DNP3 Field Device Profile

for

Document Name: Woodward DNP3 XML File

Revision History

Date	Time	Version	Reason for change	Edited by
2012-01-11		1	Initial Version	Joerg Katzer
2015-04-16	15:00:00	2	First updates	Joerg Katzer Claus Kronenberger

REFERENCE DEVICE

1. Device Properties

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

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

This document may be used to show the device capabilities, the current value of each parameter, or both. If it is used to show the current values, column 3 is filled in even if a fixed parameter is selected in the capabilities section.

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

1.1. DEVICE IDENTIFICATION	**Capabilities**	**Current Value**	**If configurable list methods**
1.1.1. Device Function: *Masters send DNP requests, while Outstations send DNP responses. If a single physical device can perform both functions a separate Device Profile Document must be provided for each function.*	- Outstation	- Outstation	.
1.1.2. Vendor Name: *The name of the organization producing the device.*	-	Woodward	-
1.1.3. Device Name: *The model and name of the device, sufficient to distinguish it from any other device from the same organization.*	-	HighPROTEC	-
1.1.4. Device manufacturer's hardware version string:	-		-
1.1.5. Device manufacturer's software version string:	-	3.0	-
	-	1.0	-

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 start of this document.*			
1.1.7. DNP Levels Supported for: *Indicate each DNP3 Level to which the device conforms fully. For Nasters, requests and responses can be indicated independently.*	Outstations Only Requests and Responses ☑ None ☑ Level 1 ☑ Level 2 ☐ Level 3	Level 2	.
1.1.8. Supported Function Blocks:	☑ Self Address Reservation ☐ Object 0 - attribute objects ☐ Data Sets ☐ File Transfer ☐ Virtual Terminal ☐ Mapping to IEC 61850 Object Models defined in a DNP3 XML file	Self Address	.
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*	This is a notable addition	This is a notable addition	.

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 Smart view ☐ 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:	Software Direct	.
1.1.11. DNP3 XML files available On-line: *XML configuration file names that can be read or written through DNP3 File Transfer to a device.* *A device's currently running configuration is returned by DNP3 on-line XML file read from the device.* *DNP3 on-line XML file write to a device will update the*	Rd Wr Filename — Description of Contents ☐ dnpDP.xml — Complete Device Profile ☐ dnpDPCap.xml — Device Profile Capabilities ☐ dnpDPCfg.xml — Device Profile config values	Rd Wr Filename ☐ dnpDP.xml ☐ dnpDPCap.xml ☐ dnpDPCfg.xml	.

device's configuration when the Activate Configuration (function code 31) is received.			
1.1.12. External DNP3 XML files available Off-line: *XML configuration file names that can be read or written from an external system, typically from a system that maintains the outstation configuration.* *External off-line XML file read permits an XML definition of a new configuration to be supplied from off-line configuration tools.* *External off-line XML file write permits an XML definition of a new configuration to be supplied to off-line configuration tools.*	Rd Wr Filename — Description of Contents ☑ ☐ dnpDP.xml — Complete Device Profile ☐ ☐ dnpDPCap.xml — Device Profile Capabilities ☐ ☐ dnpDPCfg.xml — Device Profile config values	Rd Wr Filename ☑ ☐ dnpDP.xml ☐ ☐ dnpDPCap.xml ☐ ☐ dnpDPCfg.xml	.
1.1.13. Connections Supported: *If IP Networking is supported, both TCP and UDP are required to*	☑ Serial (complete section 1.2) ☑ IP Networking (complete section 1.3) ☐ Other, explain:		software **Smart view** Vers ---------- direct ---------- .

meet the requirements of DNP3 Specification Volume 7, IP Networking Specification.			

1.2. SERIAL CONNECTIONS	**Capabilities**	**Current Value**	**If configurable list methods**
1.2.1. Port Name: *The name associated with this serial port.*	-	X103	-
1.2.2. Serial Connection Parameters:	☑ Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bit, No Parity ☑ Other, explain:**Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bits, Even Parity Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bits, Odd Parity Asynchronous - 8 Data Bits, 1 Start Bit, 1 Stop Bits, No Parity Asynchronous - 8 Data Bits, 1 Start Bit, 2 Stop Bits, NO Parity**	Asynchronous	software **Smart view** Vers ---------- direct ---------- .
1.2.3. Baud Rate:	☐ Fixed at ☐ Configurable, range to ☑ Configurable, selectable from **1200**, **2400**, **4800**, **9600**, **19200**, **38400**, **115200** ☐ Configurable, other, describe:	19200	software **Smart view** Vers ---------- direct ---------- .
1.2.4. Hardware Flow Control (Handshaking):	☑ None **RS-485 Options:** ☑ Requires Rx inactive before Tx ☐ Other, explain:	**RS-485Options:** Requires Rx inactive before Tx	.
1.2.5. Interval to Request Link Status: *Indicates how often to send Data Link Layer status requests on a serial*	☐ Not Supported ☐ Fixed at seconds ☑ Configurable, range **0** to **120**seconds ☐ Configurable, selectable	0 seconds	.

connection. This parameter is separate from the TCP Keep-alive timer.	from seconds ☐ Configurable, other, describe:		
1.2.6. Supports DNP3 Collision Avoidance: *Indicates whether an Outstation uses a collision avoidance algorithm. Documentation provided by the vendor will provide information on collision avoidance schemes.*	☑ No ☐ Yes, explain:	No	.
1.2.7. Receiver Inter-character Timeout: *When serial interfaces with asynchronous character framing are used, this parameter indicates if the receiver makes a check for gaps between characters. (i.e. extensions of the stop bit time of one character prior to the start bit of the following character within a message). If the receiver performs this check and the timeout is exceeded then the receiver discards the current data link frame. A receiver that does not discard data link frames on the basis of inter-character gaps is considered not to perform this check.* *Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options are selected.*	☑ Not Checked ☐ No gap permitted ☐ Fixed at bit times ☐ Fixed at ms ☐ Configurable, range to bit times ☐ Configurable, range to ms ☐ Configurable, selectable from bit times ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Variable, explain:	Not Checked	.
1.2.8. Inter-character gaps in transmission: *When serial interfaces with asynchronous character framing are used, this parameter indicates whether extra delay is ever introduced between*	☑ None (always transmits with no inter-character gap) ☐ Maximumbit times ☐ Maximumms	None	.

