <input checked="" type="checkbox"/> Other, explain <b>Software</b>	None <b>RS-232 / V.24 / V.28 Options:</b>  <b>RS-422 / V.11 Options:</b>  <b>RS-485 Options: Other, Half-Duplex</b>	

<p>1.2.5 Interval to Request Link Status:</p> <p><i>Indicates how often to send Data Link Layer status requests on a serial connection. This parameter is separate from the TCP Keep-alive timer.</i></p>	<p><input type="checkbox"/> Not Supported</p> <p><input checked="" type="checkbox"/> Fixed at 0seconds</p> <p><input type="checkbox"/> Configurable, range to seconds</p> <p><input type="checkbox"/> Configurable, selectable from seconds</p> <p><input type="checkbox"/> Configurable, other, describe</p>	<p>0 seconds</p>	
<p>1.2.6 Supports DNP3 Collision Avoidance:</p> <p><i>Indicates whether an Outstation uses a collision avoidance algorithm.</i></p> <p><i>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.</i></p> <p><i>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.</i></p> <p><i>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".</i></p>	<p><input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes, using Back-off time = (Min + Random) method</p> <p><input type="checkbox"/> Other, explain</p>	<p>No</p>	
<p>1.2.7 Receiver Inter-character Timeout:</p> <p><i>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.</i></p> <p><i>Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options shall be selected.</i></p>	<p><input checked="" type="checkbox"/> Not Checked</p> <p><input type="checkbox"/> No gap permitted</p> <p><input type="checkbox"/> Fixed at bit times</p> <p><input type="checkbox"/> Fixed at ms</p> <p><input type="checkbox"/> Configurable, range to bit times</p> <p><input type="checkbox"/> Configurable, range to ms</p> <p><input type="checkbox"/> Configurable, selectable from bit times</p> <p><input type="checkbox"/> Configurable, selectable from ms</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input type="checkbox"/> Variable, explain</p>	<p>Not Checked</p>	
<p>1.2.8 Inter-character gaps in transmission:</p> <p><i>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.</i></p> <p><i>Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options shall be selected.</i></p>	<p><input checked="" type="checkbox"/> None (always transmits with no inter-character gap)</p> <p><input type="checkbox"/> Maximumbit times</p> <p><input type="checkbox"/> Maximumms</p>	<p>None</p>	

<p>1.4 LINK LAYER</p>	<p>Capabilities</p>	<p>Current Value</p>	<p>If configurable list methods</p>
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1.4.1 Data Link Address: <i>Indicates if the link address is configurable over the entire valid range of 0 to 65,519. Data link addresses 0xFFFF0 through 0xFFFF are reserved for broadcast or other special purposes.</i>	<input type="checkbox"/> Fixed at <input checked="" type="checkbox"/> Configurable, range <b>1</b> to <b>65519</b> <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	4	
1.4.2 DNP3 Source Address Validation: <i>Indicates whether the Outstation will filter out requests not from a specific source address.</i>	<input checked="" type="checkbox"/> Never <input type="checkbox"/> Always, one address allowed (shown in 1.4.3) <input type="checkbox"/> Always, any one of multiple addresses allowed (each selectable as shown in 1.4.3) <input type="checkbox"/> Sometimes, explain	Never	
1.4.3 DNP3 Source Address(es) expected when Validation is Enabled: <i>Selects the allowed source address(es)</i>	<input type="checkbox"/> Configurable to any 16 bit DNP Data Link Address value <input checked="" type="checkbox"/> Configurable, range <b>1</b> to <b>65519</b> <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	4	
1.4.4 Self Address Support using address 0xFFFC: <i>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.</i>	<input checked="" type="checkbox"/> Yes (only allowed if configurable) <input type="checkbox"/> No	Yes	
1.4.5 Sends Confirmed User Data Frames: <i>A list of conditions under which the device transmits confirmed link layer services (TEST_LINK_STATES, RESET_LINK_STATES, CONFIRMED_USER_DATA).</i>	<input type="checkbox"/> Never <input checked="" type="checkbox"/> Always <input type="checkbox"/> Sometimes, explain	Always	
1.4.6 Data Link Layer Confirmation Timeout: <i>This timeout applies to any secondary data link message that requires a confirm or response (link reset, link status, user data, etc).</i>	<input type="checkbox"/> None <input checked="" type="checkbox"/> Fixed at <b>2000ms</b> <input type="checkbox"/> Configurable, range to ms <input type="checkbox"/> Configurable, selectable from ms <input type="checkbox"/> Configurable, other, describe <input type="checkbox"/> Variable, explain	2000ms	
1.4.7 Maximum Data Link Retries: <i>The number of times the device will retransmit a frame that requests Link Layer confirmation.</i>	<input type="checkbox"/> None <input checked="" type="checkbox"/> Fixed at <b>3</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	3	
1.4.8 Maximum number of octets Transmitted in a Data Link Frame: <i>This number includes the CRCs. With a length field of 255, the maximum size would be 292.</i>	<input checked="" type="checkbox"/> Fixed at <b>292</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	292	
1.4.9 Maximum number of octets that can be Received in a Data Link Frame: <i>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.</i>	<input checked="" type="checkbox"/> Fixed at <b>292</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	292	

