DNP3 Device Profile

Based on DNP XML Schema version 2.11.00

Document Name: MOXA MGate5192 Outstation Device Profile

Document Description: This is a DNP3 device profile for MOXA MGate5192 Outstation

Revision History

Date	Time	Version	Reason for change	Edited by
			First Release	

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.*	☐ Master ■ Outstation	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.*		MOXA	
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.*		MGate5192	
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.*		N/A	
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.*		1.0.0	
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.*		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.*	Outstations Only Requests and Responses ☐ None ☐ Level 1 ☐ Level 2 ■ Level 3 ☐ Level 4	Level 3+	
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)	Authentication	Web Browser
1.1.9 Notable Additions: *A brief description intended to quickly identify (for the reader) the most obvious features the device supports in addition to the Highest DNP Level Supported. The complete list of features is described in the Implementation Table.*			
1.1.10 Methods to set Configurable Parameters:	☐ XML – Loaded via DNP3 File Transfer ☐ XML – Loaded via other transport mechanism ☐ Terminal – ASCII Terminal Command Line ■ Software – Vendor software named _____ ☐ 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 _____		Web Browser

1.1 Device Identification	Capabilities	Current Value	If configurable, list methods
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 錯誤! 找不到參照來源。) ■ IP Networking (complete section 1.3) ☐ Other, explain _____	Serial IP Networking	Web Browser
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 _____ ☐ Independently tested, version _____ Test organization name _____		

1.2 Serial Connections	Capabilities	Current Value	If configurable, list methods
1.2.1 Port Name: *Name used to reference the communications port defined in this section.*		COM1	
1.2.2 Serial Connection Parameters:	■ Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bit, No Parity ■ Other, explain 8 Data Bits, 1 Start Bit, 1/2 Stop Bit, No Parity/Odd/Even/Mark/Space Note: Implemented in Target Layer	Other, 8 Data Bits, 1 Start Bit, 1/2 Stop Bit, No Parity/Odd/Even/Mark/Space	Web Browser
1.2.3 Baud Rate:	☐ Fixed at ■ Configurable, range 1 to 115200 ■ Configurable, selectable from 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600 Note: Implemented in Target Layer	115200	Web Browser

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 tosending 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	RS-232 support - none - RTS/CTS - RTS toggle RS-422 support - None RS-485 2-wire support - None RS-485 4-wire support - None	Web Browser

	☐ Other, explain ☐ Other, explain Sofware		

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 (1-99) ☐ Configurable, selectable from seconds ☐ Configurable, other, describe	Disable, or enable (1-99 min), using the "Keep-alive Period" field for configuration	Web Browser
1.2.6 Supports DNP3 Collision Avoidance: *Indicates whether an Outstation uses a collision avoidance algorithm.* *Collision avoidance may be implemented by a back-off timer with two parameters that definethe 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 timesthat are randomly distributed between the minimum value and the minimum plus the maximum ofthe random value.* *If a back-off timer is implemented with only a fixed or only a random value, select theBack-off time method and set the parameter that is not supported to "Fixed at 0 ms".*	■ No ☐ Yes, using Back-off time = (Min + Random) method ☐ Other, explain	No	
1.2.7 Receiver Inter-character Timeout: e: *When serial interfaces with asynchronous character framing are used, this parameter indicates if the receiver makes a check for gapsbetween characters. (i.e. extensions of the stop bit time of one character prior to the start bit of the following character within a message).If the receiver performs this check and the timeout is exceeded then the receiver discards the current data link frame.A receiver that does not discard data link frames on the basis of inter-character gaps is considered not to perform this check.* *Where no asynchronous serial interface is fitted this parameter is not applicable.In this case none of the options shall be selected.*	■ Not Checked ☐ No gap permitted ☐ Fixed at bit times ☐ Fixed at ms ☐ Configurable, range to bit times ☐ Configurable, range to ms ☐ Configurable, selectable from bit times ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	Not Checked	