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 are selected.*			

1.3. IP NETWORKING	**Capabilities**	**Current Value**	**If configurable list methods**
1.3.1. Port Name: *The name associated with this network port.*	-	X100	-
1.3.2. Type of End Point:	☐ TCP Initiating (Master Only) ☑ TCP Listening (Outstation Only) ☐ TCP Dual (required for Masters) ☑ UDP Datagram (required)		software **Smart view** Vers ---------- direct ---------- .
1.3.3. IP Address of this Device:	-	see Device Para TCP/IP IP address	software **Smart view** Vers ---------- direct ---------- .
1.3.4. Subnet Mask:	-	see Device Para TCP/IP Default gateway	software **Smart view** Vers ---------- direct ---------- .
1.3.5. Gateway IP Address:	-	see Device Para TCP/IP Default gateway	software **Smart view** Vers ---------- direct ---------- .
1.3.6. Accepts TCP Connections or UDP Datagrams from:	☑ Allows all (show as *.*.*.* in 1.3.7) ☐ Limits based on IP	Allows all	.

	address ☐Limits based on list of IP addresses ☐Limits based on a wildcard IP address ☐Limits based on list of wildcard IP addresses ☐Other validation, explain:		
1.3.7. IP Address(es) from which TCP Connections or UDP Datagrams are accepted:	-	*.*.*.*	.
1.3.8. TCP Listen Port Number: *If Outstation or dual end point Mater, port number on which to listen for incoming TCP connect requests. Required to be configureable 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	software **Smart view** Vers ---------- direct ---------- .
1.3.9. TCP Listen Port Number of remote device: *If Master or dual end point Outstation, port number on remote device with which to initiate connection. Required to be configurable for Masters and recommended to be configurable for Outstations.*	☑Not Applicable (Outstation w/o dual end point) ☐ Fixed at 20,000 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:	Not Applicable	.
1.3.10. TCP Keep-alive timer: *The time period for the keep-alive timer on active TCP connections.*	☐ Fixed at ms ☑ Configurable, range **1000** to **720000**ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe:	720000 ms	software **Smart view** Vers ---------- direct ---------- .
1.3.11. Local UDP port: *Local UDP port for sending and/or receiving UDP datagrams. Masters may let system choose an*	☐ Fixed at 20,000 ☑ Configurable, range **1** to **65535** ☐ Configurable, selectable from ☐ Configurable, other,	20000	software **Smart view** Vers ---------- direct

available port. Outstations must use one that is known by the Master.	describe: ☐Let system choose (Master only)		---------- .
1.3.12. Destination UDP port for DNP3 Requests (Master Only):	-	-	.
1.3.13. Destination UDP port for initial unsolicited null responses (UDP only Outstations): *For a UDP only Outstation, the destination UDP port for sending initial unsolicited Null response.*	☐ None ☐ Fixed at 20,000 ☑ Configurable, range **1** to **65535** ☐ Configurable, selectable from ☐ Configurable, other, describe:	same value as Local UDP Port (1.3.11)	software **Smart view** Vers ---------- direct ---------- .
1.3.14. Destination UDP port for responses: *For a UDP only Outstation, the destination UDP port for sending all responses other than the initial unsolicited Null response.*	☐ None ☐ Fixed at 20,000 ☑ Configurable, range **1** to **65535** ☐ Configurable, selectable from ☐ Configurable, other, describe: ☐Use source port number	same value as Local UDP Port (1.3.11)	software **Smart view** Vers ---------- direct ---------- .
1.3.15. Multiple outstation connections (Masters only): *Master only. Indicates whether multiple outstation connections are supported.*	☐ Supports multiple outstations (Masters only)	-	.
1.3.16. Multiple master connections (Outstations only): *Outstations only. Indicates whether multiple master connections are supported and the method that can be used to establish connections.*	☐ Supports multiple masters (Outstations only) If supported, the following methods may be used: ☐Method 1 (based on IP address) - required ☐Method 2 (based on IP port number) - recommended ☐Method 3 (browsing for static data) - optional	Not supported	.
1.3.17. Time synchonization support:	☑DNP3 Network method ☑Other, explain:**None, IRIG-B, SNTP** ☐Not Supported	Other	software **Smart view** Vers ---------- direct

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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:	65500	software **Smart view** Vers ---------- direct ---------- .
1.4.2. DNP3 Source Address Validation: *Indicates whether the Outstation will filter out requests not from a specific source address.*	☐ Never ☑ Always, one address allowed (shown in 1.4.3) ☐ Always, any one of multiple addresses allowed (each selectable as shown in 1.4.3) ☐ Sometimes, explain:	Always - single address	.
1.4.3. DNP3 Source Address (es) expected when Validation is Enabled: *Selects the allowed source address(es)*	☐ Configurable to any 16 bit DNP Data LInk Address value ☑ Configurable, range **0** to **65519** ☐ Configurable, selectable from ☐ Configurable, other, describe:	1	software **Smart view** Vers ---------- direct ---------- .
1.4.4. Self Address Support using address 0xFFFC: *If an Outstation receives a message with a destination address of 0xFFFC it shall respond normally with its own source address. It must be possible to diasble this feature if supported.*	☑ Yes (only allowed if configurable) ☑ No	No	software **Smart view** Vers ---------- direct ---------- .
1.4.5. Sends Confirmed User Data Frames: *A list of conditions under which the device transmits confirmed link layer services (TEST_LINK_STATES,*	☐ Never ☐ Always ☑ Sometimes, explain:**Depends on DataLinkConfirm setting**	Sometimes	software Vers ---------- direct ---------- .

RESET_LINK_STATES, CONFIRMED_USER_DATA).			
1.4.6. Data Link Layer Confirmation Timeout: *This timeout applies to any secondary data link message that requires a confirm or response (link reset, link status, user data, etc).*	☐ None ☐ Fixed at ms ☑ Configurable, range **100** to **10000**ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Variable, explain:	1000 ms	software Vers ---------- direct ---------- .
1.4.7. Maximum Data Link Retries: *The number of times the device will retransmit a frame that requests Link Layer confirmation.*	☐ None ☐ Fixed at ☑ Configurable, range **0** to **255** ☐ Configurable, selectable from ☐ Configurable, other, describe:	1	software Vers ---------- direct ---------- .
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:		.
1.4.9. Maximum number of octets that can be Received in a Data Link Frame: *This number includes the CRCs. With a field length of 255, the maximum size would be 292. The device must be able to receive 292 octets to be compliant.*	☑ Fixed at **292** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:		.

