

DNP3 SPECIFICATION

DEVICE PROFILE

Version 2016

November 2016

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REVISION HISTORY

(Applies to this entire document)

Version	Date	Reason for Changes
2.00	4-Jan-2007	Adapted from original DNP3 Subset Definitions and completely rewritten.
2.01	3-Feb-2007	Changed DNP User Group to DNP Users Group and footer at bottom of page. Added serial port name. Formatting changes.
2.02	20-Feb-2007	Changed the description of Device Profile table entry 1.1.12
2.03	30-May-2007	Updated 1.1.8 and 1.7.8 to indicate support for Function Code 31, Activate Configuration.
2.04	14-Nov-2008	Removed object 0 from 1.1.8, and added secure authentication to the list. Added new section 1.7.8 (re-numbering old 1.7.8 to 1.7.9) to show details of OS requesting CON on last fragment of a multi-fragment response. Added new sections 1.6.4 and 1.6.5 to show the action of the Master with control requests to off-line and off-scan devices. Removed the reference to retry of control messages from 1.6.2 Added new sections 1.6.6 and 1.6.7 to describe the Master behaviour with respect to retries of control select messages. Added new sections 1.6.8 and 1.6.9 for details of the master time accuracy of issuing freeze requests. Added section 1.6.10 for details of Master freeze time affected by polling or control requests. Added new section 1.6.11 for details of how the Master schedules different requests. Added new section 1.12 to show secure authentication parameters.
2.05	8-Dec-2008	Added explanation of the use of the capabilities and current value columns to section 1. Added details of identifying secure authentication version number to section 1.12.1 Split section 1.12.4 into two sections to specify if devices “issue” aggressive mode requests and if devices “accept” aggressive mode requests. Added FC 129 and FC130 to the table in 1.12.15
2.06	4-May-2009	Added capabilities cell to 1.3.12 Added capabilities cells to 1.10.1 and 1.10.3 to 1.10.8 Changed the reference to 1.10.1 in section 1 to 1.6.8 Changed section 3.5.3 as agreed at the Washington TC Meeting Added references throughout the document to parameters that map to Device Attributes (Object Group 0). Changed 1.1.8 topic “Self Address Reservation” to “Self Address Support”. Added clarification note to 1.7.2 and a cross-reference to 1.10.2 Extended the capabilities of 1.7.2 to include a range of values. Changed the presentation of Device Profile section 1.2.4 Added Level 4 for Masters to section 1.1.7

2.07	23-Feb-2010	Added the option of level 4 to section 1.1.7 Added details of device behavior with frozen analog and frozen counter objects to section 3 (see 3.4.4, 3.4.8 and new sections 3.5.7 to 3.5.10) Created new part (5) to show details of Outstation Database Points, moving the relevant sections from part 3 to this new part. Added new parts to 1.2.6
2012 (2.08)	July-2012	Minor corrections to descriptions in sections 1.5.1, 1.5.3, 1.5.5, 1.5.6, 1.5.7, 1.8.4, 1.10.2, 3.1.3, 3.1.4, 3.2.3, 3.2.4, 3.3.3, 3.4.3, 3.4.7, 3.5.4, 3.5.9, 3.6.2, 3.7, 3.8.2 and 5.11.3. Added new section 1.13 describing broadcast functionality Section 2 (Mapping between DNP3 and IEC 61850) re-worked. Updates to section 1.12 to reflect Secure Authentication V5 changes Changes to section 3 to descriptions of variation 0 requests Added notes to section 3 capabilities to leave blank if not supported
2013 (2.09)	Nov-2013	Added section 1.1.14 (Conformance Testing Details). Added section 1.5.9, to define control status codes supported by the device. Added details to 1.7.6 (Event Buffer Organization), which also affect details in part 3. Added section 1.7.10, to define the signature algorithm associated with the new object Group 0, variations 200 and 201. Added section 1.7.11 (Requests Application Confirmation). Added elements to the end of section 1.12 to meet the requirements of the Secure Authentication test procedures. Revised text in section 3 to align with IEEE 1815-2012.
2014 (2.10)	Nov-2014	Removed a note from 1.13 and added sections 3.4.13 and 3.8.4. Added “group” column to table in section 5.8. Updates to the XML suite as detailed in TB2014-005 with minor corrections to the example XML device profile file.
2016 (2.11)	April-2016	Added a mandatory new element to describe the DP type (capabilities, configuration or both) Removed SA supported from 1.12.1 (it is already in 1.1.8) Removed bracketed text from 1.3.2 Added Timer Disabled to 1.3.10 Revised the description of the last element of 1.3.14 Added new element to 1.5.2 Added new element to 1.5.5, 1.5.6 and 1.5.7 Amended text in 1.6.3 Removed sections 1.6.8 to 1.6.11 Added 1.7.12 (support for clock management) Changed 1.8.1 support for unsolicited mode to yes/no options rather than a single element of “supported” Changed word “infinite” to “unlimited” in section 1.8.4 Added new element to 1.9.5, 1.9.6 and 1.9.7 Added sections 1.11.5 to 1.11.8 Changed max number of users in 1.12.2 to allow a “range” Re-worked 1.12.8 as SAv2 only and added 1.12.21 for SAv5 Added 1.12.19 (Secure Authentication enabled) Added 1.12.20 (length of challenge data) Re-worked 3.7.1 as File Transfer support is already in section 1.1.8 Made “Point Index” an optional element in the data points list in section 5 (all other elements are optional) Changed xslt visualization to show headings of all sections, even when the section is not present in the xml file Corrected analog and counter points lists in section 5 Minor corrections to the schema file:

		• Use of g110/g114 made consistent • Removed redundant code from 3.8 (octet string data points) • Added missing control status codes • Use of N/A made consistent

INTRODUCTION

Vendors must produce a **Device Profile Document** for each device they manufacture implementing DNP3. The Device Profile Document clearly identifies any deviations from the implementation levels described in this document and any other issues that may arise when determining the device's compatibility with another device.

The instructions for completing Device Profile Forms and information are given in Clause 14 of the specification - Interoperability.

Note: there are empty "placeholder" sections in the Device Profile document. These are intentionally blank, being used so that section numbering does not change when entries are deleted from the document. Likewise, to ensure existing section numbers do not change, all new entries are added at the end of the relevant section.

The remainder of this page left blank intentionally.

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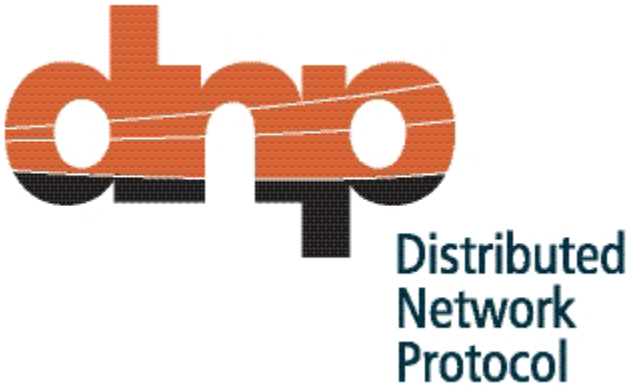
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The following pages show the Device Profile.



DNP3 Device Profile

Based on DNP XML Schema version 2.11.00

Document Name: SIMATIC RTU3041C Complete DNP3 Device Profile

Document Description: SIMATIC RTU3041C Complete DNP3 Device Profile

Showing both the Device's Capabilities and its Current Configuration

Revision History

Date	Time	Version	Reason for change	Edited by
2019-02-14		0.1	First draft	PD PA CI RD4
2019-11-19		4.0	First release for RTU3041C V4.0	DI PA CI RD4
2022-04-13		5.0	Update for RTU3041C V5.0	DI PA DCP RD4
2022-11-23		5.1	Update for RTU3041C V5.1	DI PA DCP RD4

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. 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 should be 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 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 methods 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 ("N/A" may be entered for parameters that are Not Applicable).