1.2.8 Inter-character gaps in transmission: *When serial interfaces with asynchronous character framing are used, this parameter indicates whether extra delay is everintroduced 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
1.3.0 Port Name: *Name used to reference the communication port defined in this section.*			
1.3.1 Type of End Point:	☐ TCP Initiating ■ TCP Listening ☐ TCP Dual ■ UDP Datagram	TCP Listening	Web Browser
1.3.2 IP Address of this Device:		192.168.127.254	Web Browser
1.3.3 Subnet Mask:		255.255.255.0	Web Browser
1.3.4 Gateway IP Address:			
1.3.5 Accepts TCP Connections or UDP Datagrams from:	■ Allows all (show as *.*.*.* in 1.3.6) ■ 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_____	*.*.*.*	Web Browser
1.3.6 IP Address(es) from which TCP Connections or UDP Datagrams are accepted:		*.*.*.*	
1.3.7 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 1 to 65535 ☐ Configurable, selectable from ☐ Configurable, other, describe	20000	Web Browser
1.3.8 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 IP Networking	Capabilities	Current Value	If configurable, list methods
1.3.9 TCP Keep-alive timer: *The time period for the keep-alive timer on active TCP connections.*	☐ Timer disabled ☐ Fixed at s ☐ Configurable, range 0 to 4294967295ms ■ Configurable, selectable from 1s-99s ☐ Configurable, other, describe	Disable, can enable to 1s - 99s	Web Browser
1.3.10 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 1 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Let system choose (Masters only)	20000	Web Browser
1.3.11 Destination UDP port for DNP3 Requests (Masters only):	☐ Fixed at 20,000 ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____		
1.3.12 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 0 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Use local port number (as specified in 1.3.11)	Same as local UDP port	Web Browser
1.3.13 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 0 to 65535 ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Use local port number (as specified in 1.3.11)	Same as local UDP port	Web Browser
1.3.14 Multiple outstation connections (Masters only): *Indicates whether multiple outstation connections are supported.*	☐ Supports multiple outstations (Masters only)		

1.3 IP Networking	Capabilities	Current Value	If configurable, list methods
1.3.15 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	Only support 1 master connection	
1.3.16 Time synchronization support:	☐ DNP3 LAN procedure (function code 24) ■ DNP3 Write Time (not recommended over LAN) ☐ Other, explain _____ ☐ Not Supported	DNP3 Write Time	

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	4	Web Browser
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, one address allowed	Web Browser
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(as specified in 1.8.2) ☐ Configurable, selectable from ☐ Configurable, other, describe	Configurable, range 0 to 65519(as specified in 1.8.2)	Web Browser
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	Web Browser
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 _____ ■ Always	Never	Web Browser
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_____ s ■ Configurable, range 1 to 65535 ms ☐ Configurable, selectable from ___,___,___s ☐ Configurable, other, describe_____ ☐ Variable, explain _____	10000 ms	Web Browser

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 100 ☐ Configurable, selectable from ☐ Configurable, other, describe	5	Web Browser
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	
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	Not support file transfer	
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 249 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	249	
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 atms ■ Configurable, range 0 to 65535 ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	10000 ms	Web Browser

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	10	
1.5.6 Maximum number of objects allowed in a single control request for Analog Outputs (group 41):	■ Fixed at 10 (enter 0 if controls are not supported for Analog Outputs) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain	10	
1.5.7 Maximum number of objects allowed in a single control request for Data Sets (groups 85, 86, 87):	■ Fixed at 0 (enter 0 if controls are not supported for Data Sets) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain	0	
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	Yes	

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		

1.7 Fill Out The Following Items For Outstations Only	Capabilities	Current Value	If configurable, list methods
1.7.0 Timeout waiting for Application Confirm of solicited response message:	☐ None ☐ Fixed at ms ■ Configurable, range 0 to 65535 ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	10000 ms	Web Browser
1.7.1 How often is time synchronization required from the master: *Details of when the master needs to perform a time synchronization to ensure that the outstation clock does not drift outside of an acceptable tolerance. If the option to relate this to IIN1.4 is used then details of when IIN1.4 is asserted are in section 1.10.2.*	☐ Never needs time ☐ Within seconds after IIN1.4 is set ■ Periodically, fixed at 30 seconds ☐ Periodically, between 0 and 2147483647 seconds(Set 0 for never need time.)	Periodically every 30 seconds	
1.7.2 Device Trouble Bit IIN1.6: *If IIN1.6 device trouble bit is set under certain conditions, explain the possible causes.*	■ Never used ☐ Reason for setting	Never used	
1.7.3 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	
1.7.4 Event Buffer Overflow Behavior:	■ Discard the oldest event ■ Discard the newest event ☐ Other, explain	Discard the oldest event	Web Browser