<b>1.5 APPLICATION LAYER</b>	<b>Capabilities</b>	<b>Current Value</b>	<b>If configurable list methods</b>
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<p>1.5.1 Maximum number of octets Transmitted in an Application Layer Fragment other than File Transfer:</p> <p><i>This size does not include any transport or frame octets.</i></p> <p>- Masters must provide a setting less than or equal to 249 to be compliant.</p> <p>- Outstations must provide a setting less than or equal to 2048 to be compliant.</p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 240.</i></p>	<p><input checked="" type="checkbox"/> Fixed at <b>2048</b></p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p>	2048	
<p>1.5.2 Maximum number of octets Transmitted in an Application Layer Fragment containing File Transfer:</p>	<p><input checked="" type="checkbox"/> Fixed at <b>2048</b></p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p>	2048	
<p>1.5.3 Maximum number of octets that can be received in an Application Layer Fragment:</p> <p><i>This size does not include any transport or frame octets.</i></p> <p>- Masters must provide a setting greater than or equal to 2048 to be compliant.</p> <p>- Outstations must provide a setting greater than or equal to 249 to be compliant.</p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 241.</i></p>	<p><input checked="" type="checkbox"/> Fixed at <b>2048</b></p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p>	2048	
<p>1.5.4 Timeout waiting for Complete Application Layer Fragment:</p> <p><i>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.</i></p>	<p><input checked="" type="checkbox"/> None</p> <p><input type="checkbox"/> Fixed at ms</p> <p><input type="checkbox"/> Configurable, range to ms</p> <p><input type="checkbox"/> Configurable, selectable from ms</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input type="checkbox"/> Variable, explain</p>	None	
<p>1.5.5 Maximum number of objects allowed in a single control request for CROB (Group 12):</p> <p><i>Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 216.</i></p>	<p><input checked="" type="checkbox"/> Fixed at <b>10</b>(enter 0 if controls are not supported for CROB)</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input type="checkbox"/> Variable, explain</p>	10	
<p>1.5.6 Maximum number of objects allowed in a single control request for Analog Outputs (Group 41):</p>	<p><input checked="" type="checkbox"/> Fixed at <b>10</b>(enter 0 if controls are not supported for Analog Outputs)</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input type="checkbox"/> Variable, explain</p>	10	
<p>1.5.7 Maximum number of objects allowed in a single control request for Data Sets (Groups 85, 86, 87):</p>	<p><input checked="" type="checkbox"/> Fixed at <b>8</b>(enter 0 if controls are not supported for Data Sets)</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input type="checkbox"/> Variable, explain</p>	8	
<p>1.5.8 Supports mixed object groups (AOBs, CROBs and Data Sets) in the same control request:</p>	<p><input checked="" type="checkbox"/> Not applicable - controls are not supported</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	N/A	

<p>1.5.9 Control Status Codes Supported:</p> <p><i>Indicates which control status codes are supported by the device:</i></p> <ul style="list-style-type: none"> <li>- Masters must indicate which control status codes they accept in outstation responses.</li> <li>- Outstations must indicate which control status codes they generate in responses.</li> </ul> <p><i>Control status code 0 (success) must be supported by Masters and Outstations.</i></p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 1 - TIMEOUT</li> <li><input checked="" type="checkbox"/> 2 - NO_SELECT</li> <li><input checked="" type="checkbox"/> 3 - FORMAT_ERROR</li> <li><input checked="" type="checkbox"/> 4 - NOT_SUPPORTED</li> <li><input checked="" type="checkbox"/> 5 - ALREADY_ACTIVE</li> <li><input checked="" type="checkbox"/> 6 - HARDWARE_ERROR</li> <li><input checked="" type="checkbox"/> 7 - LOCAL</li> <li><input checked="" type="checkbox"/> 8 - TOO_MANY_OBJS</li> <li><input checked="" type="checkbox"/> 9 - NOT_AUTHORIZED</li> <li><input checked="" type="checkbox"/> 10 - AUTOMATION_INHIBIT</li> <li><input checked="" type="checkbox"/> 11 - PROCESSING_LIMITED</li> <li><input checked="" type="checkbox"/> 12 - OUT_OF_RANGE</li> <li><input checked="" type="checkbox"/> 13 - DOWNSTREAM_LOCAL</li> <li><input checked="" type="checkbox"/> 14 - ALREADY_COMPLETE</li> <li><input checked="" type="checkbox"/> 15 - BLOCKED</li> <li><input checked="" type="checkbox"/> 16 - CANCELLED</li> <li><input checked="" type="checkbox"/> 17 - BLOCKED_OTHER_MASTER</li> <li><input checked="" type="checkbox"/> 18 - DOWNSTREAM_FAIL</li> <li><input checked="" type="checkbox"/> 126 - RESERVED</li> <li><input checked="" type="checkbox"/> 127 - UNDEFINED</li> </ul>		
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1.7 FILL OUT THE FOLLOWING ITEMS FOR OUTSTATIONS ONLY	Capabilities	Current Value	If configurable list methods
<p>1.7.1 Timeout waiting for Application Confirm of solicited response message:</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> None</li> <li><input checked="" type="checkbox"/> Fixed at <b>1000ms</b></li> <li><input type="checkbox"/> Configurable, range to ms</li> <li><input type="checkbox"/> Configurable, selectable from ms</li> <li><input type="checkbox"/> Configurable, other, describe</li> <li><input type="checkbox"/> Variable, explain</li> </ul>	10000ms	
<p>1.7.2 How often is time synchronization required from the master:</p> <p><i>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.</i></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Never needs time</li> <li><input type="checkbox"/> Within seconds after IIN1.4 is set</li> <li><input checked="" type="checkbox"/> Periodically, fixed at <b>1800</b> seconds</li> <li><input type="checkbox"/> Periodically, between and seconds</li> </ul>	Periodically, every 1800 seconds.	
<p>1.7.3 Device Trouble Bit IIN1.6:</p> <p><i>If IIN1.6 device trouble bit is set under certain conditions, explain the possible causes.</i></p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Never used</li> <li><input type="checkbox"/> Reason for setting</li> </ul>	Never used	
<p>1.7.4 File Handle Timeout:</p> <p><i>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).</i></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Not applicable, files not supported</li> <li><input checked="" type="checkbox"/> Fixed at <b>60000ms</b></li> <li><input type="checkbox"/> Configurable, range to ms</li> <li><input type="checkbox"/> Configurable, selectable from ms</li> <li><input type="checkbox"/> Configurable, other, describe</li> <li><input type="checkbox"/> Variable, explain</li> </ul>	60000 ms	
<p>1.7.5 Event Buffer Overflow Behavior:</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Discard the oldest event</li> <li><input checked="" type="checkbox"/> Discard the newest event</li> <li><input type="checkbox"/> Other, explain</li> </ul>	Discard newest	