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.*	☑ Fixed at **2048** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:	2048	.

- Masters must provide a setting less than or equal to 249. *- Outstations must provide a setting less than or equal to 2048.*			
1.5.2. Maximum number of octets Transmitted in an Application Layer Fragment containing File Transfer:	☑ Fixed at **2048** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:	2048	.
1.5.3. Maximum number of octets that can be received in an Application Layer Fragment: *This size does not include any transport or frame octets.* *- Masters must provide a setting greater than or equal to 2048.* *- Outstations must provide a setting greater than or equal to 249.*	☑ Fixed at **2048** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:	2048	.
1.5.4. Timeout waiting for Complete Application Layer Fragment: *Timeout if all frames of a message fragment are not received in the specified time. Measured from time first frame of a fragment is received until the last frame is received.*	☑ None ☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Variable, explain:	ms	.
1.5.5. Maximum number of objects allowed in a single control request for CROB (Group 12):	☐ Fixed at (enter 0 if controls are not supported) ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe: **The maximum Number of objects allowed in a single Control Request for CROB is only limited by the maximum length of a data link frame.** ☐ Variable, explain:		.

1.5.6. Maximum number of objects allowed in a single control request for Analog Outputs (Group 41):	☐ Fixed at (enter 0 if controls are not supported) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe: ☐ Variable, explain:		.
1.5.7. Maximum number of objects allowed in a single control request for Data Sets (Groups 85, 86, 87):	☐ Fixed at (enter 0 if controls are not supported) ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe: ☐ Variable, explain:		.
1.5.8. Supports mixed object groups (AOBs, CROBs and Data Sets) in the same control request:	☐Not applicable - controls are not supported ☐Yes ☑No	No	.

1.6. FILL OUT THE FOLLOWING ITEMS FOR MASTERS ONLY	**Capabilities**	**Current Value**	**If configurable list methods**

1.7. FILL OUT THE FOLLOWING ITEMS FOR OUTSTATIONS ONLY	**Capabilities**	**Current Value**	**If configurable list methods**
1.7.1. Timeout waiting for Application Confirm of solicited response message:	☐ None ☐ Fixed at ms ☑ Configurable, range **100** to **10000**ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Variable, explain:	5000 ms	software Vers ---------- direct ---------- .
1.7.2. How often is time synchronization required from the master:	☐Never needs time ☐ Within seconds after IIN1.4 is set ☑ Periodically every **60** seconds		.
1.7.3. Device Trouble Bit IIN1.6: *If IIN1.6 device trouble bit is set under certain*	☑Never used ☐Reason for setting:		.

conditions, explain the possible causes.			
1.7.4. File Handle Timeout: *If there is no activity referencing a file handle for a configurable length of time, the outstation must do an automatic close on the file. The timeout value must be configurable up to 1 hour. When this condition occurs the outstation will send a File Transport Status Object (obj grp 70 var 6) using a staus code value of handle expired (0x02).*	☑ Not applicable, files not supported ☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Variable, explain:		.
1.7.5. Event Buffer Overflow Behaviour:	☐ Discard the oldest event ☑ Discard the newest event ☐ Other, explain:	Discard onewest	.
1.7.6. Event Buffer Organization: *Explain how event buffers are arranged (per Object Group, per Class, single buffer etc) and provide their sizes.*	Events with timestamp and without timestamp are stored in different buffers. Events without timestamp are reported first.	Events with timestamp and without timestamp are stored in different buffers. Events without timestamp are reported first.	.
1.7.7. Sends Multi-Fragment Responses: *Indicates whether an Outstation sends multi-fragment responses (Masters do not send multi-fragment requests).*	☑ Yes ☐ No	Yes	.
1.7.8. DNP Command Settings preserved through a device reset: *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*	☑ Assign Class ☐ Analog Deadbands ☐ Data Set Prototypes ☐ Data Set Descriptors	Assign Class	.

them again anytime the Restart IIN is set.			
1.7.9 Function Code 31, Activate Configuration: *Indicate whether FC31 is supported. If it is supported, does the outstation save configuration or code to non-volatile memory when command is received?*	☐ Supports Function Code 31 ☐ Saves to non-volatile storage		.

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.*	☐ Not Supported ☑ Configurable, selectable from On and Off	Off	software Vers ---------- direct ---------- .
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 **1** to **65535** ☐ Configurable, selectable from ☐ Configurable, other, describe:	1	software Vers ---------- direct ---------- .
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*	☐ Fixed at ms ☑ Configurable, range **1000** to **60000**ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Variable, explain:	10000 ms	software Vers ---------- direct ---------- .

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.			
1.8.4. Number of Unsolicited Retries: *This is the number of retries that an outstation transmits in each unsolicited response series if it does not receive confirmation back from the master. The configured value includes identical and regenerated retry messages. One of the choices must provide for an indefinite (and potentially infinite) number of trasmissions.*	☐ None ☐ Fixed at ms ☑ Configurable, range **0** to **255**ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe: ☐ Always infinite, never gives up	2	software Vers ---------- direct ---------- .

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 to ☑ Configurable, selectable from **1, Off** ☐ Configurable, other, describe:	Off	software Vers ---------- direct ---------- .
1.9.2. Number of class 2 events:	☐ Class 2 not used to trigger Unsolicited Responses ☐ Fixed at ☐ Configurable, range to ☑ Configurable, selectable from **1, Off** ☐ Configurable, other, describe:	Off	software Vers ---------- direct ---------- .

1.9.3. Number of class 3 events:	☐Class 3 not used to trigger Unsolicited Responses ☐ Fixed at ☐ Configurable, range to ☑ Configurable, selectable from **1, Off** ☐ Configurable, other, describe:	Off	software Vers ---------- direct ---------- .
1.9.4. Total number of events from any class:	☑Total Number of Events not used to trigger Unsolicited Responses ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:		.
1.9.5. Hold time after class 1 event: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☐Class 1 not used to trigger Unsolicited Responses ☑ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe:	0 ms	.
1.9.6. Hold time after class 2 event: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☐Class 2 not used to trigger Unsolicited Responses ☑ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe:	0 ms	.
1.9.7. Hold time after class 3 event: *A configurable value of 0 indicates that responses are not delayed due to this parameter.*	☐Class 3 not used to trigger Unsolicited Responses ☑ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe:	0 ms	.