If this document is used to show the current value 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.*	O Master ● Outstation	O 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.*		SIEMENS AG	
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.*		SIMATIC RTU3041C 6NH3 112-4BB00-0XX0	
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.*		4	
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.*		V5.1.12	
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	

1.1 DEVICE IDENTIFICATION	Capabilities	Current Value	If configurable, list methods
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.*	Masters only Requests Responses ☐ ☐ None ☐ ☐ Level 1 ☐ ☐ Level 2 ☐ ☐ Level 3 ☐ ☐ Level 4 Outstations Only Requests and Responses ☐ None ☒ Level 1 ☒ Level 2 ☒ Level 3 ☐ Level 4	Level 2	Configurable via integrated webserver --- *Note: SIMATIC RTU has been conformance tested and certified for DNP3 Level 1 and 2* ---
1.1.8 Supported Function Blocks:	☐ Self-Address Support ☐ Data Sets ☐ File Transfer ☐ Virtual Terminals ☐ Mapping to IEC 61850 Object Models defined in a DNP3 XML file ☐ Function code 31, activate configuration ☐ Authentication (if checked then see 1.12)		
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 DEVICE IDENTIFICATION	Capabilities	Current Value	If configurable, list methods
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 _____ ☐ 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: via integrated webserver		Configuration is being applied via integrated webserver --- Classes can be assigned via DNP3 assign class ---
1.1.11 DNP3 XML files available On-Line: *XML configuration files 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		
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		
1.1.13 Connections Supported:	☐ Serial (complete section 1.2) ☒ IP Networking (complete section 1.3) ☐ Other, explain _____		

1.1 DEVICE IDENTIFICATION	Capabilities	Current Value	If configurable, list methods
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 2.7. Same FW Version as independently tested RTU3000C Devices ☐ Independently tested, version 2.7 Test organization name DNV GL		

1.2 SERIAL CONNECTIONS	Capabilities	Current Value	If configurable, list methods
1.2.1 Port Name: *Name used to reference the communication port defined in this section.*			
1.2.2 Serial Connection Parameters:	☐ Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bit, No Parity ☐ Other, explain _____		
1.2.3 Baud Rate:	☐ Fixed at _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		

1.2 SERIAL CONNECTIONS	Capabilities	Current Value	If configurable, list methods
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 ☐ **Other, explain** _____		

1.2 SERIAL CONNECTIONS	Capabilities	Current Value	If configurable, list methods
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 ☐ Configurable, range _____ to _____ seconds ☐ Configurable, selectable from ___,___,___ seconds ☐ Configurable, other, describe_____	Not Supported	
1.2.6 Supports DNP3 Collision Avoidance: *Indicates whether a device 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 Minimum Back-off time: ☐ Fixed at_____ ms ☐ Configurable, range _____ to _____ ms ☐ Configurable, selectable from ___,___,___ ms ☐ Configurable, other, describe_____ Maximum Random Back-off time component: ☐ Fixed at_____ ms ☐ Configurable, range _____ to _____ ms ☐ Configurable, selectable from ___,___,___ ms ☐ Configurable, other, describe_____ ☐ 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. extension 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 to not 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 SERIAL CONNECTIONS	Capabilities	Current Value	If configurable, list methods
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) ☐ Maximum _____ bit times ☐ Maximum _____ ms	None	

1.3 IP NETWORKING	Capabilities	Current Value	If configurable, list methods
1.3.1 Port Name: *Name used to reference the communication port defined in this section.*		LAN interface	Configurable via integrated webserver ----------
1.3.2 Type of End Point:	☐ TCP Initiating ☒ TCP Listening ☐ TCP Dual ☒ UDP Datagram	TCP Listening UDP Datagram	Configurable via integrated webserver ----------
1.3.3 IP Address of this Device:		*.*.*.*	Configurable via integrated webserver ----------
1.3.4 Subnet Mask:		*.*.*.*	Configurable via integrated webserver ----------
1.3.5 Gateway IP Address:		*.*.*.*	Configurable via integrated webserver ----------
1.3.6 Accepts TCP Connections or UDP Datagrams from:	☐ Allows all (show as *.*.*.* in 1.3.7) ☐ Limits based on an IP address ☒ Limits based on list of IP addresses ☐ Limits based on a wildcard IP address ☐ Limits based on list of wildcard IP addresses ☐ Other, explain_____	List of IP addresses	Configurable via integrated webserver ----------
1.3.7 IP Address(es) from which TCP Connections or UDP Datagrams are accepted:		*.*.*.*	Configurable via integrated webserver ----------

1.3 IP NETWORKING	Capabilities	Current Value	If configurable, list methods
1.3.8 TCP Listen Port Number: *If Outstation or dual end point Master, port number on which to listen for incoming TCP connect requests. Required to be configurable for Masters and recommended to be configurable for Outstations.*	☐ Not Applicable (Master w/o dual end point) ☐ Fixed at 20,000 ☒ Configurable, range 1024 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	20000	Configurable via integrated webserver ----------
1.3.9 TCP Listen Port Number of remote device: *If Master or dual end point Outstation, port number on remote device with which to initiate connection. Required to be configurable for Masters and recommended to be configurable for Outstations.*	☒ Not Applicable (Outstation w/o dual end point) ☐ Fixed at 20,000 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
1.3.10 TCP Keep-alive timer: *The time period for the keep-alive timer on active TCP connections.*	☐ Timer disabled ☒ Fixed at 30000 ms ☐ Configurable, range _____ to _____ms ☐ Configurable, selectable from ____,____,____ms ☐ Configurable, other, describe_____	30000 ms	
1.3.11 Local UDP port: *Local UDP port for sending and/or receiving UDP datagrams. Master may let system choose an available port. Outstation must use one that is known by the master.*	☐ Fixed at 20,000 ☒ Configurable, range 1024 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Let system choose (Masters only)	20000	Configurable via integrated webserver ----------
1.3.12 Destination UDP port for DNP3 Requests (Masters only):	☐ Fixed at 20,000 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
1.3.13 Destination UDP port for initial unsolicited null responses (UDP only Outstations): *The destination UDP port for sending initial unsolicited Null response.*	☐ None ☐ Fixed at 20,000 ☒ Configurable, range 1024 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		Configurable via integrated webserver ----------

1.3 IP NETWORKING	Capabilities	Current Value	If configurable, list methods
1.3.14 Destination UDP port for responses (UDP only Outstations): *The destination UDP port for sending all responses other than initial unsolicited Null Response.*	☐ None ☐ Fixed at 20,000 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☒ Use local port number (as specified in 1.3.11)	Source port number	
1.3.15 Multiple outstation connections (Masters only): *Indicates whether multiple outstation connections are supported.*	☐ Supports multiple outstations (Masters only)		
1.3.16 Multiple master connections (Outstations Only): *Indicates whether multiple master connections are supported and the method that can be used to establish connections.*	☐ Supports multiple masters (Outstations only) If supported, the following methods may be used: ☐ Method 1 (based on IP address) - required ☐ Method 2 (based on IP port number) - recommended ☐ Method 3 (browsing for static data) - optional	Not supported	
1.3.17 Time synchronization support:	☒ DNP3 LAN procedure (function code 24) ☒ DNP3 Write Time (not recommended over LAN) ☐ Other, explain _____ ☐ Not Supported	LAN procedure Write time	Configurable via integrated webserver ----------