1.7 Fill Out The Following Items For Outstations Only	Capabilities	Current Value	If configurable, list methods
1.7.5 Event Buffer Organization: *Explain how event buffers are arranged (per Object Group, per Class, single buffer, etc) and specify the number of events that can be buffered.*	■ Per Object Group (see part 3) ☐ Per Class Class 1: ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ Class 2: ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ Class 3: ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Single Buffer ☐ Fixed at_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ___,___,___ ☐ Configurable, other, describe_____ ☐ Other, describe:	Per Object Group (see part 3)	
1.7.6 Sends Multi-Fragment Responses: *Indicates whether an Outstation sends multi-fragment responses (Masters do not send multi-fragment requests).*	■ Yes ☐ No	Yes	
1.7.7 Last Fragment Confirmation: *Indicates whether the Outstation requests confirmation of the last fragment of a multi-fragment response.*	☐ Always ■ Sometimes, explain :_ Only when it contains events _ ☐ Never	Sometimes, only when it contains events	

1.7 Fill Out The Following Items For Outstations Only	Capabilities	Current Value	If configurable, list methods
1.7.8 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	Assign Class Analog Deadbands	
1.7.9 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	
1.7.10 Requests Application Confirmation: *Indicate if application confirmation is requested:* • *when responding with events* • *when sending non-final fragments of multi-fragment responses* *Note: to be compliant both must be selected as "yes".*	For event responses: ■ Yes ■ No ■ Configurable For non-final fragments: ■ Yes ■ No ■ Configurable		
1.7.11 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	Web Browser
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_____	3	Web Browser
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 65535 ms ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____	10000 ms	Web Browser
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 ____1____ to ___100___ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____ ☐ Unlimited	5	Web Browser

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 __100____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	30	Web Browser
1.9.2 Number of class 2 events:	☐ Class 2 not used to trigger Unsolicited Responses ☐ Fixed at _____ ■ Configurable, range ____0____ to __100____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	30	Web Browser
1.9.3 Number of class 3 events:	☐ Class 3 not used to trigger Unsolicited Responses ☐ Fixed at _____ ■ Configurable, range ____0____ to __100____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	30	Web Browser
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 __4294967295__ ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____ ☐ Use value specified in section 1.9.8	1000ms	Web Browser

1.9 Outstation Unsolicited Response Trigger Conditions	Capabilities	Current Value	If configurable, list methods
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 __4294967295__ ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____ ☐ Same current value as 1.9.8	1000ms	Web Browser
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 __4294967295__ ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____ ☐ Same current value as 1.9.8	1000ms	Web Browser
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_____		
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 _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ☐ Other, describe_____	Not support	
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__30__ seconds ☐ Periodically, range ____to____ seconds ☐ Periodically, selectable from ____,____,___ seconds ☐ ____ seconds after last time sync ☐ Range __0__to__65535__ seconds after last time sync(Set 0 for never need time.) ☐ 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	Asserted at startup until first Time Synchronization request received Periodically every 30 seconds	
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 _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ■ Other, describe_____	It depends on system busy or not	
1.10.4 Maximum Delay Measurement error (ms): *The difference between the time reported in the delay measurement response and the actual time between receipt of the delay measurement request and issuing the delay measurement reply.*	☐ Fixed at _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ■ Other, describe_____	It depends on system busy or not	

1.10 Outstation Performance	Capabilities	Current Value	If configurable, list methods
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 _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ■ Other, describe_____	It depends on system busy or not	
1.10.6 Maximum time from start-up to IIN 1.4 assertion (ms):	☐ Fixed at _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ■ Other, describe_____	It depends on the number of configured settings	
1.10.7 Maximum Event Time-tag error for local Binary and Double-bit I/O (ms): *The error between the time-tag reported and the absolute time of the physical event. This error includes the Internal Time Reference Error.* *Note: The current value of this parameter is available remotely using protocol object Group 0 Variation 217.*	☐ Fixed at _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ■ Other, describe: It depends on the number of configured data points	>100ms	
1.10.8 Maximum Event Time-tag error for local I/O other than Binary and Double-bit data types (ms):	☐ Fixed at _____ ms ☐ Range _____ to _____ ms ☐ Selectable from ____,____,____ ms ■ Other, describe: It depends on the number of configured data points	>100ms	