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

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.*	-	1 ms	-
1.10.2. When does outstation set IIN1.4?	☑ Never ☑ Asserted at startup until first Time Synchronization request received ☑ Periodically, range **60s** to **60s** seconds ☐ Periodically, selectable from seconds ☐ Range to seconds after last time sync ☐ Selectable from seconds after last time sync	Never	.

	☐ When time error may have drifted by range to ms ☐ When time error may have drifted by selectable from ms		
1.10.3. Maximum Internal Time Reference Error when set via DNP (ms): *The difference between the time set in DNP Write Time message, and the time actually set in the outstation.*	-	1 ms	-
1.10.4. Maximum Delay Measurement Error (ms): *The difference between the time reported in the delay measurement response and the actual time between receipt of the delay measurement request and issuing the delay measurement reply.*	-	1 ms	-
1.10.5. Maximum Response Time (ms): *The amount of time an outstation will take to respond upon receipt of a valid request. This does not include the message transmission time.*	-	50 ms	-
1.10.6. Maximum time from start-up to IIN 1.4 assertion (ms):	-	ms	-
1.10.7. Maximum Event Time-tag error for local Binary and Double Bit I/O (ms): *The error between the time-tag reported and the absolute time of the physical event. This error includes the Internal Time Reference Error.*	-	100 ms	-
1.10.8. Maximum Event Time-tag error for local I/O	-	100 ms	-

other than Binary and Double Bit data types (ms):			

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

2. Mapping to IEC 61850 Object Models

This optional section allows each configuration parameter or point in the DNP Data map to be tied to an attribute in the IEC 61850 object models. The IEC 61850 mappings are stored in the XML version of the Device Profile Document as a list of XPath references to the tags representing real-time data from DNP under each point (for example value, timestamp, and quality for Analog inputs) paired with an IEC 61850 Object Reference in the form of a flattened ACSI (Abstract Communications Service Interface) name of the object and attributes as specified in IEC 61850 parts 7-4 and 7-3. The Xpath reference into the DNP XML file may also contain a reference to a constant value, a formula or conditional expression involving one or more XML tags, or a reference to a configuration parameter that is not associated with a particular data point.

A graphical or table representation may be generated from the XML and shown here in the Device Profile Document. The following is an example table format.

MAPPING TO IEC 61850 OBJECT MODELS

3. Capabilities and Current Settings for Device Database

The following tables identify the capabilities and current settings for each DNP3 data type. Each data type also provides a table defining the data points available in the device or a description of how this information can be obtained if the database is configurable.

3.1. BINARY INPUT POINTS

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

.	**Capabilities**	**Current Value**	**If configurable list methods**
3.1.1. Static Variation reported when variation 0 requested	☑ Variation 1 - Single-bit packed format ☑ Variation 2 - Single-bit with flag ☐ Based on point index	One	.
3.1.2. Event Variation reported when variation 0 requested	☑ Variation 1 - without time ☑ Variation 2 - with absolute time ☑ Variation 3 - with relative time ☐ Based on point index	Two	.
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 are typically reported for Binary Inputs*	☐ Only most recent ☑ All events	All events	.
3.1.4. Binary Inputs included in Class 0 response:	☑ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index	Always	.
3.1.5. Definition of Binary Input Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐ Other, explain:	Configurable	software Vers --- direct --- .

Binary Input points list:

Point Index	Name	Default class A	Name for State when value is 0	Name for State when value is 1	Description

0	Binary Input Point 0	one	Depends on the selected status bit	Depends on the selected status bit	User configurable binary Input (select value from a list of status bits)
...					
63	Binary Input Point 63	one	Depends on the selected status bit	Depends on the selected status bit	User configurable binary Input (select value from a list of status bits)

3.2. DOUBLE-BIT INPUT POINTS

Static (Steady-State) Object Number: 3
Event Object Number: 4

.	**Capabilities**	**Current Value**	**If configurable list methods**
3.2.1. Static Variation reported when variation 0 requested	☑ Variation 1 - Double-bit packed format ☑ Variation 2 - Double-bit with flag ☐ Based on point index	One	.
3.2.2. Event Variation reported when variation 0 requested	☑ Variation 1 - without time ☑ Variation 2 - with absolute time ☑ Variation 3 - with relative time ☐ Based on point index	One	.
		All events	.

3.2.3. Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. All events are typically reported for Double Bit Inputs*	☐ Only most recent ☑ All events		
3.2.4. Double Bit Inputs included in Class 0 response:	☑ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index	Always	.
3.2.5. Definition of Double Bit Input Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐Other, explain:	Configurable	software Vers --- direct --- .

Double-bit Input points list:

Point Index	Name	Default class Assigned to Events (1, 2, 3 or none)	Name for State when value is 0 (intermediate)	Name for State when value is 1 (off)	Name for State when value is 2 (on)	Name for State when value is 3 (indeterminate)	Description
0	Double Bit Input Point 0	one	In transit	Open	Closed	Faulty	User configurable double bit Input (select breaker from a list)
...							
6		one	In transit	Open	Closed	Faulty	

	Double Bit Input Point6						User configurable double bit Input (select breaker from a list)

3.3. BINARY OUTPUT STATUS AND CONTROL RELAY OUTPUT BLOCK **Binary Output Status Object Number: 10** **Binary Output Event Object Number: 11** **CROB Object Number: 12** **Binary Output Command Event Object Number: 13**			
.	**Capabilities**	**Current Value**	**If configurable list methods**
3.3.1. Minimum pulse time allowed with Trip, Close and Pulse On commands.	☑ Fixed at ms (hardware may limit this further ☐ Based on point index		.
3.3.2. Maximum pulse time allowed with Trip, Close and Pulse On commands.	☑ Fixed at ms (hardware may limit this further ☐ Based on point index		.
3.3.3. Binary Output Status included in Class 0 response:	☑ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index	Always	.
3.3.4. Reports Output Command Event Objects:	☑ Never ☐ Only upon a successful Control ☐ Upon all control attempts	Never	.
3.3.5. Event Variation reported when variation 0 requested	☑ Variation 1 - without time ☑ Variation 2 - with absolute time ☐ Based on point index	One	.
3.3.6. Command Event Variation reported when variation 0 requested	☐ Variation 1 - without time ☐ Variation 2 - with absolute time ☐ Based on point index		.
3.3.7. Change Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		.