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 0 to 65519 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	1	Configurable via integrated webserver ----------
1.4.2 DNP3 Source Address Validation: *Indicates whether the device will filter out messages 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_____	Always – single address	
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 0 to 65519 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		Configurable via integrated webserver ----------
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 disable the feature if supported.*	☐ Yes (only allowed if configurable) ☒ No	No	
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 ☒ Sometimes, explain for multi frame responses ☒ Always	Never	Configurable via integrated webserver ----------
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 ☒ Configurable, range 1 to 65535 s ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____	2 s	Configurable via integrated webserver ----------

1.4 LINK LAYER	Capabilities	Current Value	If configurable, list methods
1.4.7 Maximum Data Link Retries: *The number of times the device will retransmit a frame that requests Link Layer confirmation.*	☐ Never Retries ☐ Fixed at _____ ☒ Configurable, range 1 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	3	Configurable via integrated webserver ----------
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 length field 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	Configurable via debug interface (not suitable for customer) ----------
1.5.2 Maximum number of octets Transmitted in an Application Layer Fragment containing File Transfer:	☐ Same current value as 1.5.1 ☐ Fixed at _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
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 10000 ms ☐ Configurable, range _____ to _____ms ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____	10000 ms	

1.5 APPLICATION LAYER	Capabilities	Current Value	If configurable, list methods
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 _____ ☐ Same current value as 1.5.3		
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 _____ ☐ Same current value as 1.5.3		
1.5.7 Maximum number of objects allowed in a single control request for Data Sets (groups 85, 86, 87):	☒ Fixed at 0 (enter 0 if controls are not supported for Data Sets) ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Variable, explain _____ ☐ Same current value as 1.5.3		
1.5.8 Supports mixing object groups (AOBs, CROBs and Data Sets) in the same control request:	☐ Not applicable – controls are not supported ☒ Yes ☐ No		

1.5 APPLICATION LAYER	Capabilities	Current Value	If configurable, list methods
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		

1.6 FILL OUT THE FOLLOWING ITEMS FOR MASTERS ONLY	Capabilities	Current Value	If configurable, list methods
1.6.1 Timeout waiting for Complete Application Layer Response(ms): *Timeout on Master if all fragments of a response message are not received in the specified time.*	☐ None ☐ Fixed at_____ ms ☐ Configurable, range _____ to _____ms ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____		
1.6.2 Maximum Application Layer Retries for Request Messages: *The number of times a Master will retransmit an application layer request message if a response is not received. This parameter must never cause a Master to retransmit time sync messages.*	☐ None ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Variable, explain _____		
1.6.3 Timeout waiting for First or Next Fragment of an Application Layer Response: *Timeout between a request and the first fragment of a response, or between subsequent fragments of the same response, or between an Application Layer Confirmation and a subsequent fragment.*	☐ None ☐ Fixed at_____ ms ☐ Configurable, range _____ to _____ms ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____		
1.6.4 Issuing controls to off-line devices: *Indicates if the Master issues control requests to devices that are thought to be off-line (i.e. the Master has not seen responses to previous Master requests).*	☐ Not applicable – controls are not supported ☐ Yes ☐ No		
1.6.5 Issuing controls to off-scan devices: *Indicates if the Master issues control requests to devices that are currently off-scan (i.e. the Master has been configured not to issue poll requests to the device).*	☐ Not applicable – controls are not supported ☐ Yes ☐ No		
1.6.6 Maximum Application Layer Retries for Control Select Messages (same sequence number): *Indicates the number of times a Master will retransmit an application layer control select request message if a response is not received – using the same message sequence number.*	☐ None (required) ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Variable, explain _____		

1.6 FILL OUT THE FOLLOWING ITEMS FOR MASTERS ONLY	Capabilities	Current Value	If configurable, list methods
1.6.7 Maximum Application Layer Retries for Control Select Messages (new sequence number): *Indicates the number of times a Master will retransmit an application layer control select request message if a response is not received – using a new message sequence number.*	☐ None (required) ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Variable, explain _____		
1.6.8 Item deleted			
1.6.9 Item deleted			
1.6.10 Item deleted			
1.6.11 Item deleted			

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 _____	10000 ms	
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 0 seconds after IIN1.4 is set ☐ Periodically, fixed at _____ seconds ☒ Periodically, between 600s and 604800 seconds	Periodically, every 600 seconds. Note: Time period is configurable via base communication cycle	Configurable via integrated webserver ----------
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 Status LED is red	Used as described	
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 (group 70 var 6) using a status code value of file handle expired (0x02).*	☒ Not applicable, files not supported ☐ Fixed at_____ ms ☐ Configurable, range _____ to _____ms ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____	Not applicable	
1.7.5 Event Buffer Overflow Behavior:	☐ Discard the oldest event ☒ Discard the newest event ☐ Other, explain _____	Discard the newest event	

1.7 FILL OUT THE FOLLOWING ITEMS FOR OUTSTATIONS ONLY	Capabilities	Current Value	If configurable, list methods
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: Total 10907 events Class 2: ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☒ Configurable, other, describe: Total 10907 events Class 3: ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☒ Configurable, other, describe: Total 10907 events ☐ Single Buffer ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Other, describe _____	Three class specific buffer	Total event buffer size is configurable via debug interface (not suitable for customer) ----------
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	Never	

1.7 FILL OUT THE FOLLOWING ITEMS FOR OUTSTATIONS ONLY	Capabilities	Current Value	If configurable, list methods
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: Algorithm Name: _____	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 O No O Configurable For non-final fragments: ● Yes O No O Configurable		
1.7.12 Supports Clock Management *Indicates whether the Outstation supports the clock management functionality:* *- supports timestamped object variations required for its subset level with a time accuracy that is consistent with section 1.10 of this Device Profile* *- if the outstation asserts IIN1.4 [NEED_TIME], it shall support DNP3 time synchronization functionality*	☒ Yes ☐ No	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	On	Configurable via integrated webserver ----------
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 0 to 65519 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	0	Configurable via integrated webserver ----------
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 ☒ Configurable, range 1 to 65535s ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____	10s	Configurable via integrated webserver ----------
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. To be compliant, one of the choices must provide for an indefinite (and potentially infinite) number of transmissions.*	☐ None ☐ Fixed at _____ ☒ Configurable, range 0 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Unlimited	3	Configurable via integrated webserver ----------

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 _____ ☒ Configurable, range 0 to 255 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	1, 0 means disabled	Configurable via integrated webserver ----------
1.9.2 Number of class 2 events:	☐ Class 2 not used to trigger Unsolicited Responses ☐ Fixed at _____ ☒ Configurable, range 0 to 255 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	1, 0 means disabled	Configurable via integrated webserver ----------
1.9.3 Number of class 3 events:	☐ Class 3 not used to trigger Unsolicited Responses ☐ Fixed at _____ ☒ Configurable, range 0 to 255 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	1, 0 means disabled	Configurable via integrated webserver ----------
1.9.4 Total number 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 value of 0 indicates that responses are not delayed due to this parameter.*	☐ Class 1 not used to trigger Unsolicited Responses ☐ Fixed at _____ ms ☒ Configurable, range 0 to 65535000 ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____ ☐ Use value specified in section 1.9.8	1000 ms, 0 means disabled	Configurable via integrated webserver ----------
1.9.6 Hold time after class 2 event: *A value of 0 indicates that responses are not delayed due to this parameter.*	☐ Class 2 not used to trigger Unsolicited Responses ☐ Fixed at _____ ms ☒ Configurable, range 0 to 65535000 ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____ ☐ Same current value as 1.9.8	1000 ms, 0 means disabled	Configurable via integrated webserver ----------