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):	Not supported	
1.11.3 User-assigned name string for the outstation (same as g0v247):	Not supported	
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 _____V5_____ ☐ Configurable, selectable from ____,____,____	V5	
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 _____ ■ Configurable, range ___0___ to __10___	0	Web Browser
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 0 to 65535 ms ☐ Configurable, selectable from ____,____,____ ms ☐ Configurable, other, describe_____	2000 ms	Web Browser
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* accept aggressive mode requests	Web Browser

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	Web Browser
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 0 to 7200 seconds	900 s	Web Browser
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 ___0___ to ___10000___	1000	Web Browser
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 _____	Not applicable (not using SAv2)	

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 _____	SHA-256 16 Octets	
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	
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 _____	Not relevant – TLS is not used	

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_____	Not relevant – TLS is not used	
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_____	Not relevant – TLS is not used	

1.12 Security Parameters	Capabilities	Current Value	If configurable, list methods
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)		
1.12.16 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 Security Parameters	Capabilities	Current Value	If configurable, list methods
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		
1.12.18 "Default" user credentials are permitted to expire:	☐ Yes ■ No	No	
1.12.19 Secure Authentication enabled:	■ Configurable, selectable from On and Off ☐ Always On	Off	Web Browser
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 _____4_____ octets ☐ Configurable, range _____ to _____ octets ☐ Configurable, selectable from ____,____,____ octets ☐ Configurable, other, describe_____	4	

1.12 Security Parameters	Capabilities	Current Value	If configurable, list methods
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 _____ ■ Fixed at 5 **Max Reply Timeouts:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ ■ Fixed at 3 **Max Authentication Rekeys:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ ■ Fixed at 3 **Max Error Messages Sent:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____ ■ Fixed at 2 **Max Rekeys Due to Restarts:** ☐ Not applicable (not using SAv5) ☐ Configurable, range _____ to _____	5 3 3 2 Not support	

1.13 Broadcast Functionality	Capabilities	Current Value	If configurable, list methods
This section indicates which functions are supported by the device when using broadcast addresses. *Note that this section shows only entries that may have a meaningful purpose when used with broadcast requests.*			
1.13.1 Support for broadcast functionality:	☐ Disabled ■ Enabled ☐ Configurable	Enabled	
1.13.2 Write functions (FC = 2) supported with broadcast requests:	Write clock (g50v1 with qualifier code 07): ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere) Write last recorded time (g50v3 with qualifier code 07): ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere) Clear RESTART (g80v1 with qualifier code 00 and index = 7, value = 0): ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere) Write of any other group / variation / qualifier code ■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Enabled Enabled Enabled Disabled	
1.13.3 Direct operate functions (FC = 5) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.4 Direct operate, no acknowledgment functions (FC = 6) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	

1.13 Broadcast Functionality		Capabilities	Current Value	If configurable, list methods
1.13.5	Immediate freeze functions (FC = 7) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	
1.13.6	Immediate freeze, no acknowledgment functions (FC = 8) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	
1.13.7	Freeze and clear functions (FC = 9) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	
1.13.8	Freeze and clear, no acknowledgment functions (FC = 10) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	
1.13.9	Freeze at time functions (FC = 11) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	
1.13.10	Freeze at time, no acknowledgment functions (FC = 12) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	
1.13.11	Cold restart functions (FC = 13) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.12	Warm restart functions (FC = 14) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.13	Initialize data functions (FC = 15) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.14	Initialize application functions (FC = 16) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	