3.3.8. Command Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		.
3.3.9. Maximum Time between Select and Operate:	☐Not Applicable ☑ Fixed at seconds ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐ Configurable, other, describe: ☐ Variable, explain: ☐ Based on point index	30 seconds	.
3.3.10. Definition of Binary Output Status / Control Relay Output Block Points List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐Other, explain:	Configurable	software Vers ---------- direct ---------- .

Binary Output Status and CROB points list:

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

0	Binary Output Point 0	Y	Y	Y	Y	-	Y	Y	-	-	-	inactive	active	none	none	Single bit state set by DNP Binary Output Point 0
...		-	-	-	-	-	-	-	-	-	-					
31	Binary Output Point 31	Y	Y	Y	Y	-	Y	Y	-	-	-	inactive	active	none	none	Single bit state set by DNP Binary Output Point 31

3.4. COUNTERS / FROZEN COUNTERS

Static Counter Object Number: 20
Static Frozen Counter Object Number: 21
Counter Event Object Number: 22
Frozen Counter Event Object Number: 23

.	Capabilities	Current Value	If configurable list methods
3.4.1. Static Counter Variation reported when variation 0 requested	☑ 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	One	.
3.4.2. Counter Event Variation reported when variation 0 requested	☑ Variation 1 - 32-bit with flag ☑ Variation 2 - 16-bit with flag ☑ Variation 5 - 32-bit	One	.

	with flag and time ☑ Variation 6 - 16-bit with flag and time ☐ Based on point index		
3.4.3. Counters included in Class 0 response: *If counters are not included in the Class 0 response, Counter Events (group 22) may not be reported.*	☑ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index	Always	.
3.4.4. Counter Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. All events are typically reported for Counters*	☑ Only most recent ☐ All events	Most recent	.
3.4.5. Static Frozen Counter Variation reported when variation 0 requested:	☐ 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		.
3.4.6. Frozen Counter Event Variation reported when variation 0 requested:	☐ 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		.
3.4.7. Frozen Counters included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index		.

3.4.8. Frozen Counter Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. All events are typically reported for Frozen ounters*	☐ Only most recent ☐ All events		.
3.4.9. Counters Roll Over at:	☐16 Bits (65,535) ☐32 Bits (4,294,967,295) ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe: **Based on selected counter** ☐ Based on point index	Other	.
3.4.10. Counters frozen by means of:	☐Master Request ☐Freezes itself without concern for time of day ☐Freezes itself and requires time of day ☐Other, explain:		.
3.4.11. Definition of Counter / Frozen Counter Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐Other, explain:	Configurable	software Vers ---------- direct ---------- .

Counter / Frozen Counter points list:

Point Index	Name	Default class Assigned to Counter E	Frozen Counter Exists (Yes or No)	Default class Assigned to Frozen Co	Description

0	Binary Counter Point 0	three	-		User configurable binary cuonter (select value from a list of counters)
...			-		
8	Binary Counter Point 8	three	-		User configurable binary cuonter (select value from a list of counters)

3.5. ANALOG INPUT POINTS **Static (Steady-State) Object Number: 30** **Event Object Number: 32**			
.	**Capabilities**	**Current Value**	**If configurable list methods**
3.5.1. Static Variation reported when variation 0 requested	☑ 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	One	.

	with flag ☐ Based on point index		
3.5.2. Event Variation reported when variation 0 requested	☑ 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	One	.
3.5.3. Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. Only the most recent event is typically reported for Analog Inputs*	☑ Only most recent ☐ All events	Most recent	.
3.5.4. Analog Inputs included in Class 0 response: *If Analog Inputs are not included in the Class 0 response, Analog Input Events (group 32) may not be reported.*	☑ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index	Always	.
3.5.5. How Deadbands are set:	☐A. Global Fixed ☐B. Configurable through DNP ☑C. Configurable via other means ☐D. Other, explain:	C	software Vers --- direct --- .

	☐ Based on point index - column specifies which of the options applies B, C or D		
3.5.6. Analog Deadband Algorithm: simple- just compares the difference from the previous reported value integrating- keeps track of the accumulated change other- indicating another algorithm	☑ Simple ☑ Integrating ☐ Other, explain:	Integrating	software Vers --- direct --- .
3.5.7. Definition of Analog Input Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐ Other, explain:	Configurable	software Vers --- direct --- .

Analog Input points list:

.			Transmitted Value		Scaling		.		
Point Index	Name		Default Class Assigned to Events (1, 2, 3 or none) Min	Max	Multiplier	Offset	Units	Resolution	Description
0		two	-	-		0.0		1	

	Analog Input Point 0				Configurable between 0.001 and 1000000		Based on selected value		User configurable analog input (select value from a list of measured values)
...			-	-					
31	Analog Input Point 31	two	-	-	Configurable between 0.001 and 1000000	0.0	Based on selected value	1	User configurable analog input (select value from a list of measured values)

3.6. ANALOG OUTPUT STATUS AND ANALOG OUTPUT CONTROL BLOCK
Analog Output Status Object Number: 40
Analog Output Control Block Object Number: 41
Analog Output Event Object Number: 42
Analog Output Command Event Object Number: 43

.	**Capabilities**	**Current Value**	**If configurable list methods**
3.6.1. Static Analog Output Status Variation reported when variation 0 requested	☐ 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		.
3.6.2. Analog Output Status included in Class 0 response: *If Analog Output Status points are not included in the Class 0 response, Analog Output Events (group 42) may not be reported.*	☐ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index		.
3.6.3. Reports Output Command Event Objects:	☐Never ☐Only upon a successful Control		.

	☐ Upon all control attempts		
3.6.4. Event Variation reported when variation 0 requested	☐ 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		.
3.6.5. Command Event Variation reported when variation 0 requested	☐ 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		.
3.6.6. Change Event reporting mode: *When responding with event data and more than one event has occurred for*	☐ Only most recent ☐ All events		.

a data point, an Outstation may include all events or only the most recent event.			
3.6.7. Command Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		.
3.6.8. Maximum Time between Select and Operate:	☐Not Applicable ☐ Fixed at seconds ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐ Configurable, other, describe: ☐ Variable, explain: ☐ Based on point index		.
3.6.9. Definition of Analog Output Status / Analog Output Block Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.*	☐ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐Other, explain:		.