1.9 OUTSTATION UNSOLICITED RESPONSE TRIGGER CONDITIONS	Capabilities	Current Value	If configurable, list methods
1.9.7 Hold time after class 3 event: *A value of 0 indicates that responses are not delayed due to this parameter.*	☐ Class 3 not used to trigger Unsolicited Responses ☐ Fixed at _____ ms ☒ Configurable, range 0 to 65535000 ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____ ☐ Same current value as 1.9.8	1000 ms, 0 means disabled	Configurable via integrated webserver ----------
1.9.8 Hold time after event assigned to any class: *A configured 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_____	0 ms	
1.9.9 Retrigger Hold Timer: *The hold-time timer may be retriggered for each new event detected (increased possibly 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:	_____		

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 1 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	1 ms	
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____ seconds ☐ Periodically, range ____to____ seconds ☐ Periodically, selectable from ____,____,___ seconds ☐ ____ seconds after last time sync ☐ Range ____to____ 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	At startup	
1.10.3 Maximum Internal Time Reference Error when set via DNP (ms): *The difference between the time set in a DNP Write Time message, and the time actually set in the Outstation.*	☒ Fixed at 100 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	100 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 100 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	100 ms	
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 1000 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	1000 ms	

1.10 OUTSTATION PERFORMANCE	Capabilities	Current Value	If configurable, list methods
1.10.6 Maximum time from start-up to IIN 1.4 assertion (ms):	☒ Fixed at 3000 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	3000 ms	
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 200 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	200 ms	
1.10.8 Maximum Event Time-tag error for local I/O other than Binary and Double-bit data types (ms):	☒ Fixed at 200 ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	200 ms	

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):	Not supported	
1.11.2 User-assigned ID Code/number string (same as g0v246):	Supported (MAC-Address as string	
1.11.3 User-assigned name string for the outstation (same as g0v247):	Supported (Station-Name)	
1.11.4 Device Serial Number string (same as g0v248):	supported	
1.11.5 User-assigned secondary operator name (same as g0v206):	Not supported	
1.11.6 User-assigned primary operator name (same as g0v207):	Not supported	
1.11.7 User-assigned system name (same as g0v208):	Not supported	
1.11.8 User-assigned owner name (same as g0v244):	Not supported	

1.12 SECURITY PARAMETERS	Capabilities	Current Value	If configurable, list methods
1.12.1 DNP3 device support for secure authentication: *If the device does not support secure authentication then ignore the rest of this section.* *If the device does support secure authentication then specify the version(s) that are supported in the device. The version number is an integer value defined in the DNP3 Specification. The Secure Authentication procedure defined in IEEE 1815-2010 is version 2. The Secure Authentication procedure defined in IEEE 1815-2012 is version 5.*	Supported version(s): ☒ Fixed at Version 5 ☐ Configurable, selectable from ____,____,____	Version 5	
1.12.2 Maximum number of users: *The secure authentication algorithm provides support for multiple users. The device must support details for each user (update keys, session keys, etc). A user is identified by a 16-bit user number, allowing a maximum of 65535 users. Devices are not mandated to support this number of potential users. Indicate here the actual limit to the number of simultaneous users that can be supported.*	☒ Fixed at 1 ☐ Configurable, range _____ to _____	1	
1.12.3 Security message response timeout: *Authentication of critical messages may involve additional message exchanges (challenges and responses) which can require an extension to the normal DNP3 message response timeout. This timeout specifies an additional time to be used when the extra security transactions are involved. The maximum allowable timeout extension should not exceed 120 seconds.*	☐ Fixed at _____ ms ☒ Configurable, range 1 to 65535 secs ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____	5 secs	Configurable via integrated webserver ----------
1.12.4 Aggressive mode of operation (receive): *DNP3 devices may (optionally) accept "aggressive" mode requests, where challenge data used for authentication is appended to a critical message rather than needing to be solicited via a separate message exchange.*		● *Yes* - accepts aggressive mode requests ○ *No – does not a*ccept aggressive mode requests	Configurable via integrated webserver ----------

1.12 SECURITY PARAMETERS	Capabilities	Current Value	If configurable, list methods
1.12.5 Aggressive mode of operation (issuing): *DNP3 devices must support the issuing of "aggressive" mode of operation, where challenge data used for authentication is appended to a critical message rather than needing to be solicited via a separate message exchange. Specific instances of devices may have the use of aggressive mode switched off.*		● *Yes* - issues aggressive mode requests ○ *No – does not* issue aggressive mode requests	Configurable via integrated webserver ----------
1.12.6 Session Key change interval: *To counter an attack that compromises the session key, the session key is changed at regular intervals. The maximum interval is 2 hours. Outstation devices invalidate the current set of session keys if they have not been changed by the master station after a period of twice this configured value.* *To accommodate systems with infrequent communications, this change interval can be disabled and just the session key change message count used (see 1.12.7)*	☐ Can be disabled When enabled: ☒ Configurable, range 1 to 65535 mins	15	Configurable via integrated webserver ----------
1.12.7 Session Key change message count: *In addition to changing the session key at regular intervals, the key shall also be changed after a specified number of messages have been exchanged. The maximum allowable value for this message count is 10,000*	☒ Configurable, range 1 to 65535	1000	Configurable via integrated webserver ----------
1.12.8 Maximum error count (SAv2 only): *To assist in countering denial of service attacks when using SAv2, a DNP3 device shall stop replying with error codes after a number of successive authentication failures. This error count has a maximum value of 10. Setting the error count to zero inhibits all error messages.* *See 1.12.21 for error counts when using SAv5*	☐ Not applicable (not using SAv2) ☐ Configurable, range _____ to _____		

1.12 SECURITY PARAMETERS	Capabilities	Current Value	If configurable, list methods
1.12.9 MAC algorithm requested in a challenge exchange: *Part of the authentication message is hashed using an MAC algorithm. Secure Authentication version 2 specifies that DNP3 devices must support SHA-1 and may optionally support SHA-256 for this hashing process. Secure Authentication version 5 specifies that SHA-256 is the default. The output of the MAC algorithm is truncated (the resulting length dependent on the media being used).*	☐ SHA-1 (truncated to the leftmost 4 octets) ☐ SHA-1 (truncated to the leftmost 8 octets) ☐ SHA-1 (truncated to the leftmost 10 octets) ☐ SHA-256 (truncated to the leftmost 8 octets) ☒ SHA-256 (truncated to the leftmost 16 octets) ☐ AES-GMAC ☐ Other, explain _____	SHA256 16 Octet	Configurable via integrated webserver ----------
1.12.10 Key-wrap algorithm to encrypt session keys: *During the update of a session key, the key is encrypted using AES-128 or optionally using other algorithms.*	☒ AES-128 ☒ AES-256 ☐ Other, explain _____	AES-128	Configurable via integrated webserver ----------
1.12.11 Cipher Suites used with DNP implementations using TLS: *When TLS is supported, DNP3 Secure Authentication mandates the support of TLS_RSA_WITH_AES_128_SHA. The specification has a number of recommended cipher suite combinations. Indicate the supported Cipher Suites for implementations using TLS.*	☒ Not relevant – TLS is not used ☐ TLS_RSA encrypted with AES128 ☐ TLS_RSA encrypted with RC4_128 ☐ TLS_RSA encrypted with 3DES_EDE_CBC ☐ TLS_DH, signed with DSS, encrypted with 3DES_EDE_CBC ☐ TLS_DH, signed with RSA, encrypted with 3DES_EDE_CBC ☐ TLS_DHE, signed with DSS, encrypted with 3DES_EDE_CBC ☐ TLS_DHE, signed with RSA, encrypted with 3DES_EDE_CBC ☐ TLS_DH, signed with DSS, encrypted with AES128 ☐ TLS_DH, signed with DSS, encrypted with AES256 ☐ TLS_DH encrypted with AES128 ☐ TLS_DH encrypted with AES256 ☐ Other, explain _____		