1.13 Broadcast Functionality		Capabilities	Current Value	If configurable, list methods
1.13.15	Start application functions (FC = 17) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.16	Stop application functions (FC = 18) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.17	Save configuration functions (FC = 19) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.18	Enable unsolicited functions (FC = 20) supported with broadcast requests:	Enable unsolicited by event Class (g60v2, g60v3 and g60v4 with qualifier code 06): ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere) Enable unsolicited for any other group / variation / qualifier code: ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled Enabled	
1.13.19	Disable unsolicited functions (FC = 21) supported with broadcast requests:	Disable unsolicited by event Class (g60v2, g60v3 and g60v4 with qualifier code 06): ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere) Disable unsolicited for any other group / variation / qualifier code: ☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled Enabled	
1.13.20	Assign class functions (FC = 22) supported with broadcast requests:	☐ Disabled ■ Enabled ☐ Configurable, other (described elsewhere)	Enabled	

1.13 Broadcast Functionality		Capabilities	Current Value	If configurable, list methods
1.13.21	Record current time functions (FC = 24) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	
1.13.22	Activate configuration (FC = 31) supported with broadcast requests:	■ Disabled ☐ Enabled ☐ Configurable, other (described elsewhere)	Disabled	

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.

3.0 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**
3.0.1 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)	Variation 1	Web Browser
3.0.2 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)	Variation 3	Web Browser
3.0.3 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	
3.0.4 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	
3.0.5 Binary Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), indicate the number of events that can be buffered for Binary Inputs. If event buffers are not allocated per object group then set "Fixed at 0".*	■ Fixed at ____100____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	100	

3.1 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**
3.1.1 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)	Not support	
3.1.2 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)	Not support	
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)	Not support	
3.1.4 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)	Not support	
3.1.5 Double-bit Binary Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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_____	Not support	

3.2 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**
3.2.1 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)	Not support	
3.2.2 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)	Not support	
3.2.3 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)	Always	
3.2.4 Reports Output Command Event Objects:	■ Never ☐ Only upon a successful Control ☐ Upon all control attempts	Never	
3.2.5 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)	Variation 2	Web Browser
3.2.6 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)	Variation 1	Web Browser
3.2.7 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)	Not support	
3.2.8 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	

3.2 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**
3.2.9 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	All events	
3.2.10 Maximum Time between Select and Operate:	☐ Not Applicable ☐ Fixed at ____ seconds ■ Configurable, range ___1___ to __65535__ ms ☐ Configurable, selectable from___,___,___ seconds ☐ Configurable, other, describe_____ ☐ Variable, explain _____ ☐ Based on point Index (add column to table in part 5)	5 seconds	Web Browser
3.2.11 Binary Outputs Event Buffer Organization: When event buffers are allocated per object group (see part 1.7.5), 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 ____100____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	100	
3.2.12 Binary Output Commands Event Buffer Organization: When event buffers are allocated per object group (see part 1.7.5), 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 _____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	Not support	

3.3 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**
3.3.1 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)	Variation 5	Web Browser
3.3.2 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)	Variation1	Web Browser
3.3.3 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	
3.3.4 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	
3.3.5 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)	Variation 9	Web Browser

3.3 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**
3.3.6 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)	Variation 1	Web Browser
3.3.7 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	
3.3.8 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 frozen values	
3.3.9 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)	32 Bits (4,294,967,295)	
3.3.10 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	
3.3.11 Counters Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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 ____100____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	100	

3.3 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**
3.3.12 Frozen Counters Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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 ____100____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	100	
3.3.13 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)	Yes for all counters	

3.4 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**
3.4.1 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)	Variation 3	Web Browser
3.4.2 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)	Variation 1	Web Browser
3.4.3 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	
3.4.4 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	

3.4 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**
3.4.5 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	Web Browser
3.4.6 Analog Deadband Algorithm: *simple - just compares the difference from the previous reported value* *integrating - keeps track of the accumulated change* *other - indicating another algorithm*	■ Simple ☐ Integrating ☐ Other, explain _____ ☐ Based on point Index (add column to table in part 5)	Simple	
3.4.7 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)	Not support	

3.4 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**
3.4.8 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)	Not support	
3.4.9 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)	Not support	
3.4.10 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)	Not support	
3.4.11 Analog Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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 ____100____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	100	

3.4 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**
3.4.12 Frozen Analog Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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_____	Not support	