Analog Output points list:

.		Supported Control Operations			Transmitted Value		Scaling		.				Default Class Assigned to Events (1, 2, 3 or none)		.
Point Index	Name	Select/Operate	Direct Operate	Direct Operate - No Ack	Min	Max	Min	Max	Units		Resolution	Change	Command		Description
		-	-	-	-	-	-	-							

3.7. SEQUENTIAL FILE TRANSFER **Object Number: 70**			
.	**Capabilities**	**Current Value**	**If configurable list methods**
3.7.1. File Transfer Supported:	☐ Yes ☑ No (do not complete any further entries in section 3.7)		.
3.7.2. File Authentication: *Indicates whether a valid authentication key must be obtained prior to open and delete requests.*	☐ Always ☐ Sometimes, explain ☐ Never		.
3.7.3. File Append Mode: *Indicates if a file can be opened and appended to versus just overwritten.*	☐ Always ☐ Sometimes, explain ☐ Never		.
3.7.4. Permissions Support: *Indicates the device is capable of using the indicated permissions.*	☐ Owner Read Allowed: 0x0100 ☐ Owner Write Allowed: 0x0080 ☐ Owner Execute Allowed: 0x0040 ☐ Group Read Allowed: 0x0020 ☐ Group Write Allowed: 0x0010 ☐ Group Execute Allowed: 0x0008 ☐ World Read Allowed: 0x0004 ☐ World Write Allowed: 0x0002 ☐ World Execute Allowed: 0x0001		.
3.7.5. Multiple Blocks in a Fragment: *File data is transferred in a series of blocks of a maximum specified size. This indicates whether only a single block or multiple blocks will be sent in fragment.*	☐ Yes ☐ No		.
			.

3.7.6. Max number of Files Open at one time:	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe:		
3.7.7. Definition of File Names that may be read or written:	☐ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:		.

Sequential Files list:

.		Authentication Required for:			.
File Name	Default Class Assigned to Events (1, 2, 3 or none)	Read	Write	Delete	Description
		-	-	-	

3.8. OCTET STRING POINTS **Static (Steady-State) Object Number: 110** **Event Object Number: 111**			
.	**Capabilities**	**Current Value**	**If configurable list methods**
3.8.1. Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		.
3.8.2. Octet Strings included in Class 0 response: *If Octet Strings are not included in the Class 0 response, Octet String Events (group 111) may not be reported.*	☐ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index		.

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

Octet String points list:

Point Index	Name	Default Class Assigned to Events (1, 2, 3 or none)	Description

3.9. VIRTUAL TERMINAL PORT NUMBERS (POINTS)

Static (Steady-State) Object Number: 112
Event Object Number: 113

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

Ports list:

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

3.10. DATA SET PROTOTYPE
Object Number: 85
Variation Number: 1

.	Capabilities	Current Value	If configurable list methods
3.10.1. Definition of Data Set Prototypes:	☐ Fixed, a Data Set Descriptor is shown in table below ☐ Configurable (a currently defined Data Set Prototype may be shown in table below) ☐ Other, explain:		.
3.10.2. Description:	.	This is a dataset prototype	.

Element Number	Descriptor Code	Element Description	Data Type Code	Max Data Length	Ancillary Value
0	ID (identifier)	Mandatory DS identifier	None	0	
1	UUID	UUID assigned to prototype	None	0	
2	NSPC	Prototype namespace	None	0	
3	Name	Prototype name	None	0	
4	DAEL	Data Element			

3.11. DATA SET DESCRIPTOR CONTENTS AND CHARACTERISTICS
Object Number: 86
Variation Numbers: 1 and 2

.	Capabilities	Current Value	If configurable list methods
3.11.1. Definition of Data Set Descriptors:	☐ Fixed, a Data Set Descriptor is shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:		.
3.11.2. Description:	.		.
3.11.3. Data Set Properties:			.

	☐ Readable ☐ Writable ☐ Outstation maintains a static data set ☐ Outstation generates a data set event ☐ Data set defined by master		
3.11.4. Default Event Assigned Class:	☐ One ☐ Two ☐ Three		.
3.11.5. Static Data Set included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to Class 1, 2, or 3 ☐ Based on point index		.

Element Number	Descriptor Code	Element Description	Data Type Code	Max Data Length	Ancillary Value
0	ID (identifier)	Mandatory DS identifier	None	0	
Data set Points					
Element Number	DNP Group Number	Point Index			

4. Implementation Table

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

DNP OBJECT GROUP & VARIATION			**REQUEST Master may issue Outstation must parse**		**RESPONSE Master must parse Outstation may issue**	

Object Group Number	Variation Number	Description	Function Codes (dec)	Qualifier Codes (hex)	Function Codes (dec)	Qualifier Codes (hex)
1	0	Binary Input - any variation	1 *(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
1	0	Binary Input - any variation	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)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
2	1	Binary Input Change Event - without time	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
2	1	Binary Input Change Event - without time	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	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)*	17, 28 *(index)*
2	2		1 *(read)*	06 *(no range, or*	130 *(Unsol. Resp.)*	17, 28 *(index)*

		Binary Input Change Event - with absolute time		*all)*, 07, 08 *(limited qty)*		
2	3	Binary Input Change Event - with relative time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
2	3	Binary Input Change Event - with relative time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	130 *(Unsol. Resp.)*	17, 28 *(index)*
3	0	Double-bit Input - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
3	0	Double-bit Input - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
3	1	Double-bit Input - Double-bit packed	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
3	2	Double-bit Input - with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
4	0	Double-bit Input Change Event - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
4	1	Double-bit Input Change Event - without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
4	1		1*(read)*	06 *(no range, or*		17, 28 *(index)*

		Double-bit Input Change Event - without time		*all)*, 07, 08 *(limited qty)*	130 *(Unsol. Resp.)*	
4	2	Double-bit Input Change Event - with absolute time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
4	2	Double-bit Input Change Event - with absolute time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	130 *(Unsol. Resp.)*	17, 28 *(index)*
4	3	Double-bit Input Change Event - with relative time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
4	3	Double-bit Input Change Event - with relative time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	130 *(Unsol. Resp.)*	17, 28 *(index)*
10	0	Continuous Control - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
10	0	Continuous Control - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
10	2	Continuous Control - binary output status	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	129 *(Response)*	00, 01 *(start-stop)*
11	0	Binary Output Change Event - any variation	-	-	-	-
11	1	Binary Output Change Event - status without time	-	-	-	-
11	1		-	-	-	-