<p>1.7.6 Event Buffer Organization:</p> <p><i>Explain how event buffers are arranged (per Object Group, per Class, single buffer, etc) and specify the number of events that can be buffered.</i></p>	<p><input type="checkbox"/> Per Object Group (see part 3)</p> <p><input type="checkbox"/> Per Class</p> <p>Class 1:</p> <p><input type="checkbox"/> Fixed at</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p>Class 2:</p> <p><input type="checkbox"/> Fixed at</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p>Class 3:</p> <p><input type="checkbox"/> Fixed at</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input type="checkbox"/> Single Buffer</p> <p><input type="checkbox"/> Fixed at</p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p> <p><input checked="" type="checkbox"/> Other, describe <b>Not supported by the device</b></p>	<p>Other: Not supported by the device</p>	
<p>1.7.7 Sends Multi-Fragment Responses:</p> <p><i>Indicates whether an Outstation sends multi-fragment responses (Masters do not send multi-fragment requests).</i></p>	<p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	<p>Yes</p>	
<p>1.7.8 Last Fragment Confirmation:</p> <p><i>Indicates whether the Outstation requests confirmation of the last fragment of a multi-fragment response.</i></p>	<p><input type="checkbox"/> Always</p> <p><input checked="" type="checkbox"/> Sometimes, explain <b>Only when it contains events</b></p> <p><input type="checkbox"/> Never</p>	<p>Sometimes</p>	
<p>1.7.9 DNP Command Settings preserved through a device restart:</p> <p><i>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.</i></p>	<p><input type="checkbox"/> Assign Class</p> <p><input type="checkbox"/> Analog Deadbands</p> <p><input type="checkbox"/> Data Set Prototypes</p> <p><input type="checkbox"/> Data Set Descriptors</p> <p><input type="checkbox"/> Function Code 31 Activate Configuration</p>		
<p>1.7.10 Supports configuration signature:</p> <p><i>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.</i></p> <p><i>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.</i></p>	<p><input type="checkbox"/> Configuration signature supported</p> <p>If configuration signature is supported, then the following algorithm(s) are available for calculating the signature:</p>	<p>Not Supported</p>	

<p>1.7.11 Requests Application Confirmation:</p> <p><i>Indicate if application confirmation is requested:</i></p> <p>- when responding with events - when sending non-final fragments of multi-fragment responses</p> <p><i>Note: to be compliant both must be selected as "yes".</i></p>	<p>For event responses:</p> <p><input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Configurable</p> <p>For non-final fragments:</p> <p><input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Configurable</p>	<p>Event responses: Yes Non-final fragments: Yes</p>	
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1.8 OUTSTATION UNSOLICITED RESPONSE SUPPORT	Capabilities	Current Value	If configurable list methods
<p>1.8.1 Supports Unsolicited Reporting:</p> <p><i>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.</i></p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Configurable, selectable from On and Off</p>		
<p>1.8.2 Master Data Link Address:</p> <p><i>The destination address of the master device where the unsolicited responses will be sent.</i></p>	<p><input type="checkbox"/> Fixed at <input checked="" type="checkbox"/> Configurable, range <b>1 to 65519</b> <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe</p>	3	
<p>1.8.3 Unsolicited Response Confirmation Timeout:</p> <p><i>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.</i></p>	<p><input checked="" type="checkbox"/> Fixed at <b>10000ms</b> <input type="checkbox"/> Configurable, range to ms <input type="checkbox"/> Configurable, selectable from ms <input type="checkbox"/> Configurable, other, describe <input type="checkbox"/> Variable, explain</p>	10000 ms	
<p>1.8.4 Number of Unsolicited Retries:</p> <p><i>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.</i></p>	<p><input type="checkbox"/> None <input checked="" type="checkbox"/> Fixed at <b>3</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe <input type="checkbox"/> Always infinite, never gives up</p>	3	