1.12 SECURITY PARAMETERS	Capabilities	Current Value	If configurable, list methods
1.12.12 Change cipher request timeout: *Implementations using TLS shall terminate the connection if a response to a change cipher request is not seen within this timeout period.*	☒ Not relevant – TLS is not used ☐ Fixed at _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
1.12.13 Number of Certificate Authorities supported: *Implementations using TLS shall support at least 4 Certificate Authorities. Indicate the number supported.*			
1.12.14 Certificate Revocation check time: *Implementations using TLS shall evaluate Certificate Revocation Lists on a periodic basis, terminating a connection if a certificate is revoked.*	☒ Not relevant – TLS is not used ☐ Fixed at _____ hours ☐ Configurable, range _____ to _____hours ☐ Configurable, selectable from ____,____,____hours ☐ Configurable, other, describe_____		
1.12.15 Additional critical function codes: *The DNP3 specification defines those messages with specific function codes that are critical and must be used as part of a secure authentication message exchange. Messages with other function codes are optional and changes to this list should be noted here.* *Note: Secure Authentication version 5 defines additional functions as critical that were not considered critical in version 2. These are shown in the next column annotated with "V2 only".*	Additional function codes that are to be considered as "critical": ☐ 0 (Confirm) ☐ 1 (Read) ☐ 7 (Immediate freeze) ☐ 8 (Immediate freeze – no ack) ☐ 9 (Freeze-and-clear) ☐ 10 (Freeze-and-clear – no ack) ☐ 11 (Freeze-at-time) ☐ 12 (Freeze-at-time – no ack) ☐ 22 (Assign Class) ☐ 23 (Delay Measurement) ☐ 25 (Open File) – V2 only ☐ 26 (Close File) – V2 only ☐ 27 (Delete File) – V2 only ☐ 28 (Get File Info) – V2 only ☐ 30 (Abort File) – V2 only ☐ 129 (Response) ☐ 130 (Unsolicited Response)	-	-

1.12 SECURITY PARAMETERS	Capabilities	Current Value	If configurable, list methods
1.12.16 Other critical fragments: *Other critical transactions can be defined and should be detailed here. Examples could be based on time (for example: the first transaction after a communications session is established). Other examples could be based on specific data objects (for example: the reading of specific data points).*	Describe any other critical fragment exchanges:	-	-
1.12.17 Support for remote update key changes: *Devices implementing secure authentication version 5 or later have the option to support remote update key changes. If remote update key change is supported then the procedure using symmetric cryptography is mandatory. Additional support for the procedure using asymmetric (public key) cryptography is optional.*	☐ Remote update key change by symmetric cryptography. Supported key change methods: ☐ AES-128 key wrap with SHA-1-HMAC ☐ AES-256 key wrap with SHA-256-HMAC ☐ AES-256 key wrap with AES-GMAC ☐ Remote update key change by asymmetric cryptography Supported key change methods: ☐ RSAES-OAEP-1024/SHA-1 with DSA SHA-1 and SHA-1-HMAC ☐ RSAES-OAEP-2048/SHA-256 with DSA SHA-256 and SHA-256-HMAC ☐ RSAES-OAEP-3072/SHA-256 with DSA SHA-256 and SHA-256-HMAC ☐ RSAES-OAEP-2048/SHA-256 with DSA SHA-256 and AES-GMAC ☐ RSAES-OAEP-3072/SHA-256 with DSA SHA-256 and AES-GMAC	Remote update key change is not supported	
1.12.18 "Default" user credentials are permitted to expire:	☐ Yes ☒ No		
1.12.19 Secure Authentication enabled:	☒ Configurable, selectable from On and Off ☐ Always On	Off	Configurable via integrated webserver ----------

1.12 SECURITY PARAMETERS	Capabilities	Current Value	If configurable, list methods
1.12.20 Length of the challenge data: *The length of the challenge data used when setting up session keys shall be between a minimum length of 4 octets and a maximum length of 32 octets.*	☐ Fixed at _____ octets ☐ Configurable, range _____ to _____ octets ☒ Configurable, selectable from 20, 32 octets ☐ Configurable, other, describe_____	32	Configurable via integrated webserver depends upon key wrap ----------
1.12.21 Maximum statistic counts (SAv5): *The SAv5 specification allows event objects to be generated when the statistics reach certain threshold values. Indicate here how these thresholds are set if using SAv5.* *Note that "Max Rekeys Due to Restarts" only applies to Masters and can be omitted from the Device Profile for Outstations.*	**Max Authentication Failures:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ **Max Reply Timeouts:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ **Max Authentication Rekeys:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ **Max Error Messages Sent:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ **Max Rekeys Due to Restarts:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____	Statistic is not supported	

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:	O Disabled ● Enabled O Configurable		
1.13.2 Write functions (FC = 2) supported with broadcast requests:	Write clock (g50v1 with qualifier code 07): O Disabled ● Enabled O Configurable, other (described elsewhere) Write last recorded time (g50v3 with qualifier code 07): O Disabled ● Enabled O Configurable, other (described elsewhere) Clear RESTART (g80v1 with qualifier code 00 and index = 7, value = 0): O Disabled ● Enabled O Configurable, other (described elsewhere) Write of any other group / variation / qualifier code O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.3 Direct operate functions (FC = 5) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.4 Direct operate, no acknowledgment functions (FC = 6) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.5 Immediate freeze functions (FC = 7) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		

1.13 BROADCAST FUNCTIONALITY		Capabilities	Current Value	If configurable, list methods
1.13.6	Immediate freeze, no acknowledgment functions (FC = 8) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.7	Freeze and clear functions (FC = 9) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.8	Freeze and clear, no acknowledgment functions (FC = 10) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.9	Freeze at time functions (FC = 11) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.10	Freeze at time, no acknowledgment functions (FC = 12) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.11	Cold restart functions (FC = 13) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.12	Warm restart functions (FC = 14) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.13	Initialize data functions (FC = 15) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.14	Initialize application functions (FC = 16) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.15	Start application functions (FC = 17) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		

1.13 BROADCAST FUNCTIONALITY		Capabilities	Current Value	If configurable, list methods
1.13.16	Stop application functions (FC = 18) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.17	Save configuration functions (FC = 19) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
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): O Disabled ● Enabled O Configurable, other (described elsewhere) Enable unsolicited for any other group / variation / qualifier code: O Disabled ● Enabled O Configurable, other (described elsewhere)		
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): O Disabled ● Enabled O Configurable, other (described elsewhere) Disable unsolicited for any other group / variation / qualifier code: O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.20	Assign class functions (FC = 22) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		
1.13.21	Record current time functions (FC = 24) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		

1.13 BROADCAST FUNCTIONALITY	Capabilities	Current Value	If configurable, list methods
1.13.22 Activate configuration (FC = 31) supported with broadcast requests:	O Disabled ● Enabled O Configurable, other (described elsewhere)		

2 Mapping to IEC 61850 Object Models

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.

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 2012 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.

TREE MAPPING BETWEEN DNP3 AND IEC 61850 OBJECTS	
2.1.1 Access Point:	
2.1.2 Mapping (section superseded)	
2.1.3 Rule based mapping Use this element when mapping to/from IEC 61850 using one of the predefined rules in IEEE 1815.1 Mapping is bi-directional.	
IEC 61850 Object	**DNP Xpath Reference**
MyIED	
- LLN0	
- Mod	
- stVal	Rule is: BOOLEAN_TO_BI dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=0]/dnp:dnpData/dnp:state
- q	Rule is: QUALITY_TO_BIN_FLAG dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=0]/dnp:dnpData/dnp:quality
- t	Rule is: TIME_TO_TIME dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=0]/dnp:dnpData/dnp:timestamp
- Mod1	
- stVal	Rule is: DPS_TO_2_BI dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=1]/dnp:dnpData/dnp:state dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=2]/dnp:dnpData/dnp:state
- q	Rule is: QUALITY_TO_BIN_FLAG dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=1]/dnp:dnpData/dnp:q dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=2]/dnp:dnpData/dnp:q
- LLN1	
- Mod1.t	
- t	Rule is: TIME_TO_TIME dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=1]/dnp:dnpData/dnp:timestamp dnp:dataPointsList/dnp:binaryInputPoints/dnp:dataPoints/dnp:binaryInput[dnp:index=2]/dnp:dnpData/dnp:timestamp

2.1.4 Equation based mapping

Use this element when mapping to/from IEC 61850 using an equation to map 0 or more input parameters to a single output parameter. Direction of mapping is determined by the variable on the left hand side of the equation.