		Binary Output Change Event - status without time				
11	2	Binary Output Change Event - status with time	-	-	-	-
11	2	Binary Output Change Event - status with time	-	-	-	-
12	0	Pulsed Control - any variation	22*(assign class)*	00, 01 *(start-stop)*	-	-
12	1	Pulsed Control - control relay output block	3*(select)*	17, 28 *(index)*	129 *(Response)*	17, 28 *(index)*
12	1	Pulsed Control - control relay output block	4*(operate)*	17, 28 *(index)*	129 *(Response)*	17, 28 *(index)*
12	1	Pulsed Control - control relay output block	5*(direct op.)*	17, 28 *(index)*	129 *(Response)*	17, 28 *(index)*
12	1	Pulsed Control - control relay output block	6*(direct op, no ack)*	17, 28 *(index)*	129 *(Response)*	17, 28 *(index)*
12	2	Pulsed Control - pattern control block	5*(direct op.)*	07 *(limited qty = 1)*	129 *(Response)*	07 *(limited qty = 1)*
12	2	Pulsed Control - pattern control block	6*(direct op, no ack)*	07 *(limited qty = 1)*	129 *(Response)*	07 *(limited qty = 1)*
12	3	Pulsed Control - pattern mask	5*(direct op.)*	00, 01 *(start-stop)*	129 *(Response)*	00, 01 *(start-stop)*
12	3	Pulsed Control - pattern mask	6*(direct op, no ack)*	00, 01 *(start-stop)*	129 *(Response)*	00, 01 *(start-stop)*
13	0	Binary Output Command Event - any variation	-	-	-	-
13	1	Binary Output Command Event - without time	-	-	-	-
13	1	Binary Output Command Event - without time	-	-	-	-
13	2	Binary Output Command Event - with time	-	-	-	-
13	2	Binary Output Command Event - with time	-	-	-	-

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

		Frozen Counter - 16-bit without flag				
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)*	17, 28 *(index)*
22	1	Counter Change Event - 32-bit with flag	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	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)*	17, 28 *(index)*
22	2	Counter Change Event - 16-bit with flag	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	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)*	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)*	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)*	17, 28 *(index)*
22	6	Counter Change Event - 16-bit with flag and time	1 *(read)*	06 *(no range, or all)*,	130 *(Unsol. Resp.)*	17, 28 *(index)*

				07, 08 *(limited qty)*		
23	0	Frozen Counter Change Event - any variation	-	-	-	-
23	1	Frozen Counter Change Event - 32-bit with flag	-	-	-	-
23	1	Frozen Counter Change Event - 32-bit with flag	-	-	-	-
23	2	Frozen Counter Change Event - 16-bit with flag	-	-	-	-
23	2	Frozen Counter Change Event - 16-bit with flag	-	-	-	-
23	5	Frozen Counter Change Event - 32-bit with flag and time	-	-	-	-
23	5	Frozen Counter Change Event - 32-bit with flag and time	-	-	-	-
23	6	Frozen Counter Change Event - 16-bit with flag and time	-	-	-	-
23	6	Frozen Counter Change Event - 16-bit with flag and time	-	-	-	-
30	0	Analog Input - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*	-	-
30	0	Analog Input - any variation	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		1*(read)*	00, 01 *(start-*	129 *(Response)*	00, 01 *(start-stop)*

		Analog Input - 16-bit with flag		*stop)*, 06 *(no range, or all)*		
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	-	-	-	-
30	6	Analog Input - double-precision, floating-point with flag	-	-	-	-
31	0	Frozen Analog Input - any variation	-	-	-	-
31	0	Frozen Analog Input - any variation	-	-	-	-
31	1	Frozen Analog Input - 32-bit with flag	-	-	-	-
31	2	Frozen Analog Input - 16-bit with flag	-	-	-	-
31	3	Frozen Analog Input - 32-bit with time of freeze	-	-	-	-
31	4	Frozen Analog Input - 16-bit with time of freeze	-	-	-	-
31	5	Frozen Analog Input - 32-bit without flag	-	-	-	-
31	6	Frozen Analog Input - 16-bit without flag	-	-	-	-
31	7	Frozen Analog Input - single-precision, floating point with flag	-	-	-	-
31	8	Frozen Analog Input - double-precision, floating point with flag	-	-	-	-

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)*	17, 28 *(index)*
32	1	Analog Input Change Event - 32-bit without time	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	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)*	17, 28 *(index)*
32	2	Analog Input Change Event - 16-bit without time	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	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)*	17, 28 *(index)*
32	3	Analog Input Change Event - 32-bit with time	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	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)*	17, 28 *(index)*
32	4	Analog Input Change Event - 16-bit with time	1 *(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	130 *(Unsol. Resp.)*	17, 28 *(index)*

32	5	Analog Input Change Event - single-precision, floating-point without time	-	-	-	-
32	5	Analog Input Change Event - single-precision, floating-point without time	-	-	-	-
32	6	Analog Input Change Event - double-precision, floating-point without time	-	-	-	-
32	6	Analog Input Change Event - double-precision, floating-point without time	-	-	-	-
32	7	Analog Input Change Event - single-precision, floating-point with time	-	-	-	-
32	7	Analog Input Change Event - single-precision, floating-point with time	-	-	-	-
32	8	Analog Input Change Event - double-precision, floating-point with time	-	-	-	-
32	8	Analog Input Change Event - double-precision, floating-point with time	-	-	-	-
33	0	Frozen Analog Input Change Event - any variation	-	-	-	-
33	1	Frozen Analog Input Change Event - 32-bit without time	-	-	-	-
33	1	Frozen Analog Input Change Event - 32-bit without time	-	-	-	-
33	2	Frozen Analog Input Change Event - 16-bit without time	-	-	-	-
33	2	Frozen Analog Input Change Event - 16-bit without time	-	-	-	-
33	3		-	-	-	-

		Frozen Analog Input Change Event - 32-bit with time				
33	3	Frozen Analog Input Change Event - 32-bit with time	-	-	-	-
33	4	Frozen Analog Input Change Event - 16-bit with time	-	-	-	-
33	4	Frozen Analog Input Change Event - 16-bit with time	-	-	-	-
33	5	Frozen Analog Input Change Event - single-precision, floating-point without time	-	-	-	-
33	5	Frozen Analog Input Change Event - single-precision, floating-point without time	-	-	-	-
33	6	Frozen Analog Input Change Event - double-precision, floating-point without time	-	-	-	-
33	6	Frozen Analog Input Change Event - double-precision, floating-point without time	-	-	-	-
33	7	Frozen Analog Input Change Event - single-precision, floating-point with time	-	-	-	-
33	7	Frozen Analog Input Change Event - single-precision, floating-point with time	-	-	-	-
33	8	Frozen Analog Input Change Event - double-precision, floating-point with time	-	-	-	-
33	8	Frozen Analog Input Change Event - double-precision, floating-point with time	-	-	-	-