1.9 OUTSTATION UNSOLICITED RESPONSE TRIGGER CONDITIONS	Capabilities	Current Value	If configurable list methods
<p>1.9.1 Number of class 1 events:</p>	<p><input type="checkbox"/> Class 1 not used to trigger Unsolicited Responses <input checked="" type="checkbox"/> Fixed at <b>5</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe</p>	5	

1.9.2 Number of class 2 events:	<input type="checkbox"/> Class 2 not used to trigger Unsolicited Responses <input checked="" type="checkbox"/> Fixed at <b>5</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	5	
1.9.3 Number of class 3 events:	<input type="checkbox"/> Class 3 not used to trigger Unsolicited Responses <input checked="" type="checkbox"/> Fixed at <b>5</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	5	
1.9.4 Total number of events from any class:	<input checked="" type="checkbox"/> Total Number of Events not used to trigger Unsolicited Responses <input type="checkbox"/> Fixed at <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe		
1.9.5 Hold time after class 1 event: <i>A configurable value of 0 indicates that responses are not delayed due to this parameter.</i>	<input type="checkbox"/> Class 1 not used to trigger Unsolicited Responses <input checked="" type="checkbox"/> Fixed at <b>5ms</b> <input type="checkbox"/> Configurable, range to ms <input type="checkbox"/> Configurable, selectable from ms <input type="checkbox"/> Configurable, other, describe	5 ms	
1.9.6 Hold time after class 2 event: <i>A configurable value of 0 indicates that responses are not delayed due to this parameter.</i>	<input type="checkbox"/> Class 2 not used to trigger Unsolicited Responses <input checked="" type="checkbox"/> Fixed at <b>5ms</b> <input type="checkbox"/> Configurable, range to ms <input type="checkbox"/> Configurable, selectable from ms <input type="checkbox"/> Configurable, other, describe	5 ms	
1.9.7 Hold time after class 3 event: <i>A configurable value of 0 indicates that responses are not delayed due to this parameter.</i>	<input type="checkbox"/> Class 3 not used to trigger Unsolicited Responses <input checked="" type="checkbox"/> Fixed at <b>5ms</b> <input type="checkbox"/> Configurable, range to ms <input type="checkbox"/> Configurable, selectable from ms <input type="checkbox"/> Configurable, other, describe	5 ms	
1.9.8 Hold time after event assigned to any class: <i>A configurable value of 0 indicates that responses are not delayed due to this parameter.</i>	<input checked="" type="checkbox"/> Class events not used to trigger Unsolicited Responses <input type="checkbox"/> Fixed at ms <input type="checkbox"/> Configurable, range to ms <input type="checkbox"/> Configurable, selectable from ms <input type="checkbox"/> Configurable, other, describe		
1.9.9 Retrigger Hold Time: <i>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).</i>	<input type="checkbox"/> Hold-time timer will be retriggered for each new event detected (may get more changes in next response) <input checked="" type="checkbox"/> 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:	<input checked="" type="checkbox"/> <b>Not supported by the device</b>	Other, <b>Not supported by the device</b>	

1.10 OUTSTATION PERFORMANCE	Capabilities	Current Value	If configurable list methods
1.10.1 Maximum Time Base Drift (milliseconds per minute): <i>If the device is synchronized by DNP, what is the clock drift rate over the full operating temperature range.</i>	<input type="checkbox"/> Fixed at ms <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input checked="" type="checkbox"/> Other, describe <b>not supported in the device</b>	Other,	