Equation parameter	DNP Xpath Reference / IEC 61850 Path reference	FC	CDC	Data Type	enumTypeId
Mapping Equation: celsius = ((value * scale) - 32) / 1.8					
scale	dnp:dataPointsList/dnp:analogInputPoints/dnp:dataPoints/dnp:analogInput[dnp:index=9]/dnp:scaleFactor				
value	dnp:dataPointsList/dnp:analogInputPoints/dnp:dataPoints/dnp:analogInput[dnp:index=10]/dnp:dnpData/dnp:value				
celsius	MyIED/LLN0.Mod.mag	MX	MV	FLOAT32	
Mapping Equation: value = ((celsius * 1.8) + 32) / scale					
value	dnp:dataPointsList/dnp:analogInputPoints/dnp:dataPoints/dnp:analogInput[dnp:index=11]/dnp:dnpData/dnp:value				
celsius	MyIED/LLN0.Mod.mag	MX	MV	FLOAT32	
scale	MyIED/LLN0.Mod.scaleFactor	MX	MV	FLOAT32	

3 Capabilities and Current Settings for Device Database (Outstations 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) Group Number: **1** Event Group 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	Configurable via debug interface (not suitable for customer) ----------
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)	Two	Configurable via debug interface (not suitable for customer) ----------
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)	All events	Configurable via integrated webserver ----------
3.1.4 Binary Inputs included in Class 0 response:	☒ Always ☐ Never ☐ Only if the 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 0 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		

3.2 DOUBLE-BIT BINARY INPUTS Static (Steady-State) Group Number: **3** Event Group Number: **4**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
3.2.1 Static Variation reported when variation 0 requested or in response to Class polls: *Note: The support for double-bit binary inputs can be determined remotely using protocol object Group 0 Variation 234.*	☐ Variation 1 – packed format ☐ Variation 2 – with flag ☐ Based on point Index (add column to table in part 5)		
3.2.2 Event Variation reported when variation 0 requested or in response to Class polls:	☐ 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)		
3.2.3 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)		
3.2.4 Double-bit Binary Inputs included in Class 0 response:	☐ Always ☐ Never ☐ Only if the point is assigned to a class ☐ Based on point Index (add column to table in part 5)		
3.2.5 Double-bit 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 Double-bit Binary Inputs. 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_____		

3.3 BINARY OUTPUT STATUS AND CONTROL RELAY OUTPUT BLOCK Binary Output Status Group Number: **10** Binary Output Event Group Number: **11** CROB Group Number: **12** Binary Output Command Event Group Number: **13**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
3.3.1 Minimum pulse time allowed with Trip, Close, and Pulse On commands:	☐ Fixed at _____ms (hardware may limit this further) ☐ Based on point Index (add column to table in part 5)		
3.3.2 Maximum pulse time allowed with Trip, Close, and Pulse On commands:	☐ Fixed at _____ms (hardware may limit this further) ☐ Based on point Index (add column to table in part 5)		
3.3.3 Binary Output Status included in Class 0 response:	☒ Always ☐ Never ☐ Only if the point is assigned to a class ☐ Based on point Index (add column to table in part 5)		
3.3.4 Reports Output Command Event Objects:	☒ Never ☐ Only upon a successful Control ☐ Upon all control attempts		
3.3.5 Static Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 – packed format ☒ Variation 2 – output status with flags ☐ Based on point Index (add column to table in part 5)		
3.3.6 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for binary output events can be determined remotely using protocol object Group 0 Variation 222.*	☒ Variation 1 – status without time ☒ Variation 2 – status with time ☐ Based on point Index (add column to table in part 5)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
3.3.7 Command Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 – command status without time ☐ Variation 2 – command status with time ☐ Based on point Index (add column to table in part 5)		
3.3.8 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	All events	Configurable via integrated webserver ----------

3.3 BINARY OUTPUT STATUS AND CONTROL RELAY OUTPUT BLOCK Binary Output Status Group Number: **10** Binary Output Event Group Number: **11** CROB Group Number: **12** Binary Output Command Event Group Number: **13**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
3.3.9 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		
3.3.10 Maximum Time between Select and Operate:	☐ Not Applicable ☐ Fixed at _____ seconds ☒ Configurable, range 1 to 65535 seconds ☐ Configurable, selectable from___,___,___ seconds ☐ Configurable, other, describe_____ ☐ Variable, explain _____ ☐ Based on point Index (add column to table in part 5)	5	Configurable via integrated webserver ----------
3.3.11 Binary 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 Binary Outputs. 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_____		
3.3.12 Binary 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 Binary Output Commands. 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_____		

3.4 COUNTERS / FROZEN COUNTERS Counter Group Number: **20** Frozen Counter Group Number: **21** Counter Event Group Number: **22** Frozen Counter Event Group Number: **23**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
3.4.1 Static Counter 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 5 – 32-bit without flag ☐ Variation 6 – 16-bit without flag ☐ Based on point Index (add column to table in part 5)	One	Configurable via debug interface (not suitable for customer) ----------
3.4.2 Counter Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for counter events can be determined remotely using protocol object Group 0 Variation 227.*	☒ Variation 1 – 32-bit with flag ☐ Variation 2 – 16-bit with flag ☒ Variation 5 – 32-bit with flag and time ☐ Variation 6 – 16-bit with flag and time ☐ Based on point Index (add column to table in part 5)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
3.4.3 Counters included in Class 0 response:	☒ Always ☐ Never ☐ Only if the point is assigned to a class ☐ Based on point Index (add column to table in part 5)	Always	
3.4.4 Counter 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 Counters. When reporting "only most recent", the counter value reported in the response may be the value at the time of the original event or it may be the value at the time of the response.*	☒ Only most recent (value at time of event) ☐ Only most recent (value at time of response) ☒ All events ☐ Based on point Index (add column to table in part 5)	All events	Configurable via integrated webserver ----------
3.4.5 Static Frozen Counter 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 5 – 32-bit with flag and time ☐ Variation 6 – 16-bit with flag and time ☐ Variation 9 – 32-bit without flag ☐ Variation 10 – 16-bit without flag ☐ Based on point Index (add column to table in part 5)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------

3.4 COUNTERS / FROZEN COUNTERS Counter Group Number: **20** Frozen Counter Group Number: **21** Counter Event Group Number: **22** Frozen Counter Event Group Number: **23**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
3.4.6 Frozen Counter Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for frozen counter events can be determined remotely using protocol object Group 0 Variation 225.*	☒ Variation 1 – 32-bit with flag ☐ Variation 2 – 16-bit with flag ☒ Variation 5 – 32-bit with flag and time ☐ Variation 6 – 16-bit with flag and time ☐ Based on point Index (add column to table in part 5)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
3.4.7 Frozen Counters included in Class 0 response:	☒ Always ☐ Never ☐ Only if the point is assigned to a class ☐ Based on point Index (add column to table in part 5)	Always	
3.4.8 Frozen Counter 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 Counters.*	☒ Only most recent frozen value ☒ All frozen values ☐ Based on point Index (add column to table in part 5)	All events	Configurable via integrated webserver ----------
3.4.9 Counters Roll Over at:	☐ 16 Bits (65,535) ☒ 32 Bits (4,294,967,295) ☐ Other Fixed Value _____ ☐ Configurable; range _____ to_____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Based on point Index (add column to table in part 5)	4,294,967,295	
3.4.10 Counters frozen by means of:	☒ Master Request ☐ Freezes itself without concern for time of day ☐ Freezes itself and requires time of day ☐ Other, explain _____	Master Request	
3.4.11 Counters 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 Counters. 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_____		