3.5 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**
3.5.1 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)	Variation 2	Web Browser
3.5.2 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	
3.5.3 Reports Output Command Event Objects:	■ Never ☐ Only upon a successful Control ☐ Upon all control attempts	Never	
3.5.4 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)	Variation 2	Web Browser

3.5 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**
3.5.5 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)	Not support	
3.5.6 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	
3.5.7 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	Not support	
3.5.8 Maximum Time between Select and Operate:	☐ Not Applicable ☐ Fixed at ____ seconds ■ Configurable, range __1__ to __65535__ ms ☐ Configurable, selectable from ___,___,___ms ☐ Configurable, other, describe_____ ☐ Variable, explain _____ ☐ Based on point Index (add column to table in part 5)	5000ms	Web Browser

3.5 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**
3.5.9 Analog Outputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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 ____100_____ ☐ Configurable, range _____ to _____ ☐ Configurable, selectable from ____,____,____ ☐ Configurable, other, describe_____	100	
3.5.10 Analog Output Commands Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.5), 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_____	Not support	

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.

DNP OBJECT GROUP & VARIATION			**REQUEST** **Master may issue** **Outstation must parse**		**RESPONSE** **Master must parse** **Outstation may issue**	
Object Group Number	**Variation Number**	**Description**	**Function Codes (dec)**	**Qualifier Codes (hex)**	**Function Codes (dec)**	**Qualifier Codes (hex)**
0	209	Device Attributes - Secure authentication version	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
0	210	Device Attributes - Number of security statistics per association	1(read)	00 (start-stop)	129 (Response)	00 (start-stop), 17 (index)
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	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	231	Device Attributes - Support for analog input events	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	237	Device Attributes - Support for binary input events	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	248	Device Attributes - Device serial number	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) 17 (index)
1	0	Binary Input - any variation	1(read) 22(assign class)	00, 01 (start- stop) 06(no range, or all)		

1	1	Binary Input - Single-bit packed	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
1	2	Binary Input - Single-bit with flag	1(read)	00, 01 (start- stop), 06(no range, or all)	129 (Response)	00, 01 (start- stop)
2	0	Binary Input Change Event - any variation	1(read)	06(no range, or all) 07,08(limited qty)		
2	1	Binary Input Change Event - without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
2	2	Binary Input Change Event - with absolute time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
2	3	Binary Input Change Event - with relative time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
10	0	Binary Output Status - any variation	1(read) 22(assign class)			
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	1(read)	06(no range, or all) 07, 08 (limited qty)		
11	1	Binary Output Event - without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
11	2	Binary Output Event - with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)

12	1	Binary Command - control relay output block (only latch on/off)	3(select) 4(operate) 5(direct op)	17, 28 (index)	129 (Response)	echo of request
			6(dir. op, no ack)	17, 28 (index)		
20	0	Counter - any variation	1(read) 7(freeze) 8(freeze noack) 9(freeze clear) 10(frz. cl. noack) 22(assign class)	00, 01(start- stop) 06(no range, or all)		
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	1(read) 22(assign class)	00, 01(start- stop) 06(no range, or all)		
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	1(read)	06(no range, or all) 07, 08 (limited qty)		
22	1	Counter Change Event - 32-bit with flag	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
22	2	Counter Change Event - 16-bit with flag	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
22	5	Counter Change Event - 32-bit with flag and time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
22	6	Counter Change Event - 16-bit with flag and time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
23	0	Frozen Counter Change Event - any variation	1(read)	06(no range, or all) 07, 08 (limited qty)		
23	1	Frozen Counter Change Event - 32-bit with flag	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	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(Response) 130(unsol. resp)	17, 28 (index)
23	5	Frozen Counter Change Event - 32-bit with flag and time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)