1.10.2 When does outstation set IIN1.4:  <i>When does the outstation set the internal indication IIN1.4 NEED_TIME</i>	<input type="checkbox"/> Never <input checked="" type="checkbox"/> Asserted at startup until first Time Synchronization request received <input checked="" type="checkbox"/> Periodically every <b>1800</b> seconds <input type="checkbox"/> Periodically, range to seconds <input type="checkbox"/> Periodically, selectable from seconds <input type="checkbox"/> seconds after last time sync <input checked="" type="checkbox"/> Range <b>1</b> to <b>2147483</b> seconds after last time sync <input type="checkbox"/> Selectable from seconds after last time sync <input type="checkbox"/> When time error may have drifted by ms <input type="checkbox"/> When time error may have drifted by range to ms <input type="checkbox"/> When time error may have drifted by selectable from ms		
1.10.3 Maximum Internal Time Reference Error when set via DNP (ms):  <i>The difference between the time set in DNP Write Time message, and the time actually set in the outstation.</i>	<input checked="" type="checkbox"/> Fixed at <b>0ms</b> <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input type="checkbox"/> Other, describe	0 ms	
1.10.4 Maximum Delay Measurement Error (ms):  <i>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.</i>	<input type="checkbox"/> Fixed at ms <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input checked="" type="checkbox"/> Other, describe <b>Not supported by the device</b>	Other,	
1.10.5 Maximum Response Time (ms):  <i>The amount of time an outstation will take to respond upon receipt of a valid request. This does not include the message transmission time.</i>	<input checked="" type="checkbox"/> Fixed at <b>0ms</b> <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input type="checkbox"/> Other, describe	0 ms	
1.10.6 Maximum time from start-up to IIN 1.4 assertion (ms):	<input type="checkbox"/> Fixed at ms <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input checked="" type="checkbox"/> Other, describe <b>not supported by the device</b>	Other,	
1.10.7 Maximum Event Time-tag error for local Binary and Double Bit I/O (ms):  <i>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.</i>	<input type="checkbox"/> Fixed at ms <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input checked="" type="checkbox"/> Other, describe <b>not supported by the device</b>	Other,	
1.10.8 Maximum Event Time-tag error for local I/O other than Binary and Double Bit data types (ms):	<input type="checkbox"/> Fixed at ms <input type="checkbox"/> Range to ms <input type="checkbox"/> Selectable from ms <input checked="" type="checkbox"/> Other, describe <b>not supported by the device</b>	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
<p>This section indicates which functions are supported by the device when using broadcast addresses.</p> <p>Note that this section shows only entries that may have a meaningful purpose when used with broadcast requests.</p>			
1.13.1 Support for broadcast functionality:	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable	Enabled	
1.13.2 Write functions (FC = 2) supported with broadcast requests:	<p>Write clock (g50v1 with qualifier code 07)</p> <input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	<p>Write clock: Enabled</p> <p>Write last recorded time: Enabled</p> <p>Clear restart: Enabled</p> <p>Write any other: Disabled</p>	<p>Clock: Time:</p> <p>Restart: Other:</p>
1.13.3 Direct operate functions (FC = 5) supported with broadcast requests:	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Enabled	
1.13.4 Direct operate, no acknowledgement functions (FC = 6) supported with broadcast requests:	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Enabled	
1.13.5 Immediate freeze functions (FC = 7) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.6 Immediate freeze, no acknowledgement functions (FC = 8) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.7 Freeze and clear functions (FC = 9) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.8 Freeze and clear, no acknowledgement functions (FC = 10) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.9 Freeze at time functions (FC = 11) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.10 Freeze at time, no acknowledgement functions (FC = 12) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.11 Cold restart functions (FC = 13) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.12 Warm restart functions (FC = 14) supported with broadcast requests:	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Enabled	

1.13.13 Initialize data functions (FC = 15) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.14 Initialize application functions (FC = 16) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.15 Start application functions (FC = 17) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.16 Stop application functions (FC = 18) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Disabled	
1.13.17 Save configuration functions (FC = 19) supported with broadcast requests:	<input type="radio"/> Disabled <input type="radio"/> Enabled <input checked="" type="radio"/> 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) <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)  Enable unsolicited for any other group / variation / qualifier code <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> 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) <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)  Disable unsolicited for any other group / variation / qualifier code <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> 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:	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Enabled	
1.13.21 Record current time functions (FC = 24) supported with broadcast requests:	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Configurable, other (described elsewhere)	Enabled	
1.13.22 Activate configuration functions (FC = 31) supported with broadcast requests:	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled <input type="radio"/> 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.

### 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.

3.5 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:	<input type="checkbox"/> Variation 1 - 32-bit with flag <input type="checkbox"/> Variation 2 - 16-bit with flag <input type="checkbox"/> Variation 3 - 32-bit without flag <input type="checkbox"/> Variation 4 - 16-bit without flag <input checked="" type="checkbox"/> Variation 5 - single-precision floating point with flag <input type="checkbox"/> Variation 6 - double-precision floating point with flag <input type="checkbox"/> Based on point index (add column to table in part 5)		
3.5.2 Event Variation reported when variation 0 requested or in response to Class polls:  <i>Note: The support for analog input events can be determined remotely using protocol object Group 0 Variation 231.</i>	<input type="checkbox"/> Variation 1 - 32-bit without time <input type="checkbox"/> Variation 2 - 16-bit without time <input type="checkbox"/> Variation 3 - 32-bit with time <input type="checkbox"/> Variation 4 - 16-bit with time <input type="checkbox"/> Variation 5 - single-precision floating point w/o time <input type="checkbox"/> Variation 6 - double-precision floating point w/o time <input type="checkbox"/> Variation 7 - single-precision floating point with time <input type="checkbox"/> Variation 8 - double-precision floating point with time <input type="checkbox"/> Based on point index (add column to table in part 5)		
3.5.3 Event reporting mode:  <i>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.</i>	<input type="checkbox"/> A: Only most recent (value at time of event) <input type="checkbox"/> B: Only most recent (value at time of response) <input type="checkbox"/> C: All events <input type="checkbox"/> Based on point index (add column to table in part 5)		
3.5.4 Analog Inputs included in Class 0 response:	<input checked="" type="checkbox"/> Always <input type="checkbox"/> Never <input type="checkbox"/> Only if point is assigned to a class <input type="checkbox"/> Based on point index (add column to table in part 5)	Always	
3.5.5 How Deadbands are set:	<input type="checkbox"/> A. Global Fixed <input checked="" type="checkbox"/> B. Configurable through DNP <input type="checkbox"/> C. Configurable via other means <input type="checkbox"/> D. Other, explain:  <input type="checkbox"/> Based on point index - column in part 5 specifies which of the options applies, B, C, or D	B	