3.4 COUNTERS / FROZEN COUNTERS Counter Group Number: **20** Frozen Counter Group Number: **21** Counter Event Group Number: **22** Frozen Counter Event Group Number: **23**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
3.4.12 Frozen Counters 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 Counters. 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_____		
3.4.13 Reports counter events for change of value: *Indicate if counter events are created when the counter value changes.*	☒ Yes for all counters ☐ No for all counters ☐ Configurable, based on point Index (add column to table in part 5)		

3.5 ANALOG INPUTS / FROZEN ANALOG INPUTS Static (Steady-State) Group Number: **30** Static Frozen Group Number: **31** Event Group Number: **32** Frozen Analog Input Event Group Number: **33** Deadband Group 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)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
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)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
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 most recent", the analog value reported in the response may be the value at the time of the original event or it may be the value at the time of the response.*	☒ Only most recent (value at time of event) ☐ Only most recent (value at time of response) ☒ All events ☐ Based on point Index (add column to table in part 5)	All events	Configurable via integrated webserver ----------
3.5.4 Analog Inputs Included in Class 0 response:	☒ Always ☐ Never ☐ Only if the point is assigned to a class ☐ Based on point Index (add column to table in part 5)	Always	

3.5 ANALOG INPUTS / FROZEN ANALOG INPUTS Static (Steady-State) Group Number: **30** Static Frozen Group Number: **31** Event Group Number: **32** Frozen Analog Input Event Group Number: **33** Deadband Group Number: **34**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
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	Configurable via other means	Configurable via integrated webserver ----------
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)	Integrating	
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 ANALOG INPUTS / FROZEN ANALOG INPUTS Static (Steady-State) Group Number: **30** Static Frozen Group Number: **31** Event Group Number: **32** Frozen Analog Input Event Group Number: **33** Deadband Group Number: **34**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
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 without time ☐ Variation 6 – Double-precision, floating-point without 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 the point is assigned to a class ☐ Based on point Index (add column to table in part 5)		
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 0 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		

3.5 ANALOG INPUTS / FROZEN ANALOG INPUTS Static (Steady-State) Group Number: **30** Static Frozen Group Number: **31** Event Group Number: **32** Frozen Analog Input Event Group Number: **33** Deadband Group Number: **34**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable, list methods**
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 _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		

3.6 ANALOG OUTPUTS / 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)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
3.6.2 Analog Output Status Included in Class 0 response:	☒ Always ☐ Never ☐ Only if the 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)	Default variation depends on DNP3 levels	Configurable via integrated webserver ----------
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 ANALOG OUTPUTS / 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**
3.6.6 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	All events	Configurable via integrated webserver ----------
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 ☒ Configurable, range 1 to 65535 seconds ☐ Configurable, selectable from ___,___,___seconds ☐ Configurable, other, describe_____ ☐ Variable, explain _____ ☐ Based on point Index (add column to table in part 5)	5	Configurable via integrated webserver ----------
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 0 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
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 _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		

3.7 FILE CONTROL Group Number: 70	**Capabilities**	**Current Value**	**If configurable, list methods**
3.7.1 File Transfer Supported:	Supported (as defined in section 1.1.8) If not supported then do not complete other entries in section 3.7)		
3.7.2 File Authentication: *Indicates whether a valid authentication key must be obtained prior to open and delete requests.*	☐ Always ☐ Sometimes, explain _____ ☐ Never		
3.7.3 File Append Mode: *Indicates if a file can be opened and appended to versus just overwritten.*	☐ Always ☐ Sometimes, explain _____ ☐ 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		
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		
3.7.6 Max number of Files Open at one time:	☐ Fixed at _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		

3.8 OCTET STRING & EXTENDED OCTET STRING POINTS Static (Steady-State) Group Number: **110, 114** Event Group Number: **111, 115**	**Capabilities** **(leave tick-boxes blank if this data type is not supported)**	**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 the point is assigned to a class ☐ Based on point Index (add column to table in part 5)		
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 _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
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)		

3.9 VIRTUAL TERMINAL PORT NUMBERS (POINTS) Static (Steady-State) Group Number: **112** Event Group Number: **113**	**Capabilities**	**Current Value**	**If configurable, list methods**
3.9.1 Virtual Terminals 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 Virtual Terminals. 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_____		

3.10 DATA SET PROTOTYPE Group Number: **85** Variation Number: **1**	**Capabilities**	**Current Value**	**If configurable, list methods**

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

3.11 DATA SET DESCRIPTOR CONTENTS AND CHARACTERISTICS Group Number: **86** Variation Numbers: **1 and 2**	**Capabilities**	**Current Value**	**If configurable, list methods**

This version of the Device Profile document has the requirement for describing Data Set Descriptor capabilities being repeated for each Data Set (details can be found in section 5.11).

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.

NOTE	The implementation table must list all functionality implemented in the Device.

< insert text from one of the subset tables in clause 14 of the specification and show any further functionality >

DNP OBJECT GROUP & VARIATION			REQUEST Master may issue Outstation must parse		RESPONSE Master may issue Outstation must parse	
Object Group Number	Variation Number	Description	Function Codes (dec)	Qualifier Codes (hex)	Function Codes (dec)	Qualifier Codes (hex)
0	216	Device Attributes - Maximum number of binary output objects per request	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	217	Device Attributes - Local timing accuracy	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	218	Device Attributes - Duration of time accuracy	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	219	Device Attributes - Support for analog output events	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	220	Device Attributes - Maximum analog output index	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	221	Device Attributes - Number of analog outputs	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	222	Device Attributes - Support for binary output events	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	223	Device Attributes - Maximum binary output index	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	224	Device Attributes - Number of binary outputs	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	225	Device Attributes - Support for frozen counter events	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	226	Device Attributes - Support for frozen counters	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	227	Device Attributes - Support for counter events	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	228	Device Attributes - Maximum counter index	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	229	Device Attributes - Number of counter points	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	232	Device Attributes - Maximum analog input index	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)

0	233	Device Attributes - Number of analog input points	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	238	Device Attributes - Maximum binary input index	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	239	Device Attributes - Number of binary input points	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	240	Device Attributes - Maximum transmit fragment size	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	241	Device Attributes - Maximum receive fragment size	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	242	Device Attributes - Device manufacturer's software version	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	243	Device Attributes - Device manufacturer's hardware version	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	246	Device Attributes - User assigned ID code/number	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	247	Device Attributes - User-assigned device name	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	248	Device Attributes - Device serial number	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	249	Device Attributes - DNP subset and conformance	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	250	Device Attributes - Device manufacturer's product name and model	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	252	Device Attributes - Device manufacturer's name	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	254	Device Attributes - Non-specific all attributes request	1(read)	00 (start-stop), 06 (no range, or all)		
0	255	Device Attributes - List of attribute variations	1(read)	00 (start-stop), 06 (no range, or all)	129 (Response)	00 (start-stop), 5B (free format)
1	0	Binary Input - any variation				
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)
2	0	Binary Input Change Event - any variation				
2	1	Binary Input Change Event - without time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
2	2	Binary Input Change Event – with absolute time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
2	3	Binary Input Change Event – with relative time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
10	0	Binary Output Status - any variation				
10	1	Binary Output Status - packed	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
10	2	Binary Output Status – with flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
11	0	Binary Output Event - any variation				
11	1	Binary Output Event – without time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17,28 (index)
11	2	Binary Output Event – with time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17,28 (index)
12	0	Binary Command - any variation				
12	1	Binary Command – control relay output block (only latch on/off)	3,4,5,6	17,28 (index)	129 (Response)	Echo of request
20	0	Counter - any variation				