23	6	Frozen Counter Change Event - 16-bit with flag and time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
30	0	Analog Input - any variation	1(read) 22(assign class)	00, 01(start- stop) 06(no range, or all)		
30	1	Analog Input - 32-bit with flag	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
30	2	Analog Input - 16-bit with flag	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
30	3	Analog Input - 32-bit without flag	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
30	4	Analog Input - 16-bit without flag	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
30	5	Analog Input - single-precision, floating-point with flag	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start-stop)
30	6	Analog Input - double-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	1(read)	06(no range, or all) 07, 08 (limited qty)		
32	1	Analog Input Change Event - 32-bit without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	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(Response) 130(unsol. resp)	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(Response) 130(unsol. resp)	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(Response) 130(unsol. resp)	17, 28 (index)
32	5	Analog Input Change Event - single-precision, floating-point without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
32	7	Analog Input Change Event - single-precision, floating-point with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
32	8	Analog Input Change Event - double-precision, floating-point with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
40	0	Analog Output Status - any variation	1(read) 22(assign class)	00, 01(start- stop) 06(no range, or all)		
40	1	Analog Output Status - 32-bit with flag	1(read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
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)
40	4	Analog Output Status - double-precision, floating-point with flag	1 (read)	00, 01(start- stop) 06(no range, or all)	129 (Response)	00, 01 (start- stop)
41	1	Analog Output Block - 32-bit	3(select) 4(operate) 5(direct op)	17, 28 (index)	129 (Response)	echo of request
			6(dir. op, no ack)	17, 28 (index)		
41	2	Analog Output Block - 16-bit	3(select) 4(operate) 5(direct op)	17, 28 (index)	129 (Response)	echo of request

			6(dir. op, no ack)	17, 28 (index)		
41	3	Analog Output Block - single-precision, floating-point	3(select) 4(operate) 5(direct op)	17, 28 (index)	129 (Response)	echo of request
			6(dir. op, no ack)	17, 28 (index)		
42	0	Analog Output Event - any variation	1(read)	06(no range, or all) 07, 08 (limited qty)		
42	1	Analog Output Event - 32-bit without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
42	2	Analog Output Event - 16-bit without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
42	3	Analog Output Event - 32-bit with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
42	4	Analog Output Event - 16-bit with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
42	5	Analog Output Event - single-precision, floating-point without time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
42	7	Analog Output Event - single-precision, floating-point with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
42	8	Analog Output Event - double-precision, floating-point with time	1(read)	06(no range, or all) 07, 08 (limited qty)	129(Response) 130(unsol. resp)	17, 28 (index)
50	1	Time and Date - absolute time	1(read)	07 (limited qty = 1)	129 (Response)	07 (limited qty = 1)

			2(write)	07 (limited qty = 1)		
50	3	Time and Date - Absolute time at last recorded time	2(write)	07 (limited qty = 1)		
60	1	Class Objects - class 0 data	1(read) 22(assign class)	06(no range, or all)		
60	2	Class Objects - class 1 data	1(read)	06(no range, or all) 07, 08 (limited qty)		
			20(enable unsol.) 21(disable unsol.) 22(assign class)	06(no range, or all)		
60	3	Class Objects - class 2 data	1(read)	06(no range, or all) 07, 08 (limited qty)		
			20(enable unsol.) 21(disable unsol.) 22(assign class)	06(no range, or all)		
60	4	Class Objects - class 3 data	1(read)	06(no range, or all) 07, 08 (limited qty)		
			20(enable unsol.) 21(disable unsol.) 22(assign class)	06(no range, or all)		
80	1	Internal Indications - Packed format	1(read)	00, 01 (start- stop)	129 (Response)	00, 01 (start- stop)
			2(write)	00(start-stop), index=7		
120	1	Authentication Challenge	32(Auth Req)	5B	129(Response) 130(unsol. resp) 131(Auth Resp)	5B

120	2	Authentication Reply	32(Auth Req)	5B	131(Auth Resp)	5B
120	3	Authentication Aggressive Mode Request	1~31	07 (limited qty = 1)	129(Response) 130(unsol. resp)	07 (limited qty = 1)
120	4	Authentication Session Key Status Request	32(Auth Req)	07 (limited qty = 1)		
120	5	Authentication Session Key Status			131(Auth Resp)	5B
120	6	Authentication Session Key Change	32(Auth Req)	5B		
120	7	Authentication Error	32(Auth Req, no ack)	5B	129(Response) 130(unsol. resp) 131(Auth Resp)	5B
120	9	Authentication HMAC	1~31	5B	129(Response) 130(unsol. resp)	5B
No Object (function code only)			0 (confirm)			
No Object (function code only)			24(record current time)			