<p>3.5.6 Analog Deadband Algorithm:</p> <p>simple- just compares the difference from the previous reported value</p> <p>integrating- keeps track of the accumulated change</p> <p>other- indicating another algorithm</p>	<p><input checked="" type="checkbox"/> Simple</p> <p><input type="checkbox"/> Integrating</p> <p><input checked="" type="checkbox"/> Other, explain:</p> <p><input type="checkbox"/> Based on point index (add column to table in part 5)</p>	Simple	
<p>3.5.7 Static Frozen Analog Input Variation reported when variation 0 requested or in response to Class polls:</p>	<p><input type="checkbox"/> Variation 1 - 32-bit with flag</p> <p><input type="checkbox"/> Variation 2 - 16-bit with flag</p> <p><input type="checkbox"/> Variation 3 - 32-bit with time-of-freeze</p> <p><input type="checkbox"/> Variation 4 - 16-bit with time-of-freeze</p> <p><input type="checkbox"/> Variation 5 - 32-bit without flag</p> <p><input type="checkbox"/> Variation 6 - 16-bit without flag</p> <p><input type="checkbox"/> Variation 7 - single-precision floating point with flag</p> <p><input type="checkbox"/> Variation 8 - double-precision floating point with flag</p> <p><input type="checkbox"/> Based on point index (add column to table in part 5)</p>		
<p>3.5.8 Frozen Analog Input Event Variation reported when variation 0 requested or in response to Class polls:</p> <p><i>Note: The support for frozen analog input events can be determined remotely using protocol object Group 0 Variation 230.</i></p>	<p><input type="checkbox"/> Variation 1 - 32-bit without time</p> <p><input type="checkbox"/> Variation 2 - 16-bit without time</p> <p><input type="checkbox"/> Variation 3 - 32-bit with time</p> <p><input type="checkbox"/> Variation 4 - 16-bit with time</p> <p><input type="checkbox"/> Variation 5 - single-precision floating point w/o time</p> <p><input type="checkbox"/> Variation 6 - double-precision floating point w/o time</p> <p><input type="checkbox"/> Variation 7 - single-precision floating point with time</p> <p><input type="checkbox"/> Variation 8 - double-precision floating point with time</p> <p><input type="checkbox"/> Based on point index (add column to table in part 5)</p>		
<p>3.5.9 Frozen Analog Inputs included in Class 0 response:</p>	<p><input type="checkbox"/> Always</p> <p><input checked="" type="checkbox"/> Never</p> <p><input type="checkbox"/> Only if point is assigned to a class</p> <p><input type="checkbox"/> Based on point index (add column to table in part 5)</p>	Never	
<p>3.5.10 Frozen Analog Input Event reporting mode:</p> <p><i>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.</i></p>	<p><input type="checkbox"/> Only most recent frozen value</p> <p><input type="checkbox"/> All frozen values</p> <p><input type="checkbox"/> Based on point index (add column to table in part 5)</p>		
<p>3.5.11 Analog Inputs Event Buffer Organization:</p> <p><i>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".</i></p>	<p><input checked="" type="checkbox"/> Fixed at <b>30</b></p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p>	Number of events = 30	
<p>3.5.12 Frozen Analog Inputs Event Buffer Organization:</p> <p><i>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".</i></p>	<p><input checked="" type="checkbox"/> Fixed at <b>0</b></p> <p><input type="checkbox"/> Configurable, range to</p> <p><input type="checkbox"/> Configurable, selectable from</p> <p><input type="checkbox"/> Configurable, other, describe</p>	Number of events = 0	

<b>3.6 ANALOG OUTPUTS AND ANALOG OUTPUT COMMANDS</b> <b>Analog Output Status Group Number: 40</b> <b>Analog Outputs Group Number: 41</b> <b>Analog Output Events Group Number: 42</b> <b>Analog Output Command Events Group Number: 43</b>			
	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:	<input type="checkbox"/> Variation 1 - 32-bit with flag <input type="checkbox"/> Variation 2 - 16-bit with flag <input checked="" type="checkbox"/> Variation 3 - single-precision floating point with flag <input type="checkbox"/> Variation 4 - double-precision floating point with flag <input type="checkbox"/> Based on point index (add column to table in part 5)	Three	
3.6.2 Analog Output Status included in Class 0 response:	<input checked="" type="checkbox"/> Always <input type="checkbox"/> Never <input type="checkbox"/> Only if point is assigned to a class <input type="checkbox"/> Based on point index (add column to table in part 5)	Always	
3.6.3 Reports Output Command Event Objects:	<input checked="" type="checkbox"/> Never <input type="checkbox"/> Only upon a successful Control <input type="checkbox"/> Upon all control attempts	Never	
3.6.4 Event Variation reported when variation 0 requested or in response to Class polls:  <i>Note: The support for analog output events can be determined remotely using protocol object Group 0 Variation 219.</i>	<input checked="" type="checkbox"/> Variation 1 - 32-bit without time <input type="checkbox"/> Variation 2 - 16-bit without time <input type="checkbox"/> Variation 3 - 32-bit with time <input type="checkbox"/> Variation 4 - 16-bit with time <input type="checkbox"/> Variation 5 - single-precision floating point w/o time <input type="checkbox"/> Variation 6 - double-precision floating point w/o time <input type="checkbox"/> Variation 7 - single-precision floating point with time <input type="checkbox"/> Variation 8 - double-precision floating point with time <input type="checkbox"/> 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:	<input type="checkbox"/> Variation 1 - 32-bit without time <input type="checkbox"/> Variation 2 - 16-bit without time <input type="checkbox"/> Variation 3 - 32-bit with time <input type="checkbox"/> Variation 4 - 16-bit with time <input type="checkbox"/> Variation 5 - single-precision floating point w/o time <input type="checkbox"/> Variation 6 - double-precision floating point w/o time <input type="checkbox"/> Variation 7 - single-precision floating point with time <input type="checkbox"/> Variation 8 - double-precision floating point with time <input type="checkbox"/> Based on point index (add column to table in part 5)		
3.6.6 Event reporting mode:  <i>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.</i>	<input type="checkbox"/> Only most recent <input type="checkbox"/> All events		