20	1	Counter – 32-bit with flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
20	2	Counter – 16-bit with flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
20	5	Counter – 32-bit without flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
20	6	Counter – 16-bit without flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
21	0	Frozen Counter – any variation				
21	1	Frozen Counter – 32-bit with flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
21	2	Frozen Counter – 16-bit with flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
21	5	Frozen Counter – 32-bit with flag and time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
21	6	Frozen Counter – 16-bit with flag and time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
21	9	Frozen Counter – 32-bit without flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
21	10	Frozen Counter – 16-bit without flag	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	00, 01 (start-stop)
22	0	Counter Change Event – any variation				

22	1	Counter Change Event – 32-bit with flag	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
22	2	Counter Change Event – 16-bit with flag	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
22	5	Counter Change Event – 32-bit flag and time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
22	6	Counter Change Event – 16-bit flag and time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
23	0	Frozen Counter Change Event – any variation				
23	1	Frozen Counter Change Event – 32-bit with flag	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
23	2	Frozen Counter Change Event – 16-bit with flag	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
23	5	Frozen Counter Change Event – 32-bit flag and time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
23	6	Frozen Counter Change Event – 16-bit flag and time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
30	0	Analog Input – any variation				
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)
32	0	Analog Input Change Event – any variation				
32	1	Analog Input Change Event – 32-bit without time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
32	2	Analog Input Change Event – 16-bit without time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
32	3	Analog Input Change Event – 32-bit with time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
32	4	Analog Input Change Event – 16-bit with time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
32	5	Analog Input Change Event – single-precision, floating-point without flag	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
32	7	Analog Input Change Event – single-precision, floating-point with flag	1(read)	06 (no range, or all), 07, 08 (limited qty)	129,130	17,28 (index)
40	0	Analog Output Status – any variation				
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)

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)
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)
41	0	Analog Output Block – any variation				
41	1	Analog Output Block – 32-bit	3,4,5,6	17,28 (index)	129 (Response)	Echo of request
41	2	Analog Output Block – 16-bit	3,4,5,6	17,28 (index)	129 (Response)	Echo of request
41	3	Analog Output Block – single-precision, floating-point	3,4,5,6	17,28 (index)	129 (Response)	Echo of request
42	0	Analog Output Event – any variation				
42	1	Analog Output Event – 32-bit without time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17, 28 (index)
42	2	Analog Output Event – 16-bit without time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17, 28 (index)
42	3	Analog Output Event – 32-bit with time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17, 28 (index)
42	4	Analog Output Event – 16-bit with time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17, 28 (index)
42	5	Analog Output Event – single-precision, floating-point without time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17, 28 (index)
42	7	Analog Output Event – single-precision, floating-point with time	1(read)	00, 01 (start-stop), 06 (no range, or all)	129 (Response)	17, 28 (index)

50	1	Time and Date – absolute time	1,2	07 (limited qty = 1)	129 (Response)	07 (limited qty = 1)
60	1	Class Objects – class 0 data	1(read)	06 (no range, or all)		
60	2	Class Objects – class 1 data	1(read)	06 (no range, or all), 07, 08 (limited qty)		
60	2	Class Objects – class 1 data	20(enable unsol.)	06 (no range, or all)		
60	2	Class Objects – class 1 data	21(disable unsol.)	06 (no range, or all)		
60	3	Class Objects – class 2 data	1(read)	06 (no range, or all), 07, 08 (limited qty)		
60	3	Class Objects – class 2 data	20(enable unsol.)	06 (no range, or all)		
60	3	Class Objects – class 2 data	20(disable unsol.)	06 (no range, or all)		
60	4	Class Objects – class 3 data	1(read)	06 (no range, or all), 07, 08 (limited qty)		
60	4	Class Objects – class 3 data	20(enable unsol.)	06 (no range, or all)		
60	4	Class Objects – class 3 data	20(disable unsol.)	06 (no range, or all)		

5 DATA POINTS LIST (OUTSTATIONS 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 all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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.*	☐ 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					
1					
2					
: :	Add more rows as necessary				

5.2 Definition of Double-bit Input Point List: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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
0							
1							
2							
:	Add more rows as necessary						

5.3 Definition of Binary Output Status/Control relay output block (CROB) Point List: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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:

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

5.4 Definition of Counter/Frozen Counter Point List: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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
0					
1					
2					
: :	Add more rows as necessary				

5.5 Definition of Analog Input Point List: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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	Max	Multiplier	Offset			
0									
1									
2									
: :	Add more rows as necessary								

5.6 Definition of Analog Output Status/Analog Output Block Point List: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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	Multiplier	Offset			Change	Command	
0													
1													
2													
⋮	Add more rows as necessary												

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	
Add more rows as necessary					

5.8 Definition of Octet String and Extended Octet String Point List: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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				
1				
2				
: :	Add more rows as necessary			

5.9 Definition of Virtual Terminal Port Numbers: *List all addressable points. Points that do not exist (for example, because an option is not installed) shall be 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**
0			
1			
2			
⋮	Add more rows as necessary		

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 numbers of data set prototypes known to the device are available remotely using the protocol object Group 0 Variations 212 and 213.*	☐ Fixed, Data Set Prototypes are shown in table below ☐ Configurable, list methods:_____ (a list of currently defined Data Set Prototypes may be shown in tables below) ☐ Other, explain_____

Prototype Description:

Element Number	Descriptor Code (check one)							Element Description	Data Type Code (check one)									Maximum Data length	Ancillary Value: **ID = Identifier number** **UUID = UUID value** **NSPC = Prototype namespace** **NAME = Prototype name** **DAEL = Data element name** **CTLS = Control status name** **CTLV = Control value name**
	ID	UUID	NSPC	NAME	DAEL	CTLS	CTLV		NONE	VSTR	UINT	INT	FLT	OSTR	BSTR	TIME	UNCD		
0	X							Mandatory DNP identifier			X								
1		X						UUID assigned to prototype						X					
2																			
:								Add more rows as necessary											

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 numbers of data sets known to the device are available remotely using the protocol object Group 0 Variations 214 and 215.*	☐ Fixed, Data Set Descriptors are shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain_____

Data Set Description:

5.11.1 Data Set Properties:	☐ Readable ☐ Writable ☐ Outstation maintains a static data set ☐ Outstation generates a data set event ☐ Data set defined by master
5.11.2 Event Class Assigned:	☐ Class 1 ☐ Class 2 ☐ Class 3
5.11.3 Static Data Set included in Class 0 response:	☐ Always ☐ Never ☐ Only if assigned to a class

Element Number	Descriptor Code (check one)						Element Description	Data Type Code (check one)									Maximum Data length	Ancillary Value: **ID = Identifier number** **NAME = Data Set name** **DAEL = Data element name** **CTLS = Control status name** **CTLV = Control value name** **PTYP = UUID and (optional) instance name**
	ID	NAME	DAEL	CTLS	CTLV	PTYP		NONE	VSTR	UINT	INT	FLT	OSTR	BSTR	TIME	UNCD		
0	X						Mandatory DNP identifier			X								
1																		
:							Add more rows as necessary											

5.12 Data Set Descriptor – 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 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.

Duplicate this table for each Data Set Descriptor defined

Data Set Description:

Element Number	DNP3 Group Number	Point Index
0		
1		
2		
⋮	Add more rows as necessary	