3.6.7 Command Event reporting mode:  <i>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.</i>	<input type="checkbox"/> Only most recent <input type="checkbox"/> All events		
3.6.8 Maximum Time between Select and Operate:	<input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Fixed at 5seconds <input type="checkbox"/> Configurable, range to seconds <input type="checkbox"/> Configurable, selectable from seconds <input type="checkbox"/> Configurable, other, describe <input type="checkbox"/> Variable, explain <input type="checkbox"/> Based on point index (add column to table in part 5)	5 seconds	
3.6.9 Analog Outputs Event Buffer Organization:  <i>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".</i>	<input type="checkbox"/> Fixed at <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	Number of events = 100	
3.6.10 Analog Output Commands Event Buffer Organization:  <i>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".</i>	<input checked="" type="checkbox"/> Fixed at <b>100</b> <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe	Number of events = 100	

<b>3.7 FILE CONTROL</b>			
<b>Object Number: 70</b>			
	<b>Capabilities</b>	<b>Current Value</b>	<b>If configurable list methods</b>
3.7.1 File Transfer Supported:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (set 3.7.6 to "Fixed at 0" and do not complete other entries in section 3.7)	No	
3.7.2 File Authentication:  <i>Indicates whether a valid authentication key must be obtained prior to open and delete requests.</i>	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes, explain  <input type="checkbox"/> Never		
3.7.3 File Append Mode:  <i>Indicates if a file can be opened and appended to versus just overwritten.</i>	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes, explain  <input type="checkbox"/> Never		
3.7.4 Permissions Support:  <i>Indicates the device is capable of using the indicated permissions.</i>	<input type="checkbox"/> Owner Read Allowed: 0x0100 <input type="checkbox"/> Owner Write Allowed: 0x0080 <input type="checkbox"/> Owner Execute Allowed: 0x0040 <input type="checkbox"/> Group Read Allowed: 0x0020 <input type="checkbox"/> Group Write Allowed: 0x0010 <input type="checkbox"/> Group Execute Allowed: 0x0008 <input type="checkbox"/> World Read Allowed: 0x0004 <input type="checkbox"/> World Write Allowed: 0x0002 <input type="checkbox"/> World Execute Allowed: 0x0001		
3.7.5 Multiple Blocks in a Fragment:  <i>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.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No		

3.7.6 Max number of Files Open at one time:	<input type="checkbox"/> Fixed at <input type="checkbox"/> Configurable, range to <input type="checkbox"/> Configurable, selectable from <input type="checkbox"/> Configurable, other, describe		
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<b>3.10 DATA SET PROTOTYPE</b>			
Object Number: 85			
Variation Number: 1			
	<b>Capabilities</b>	<b>Current Value</b>	<b>If configurable list methods</b>

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.

<b>3.11 DATA SET DESCRIPTOR CONTENTS AND CHARACTERISTICS</b>			
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( <i>read</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> )
0	198	Device Attributes - Configuration build date	1( <i>read</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> )
0	208	Device Attributes - User-assigned system name	1( <i>read</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> )
0	220	Device Attributes - Maximum analog output index	1( <i>read</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> )
0	221	Device Attributes - Number of analog outputs	1( <i>read</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> )
0	232	Device Attributes - Maximum analog input index	1( <i>read</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00 ( <i>start-stop</i> ), 01 ( <i>start-stop</i> )

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( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> )
30	0	Analog Input - any variation	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )		
30	1	Analog Input - 32-bit with flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> )
30	2	Analog Input - 16-bit with flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> )
30	3	Analog Input - 32-bit without flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> )
30	4	Analog Input - 16-bit without flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> )
30	5	Analog Input - single-precision, floating-point with flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> )
40	0	Analog Output Status - any variation	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )		
40	1	Analog Output Status - 32-bit with flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> ), 17, 28 ( <i>index</i> )
40	2	Analog Output Status - 16-bit with flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> ), 17, 28 ( <i>index</i> )
40	3	Analog Output Status - single-precision, floating-point with flag	1( <i>read</i> )	00, 01 ( <i>start-stop</i> ), 06 ( <i>no range, or all</i> )	129 ( <i>Response</i> )	00, 01 ( <i>start-stop</i> ), 17, 28 ( <i>index</i> )
41	1	Analog Output Block - 32-bit	3( <i>select</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	1	Analog Output Block - 32-bit	4( <i>operate</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	1	Analog Output Block - 32-bit	5( <i>direct op.</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	1	Analog Output Block - 32-bit	6( <i>direct op, no ack</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	2	Analog Output Block - 16-bit	3( <i>select</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	2	Analog Output Block - 16-bit	4( <i>operate</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	2	Analog Output Block - 16-bit	5( <i>direct op.</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	2	Analog Output Block - 16-bit	6( <i>direct op, no ack</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	3	Analog Output Block - single-precision, floating-point	3( <i>select</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	3	Analog Output Block - single-precision, floating-point	4( <i>operate</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
41	3	Analog Output Block - single-precision, floating-point	5( <i>direct op.</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request

41	3	Analog Output Block - single-precision, floating-point	6( <i>direct op, no ack</i> )	17, 28 ( <i>index</i> )	129 ( <i>Response</i> )	echo of request
50	1	Time and Date - absolute time	1( <i>read</i> )	07 ( <i>limited qty = 1</i> )	129 ( <i>Response</i> )	07 ( <i>limited qty = 1</i> )
50	1	Time and Date - absolute time	2( <i>write</i> )	07 ( <i>limited qty = 1</i> )		
50	3	Time and Date - absolute time at last recorded time	2( <i>write</i> )	07 ( <i>limited qty = 1</i> )		
51	1	Time and Date CTO - absolute time, synchronized			129 ( <i>Response</i> )	07 ( <i>limited qty = 1</i> )
51	1	Time and Date CTO - absolute time, synchronized			130 ( <i>Unsol. Resp.</i> )	07 ( <i>limited qty = 1</i> )
51	2	Time and Date CTO - absolute time, un-synchronized			129 ( <i>Response</i> )	07 ( <i>limited qty = 1</i> )
51	2	Time and Date CTO - absolute time, un-synchronized			130 ( <i>Unsol. Resp.</i> )	07 ( <i>limited qty = 1</i> )
52	1	Time Delay - coarse			129 ( <i>Response</i> )	07 ( <i>limited qty = 1</i> )
52	2	Time Delay - fine			129 ( <i>Response</i> )	07 ( <i>limited qty = 1</i> )
60	1	Class Objects - class 0 data	1( <i>read</i> )	06 ( <i>no range, or all</i> )		

### 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.

<p><b>5.1 Definition of Binary Input Point List:</b></p> <p><i>List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.</i></p> <p><i>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.</i></p>	<p><input checked="" type="checkbox"/> Fixed, list shown in table below</p> <p><input type="checkbox"/> Configurable (current list may be shown in table below)</p> <p><input type="checkbox"/> Other, explain:</p>
--	---

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

<p><b>5.2 Definition of Double-bit Input Point List:</b></p> <p><i>List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.</i></p> <p><i>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.</i></p>	<p><input type="checkbox"/> Fixed, list shown in table below</p> <p><input type="checkbox"/> Configurable (current list may be shown in table below)</p> <p><input type="checkbox"/> Other, explain:</p>
--	--

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:

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Transmitted Value		Scaling		Units	Resolution	Description
			Min int / ft	Max int / ft	Multiplier	Offset			
0	Main Tank H2 Value	none	/	/	1	0	PPM		H2 Value if a sensor's name is "Main Tank"
2	Main Tank H2 Daily ROC	none	/	/	1	0	ppm/day		H2 Daily ROC if a sensor's name is "Main Tank"
3	Input 1 Oil Temp	none	/	/	1	0	Celcius		Oil Temp if a sensor's name is "Input 1"

4	Main Tank %RH	none	/	/	1	0	%		%RH level if a sensor's name is "Main Tank"
6	Main Tank Oil Temp	none	/	/	1	0	Celcius		Oil Temp if a sensor's name is "Main Tank"
8	Main Tank H2O PPM Level	none	/	/	1	0	PPM		H2O PPM level if a sensor's name is "Main Tank"
14	AIN1	none	/	/	1	0			Value equivalent to analog input 1 sensor value
15	AIN2	none	/	/	1	0			Value equivalent to analog input 2 sensor value
19	Top Oil Oil Temp	none	/	/	1	0	Celcius		Oil Temp if a sensor's name is "Top Oil"
22	LTC Oil Temp	none	/	/	1	0	Celcius		Oil Temp if a sensor's name is "LTC"
25	Bottom Oil Oil Temp	none	/	/	1	0	Celcius		Oil Temp if a sensor's name is "BottomOil"
287	Input 1 H2 Value	none	/	/	1	0	PPM		H2 Value if a sensor's name is "Input 1"
288	Input 1 %RH Level	none	/	/	1	0	%		%RH Level if a sensor's name is "Input 1"
289	Input 1 Oil Temp	none	/	/	1	0	Celcius		Oil Temp if a sensor's name is "Input 1"

**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.

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

Analog Output points list:

Point Index	Name	Supported Control Operations			Transmitted Value		Scaling		Units	Resolution	Event Class Assigned (1, 2, 3 or none)		Description
		Select/Operate	Direct Operate	Direct Operate - No Ack	Min	Max	Min	Max			Change	Command	
192	DNP3 Network Source Address												DNP3 Network Source Address

**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:

File Name	Event Class Assigned (1, 2, 3 or none)	Authentication Required for:			Description
		Read	Write	Delete	

**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

**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 -----