34	0	Analog Input Deadband - any variation	-	-	-	-
34	1	Analog Input Deadband - 16-bit	-	-	-	-
34	1	Analog Input Deadband - 16-bit	-	-	-	-
34	2	Analog Input Deadband - 32-bit	-	-	-	-
34	2	Analog Input Deadband - 32-bit	-	-	-	-
34	3	Analog Input Deadband - single-precision, floating-point	-	-	-	-
34	3	Analog Input Deadband - single-precision, floating-point	-	-	-	-
40	0	Analog Output Status - any variation	-	-	-	-
40	0	Analog Output Status - any variation	-	-	-	-
40	1	Analog Output Status - 32-bit with flag	-	-	-	-
40	2	Analog Output Status - 16-bit with flag	-	-	-	-
40	3	Analog Output Status - single-precision, floating-point with flag	-	-	-	-
40	4	Analog Output Status - double-precision, floating-point with flag	-	-	-	-
41	0	Analog Output Block - any variation	-	-	-	-
41	1	Analog Output Block - 32-bit	-	-	-	-
41	1	Analog Output Block - 32-bit	-	-	-	-
41	1	Analog Output Block - 32-bit	-	-	-	-
41	1	Analog Output Block - 32-bit	-	-	-	-
41	2		-	-	-	-

		Analog Output Block - 16-bit				
41	2	Analog Output Block - 16-bit	-	-	-	-
41	2	Analog Output Block - 16-bit	-	-	-	-
41	2	Analog Output Block - 16-bit	-	-	-	-
41	3	Analog Output Block - single-precision, floating-pointt	-	-	-	-
41	3	Analog Output Block - single-precision, floating-pointt	-	-	-	-
41	3	Analog Output Block - single-precision, floating-pointt	-	-	-	-
41	3	Analog Output Block - single-precision, floating-pointt	-	-	-	-
41	4	Analog Output Block - double-precision, floating-point	-	-	-	-
41	4	Analog Output Block - double-precision, floating-point	-	-	-	-
41	4	Analog Output Block - double-precision, floating-point	-	-	-	-
41	4	Analog Output Block - double-precision, floating-point	-	-	-	-
42	0	Analog Output Change Event - any variation	-	-	-	-
42	1	Analog Output Change Event - 32-bit without time	-	-	-	-
42	1	Analog Output Change Event - 32-bit without time	-	-	-	-
42	2	Analog Output Change Event - 16-bit without time	-	-	-	-
42	2		-	-	-	-

		Analog Output Change Event - 16-bit without time				
42	3	Analog Output Change Event - 32-bit with time	-	-	-	-
42	3	Analog Output Change Event - 32-bit with time	-	-	-	-
42	4	Analog Output Change Event - 16-bit with time	-	-	-	-
42	4	Analog Output Change Event - 16-bit with time	-	-	-	-
42	5	Analog Output Change Event - single-precision, floating-point without time	-	-	-	-
42	5	Analog Output Change Event - single-precision, floating-point without time	-	-	-	-
42	6	Analog Output Change Event - double-precision, floating-point without time	-	-	-	-
42	6	Analog Output Change Event - double-precision, floating-point without time	-	-	-	-
42	7	Analog Output Change Event - single-precision, floating-point with time	-	-	-	-
42	7	Analog Output Change Event - single-precision, floating-point with time	-	-	-	-
42	8	Analog Output Change Event - double-precision, floating-point with time	-	-	-	-
42	8	Analog Output Change Event -	-	-	-	-

		double-precision, floating-point with time				
43	0	Analog Output Command Event - any variation	-	-	-	-
43	1	Analog Output Command Event - 32-bit without time	-	-	-	-
43	1	Analog Output Command Event - 32-bit without time	-	-	-	-
43	2	Analog Output Command Event - 16-bit without time	-	-	-	-
43	2	Analog Output Command Event - 16-bit without time	-	-	-	-
43	3	Analog Output Command Event - 32-bit with time	-	-	-	-
43	3	Analog Output Command Event - 32-bit with time	-	-	-	-
43	4	Analog Output Command Event - 16-bit with time	-	-	-	-
43	4	Analog Output Command Event - 16-bit with time	-	-	-	-
43	5	Analog Output Command Event - single-precision, floating-point without time	-	-	-	-
43	5	Analog Output Command Event - single-precision, floating-point without time	-	-	-	-
43	6	Analog Output Command Event - double-precision, floating-point without time	-	-	-	-
43	6	Analog Output Command Event - double-precision,	-	-	-	-

		floating-point without time				
43	7	Analog Output Command Event - single-precision, floating-point with time	-	-	-	-
43	7	Analog Output Command Event - single-precision, floating-point with time	-	-	-	-
43	8	Analog Output Command Event - double-precision, floating-point with time	-	-	-	-
43	8	Analog Output Command Event - double-precision, floating-point with time	-	-	-	-
50	1	Time and Date - absolute time	1*(read)*	07 *(limited qty = 1)*	129 *(Response)*	07 *(limited qty = 1)*
50	1	Time and Date - absolute time	2*(write)*	07 *(limited qty = 1)*	-	-
50	2	Time and Date - absolute time and interval	11*(frz at time)*	07 *(limited qty = 1)*	-	-
50	2	Time and Date - absolute time and interval	12*(frz at time, no ack)*	07 *(limited qty = 1)*	-	-
50	3	Time and Date - absolute time at last recorded time	2*(write)*	07 *(limited qty = 1)*	-	-
51	1	Time and Date CTO - absolute time, synchronised	-	-	129 *(Response)*	07 *(limited qty = 1)*
51	1	Time and Date CTO - absolute time, synchronised	-	-	130 *(Unsol. Resp.)*	07 *(limited qty = 1)*
51	2	Time and Date CTO - absolute time, un-synchronised	-	-	129 *(Response)*	07 *(limited qty = 1)*
51	2	Time and Date CTO - absolute time, un-synchronised	-	-	130 *(Unsol. Resp.)*	07 *(limited qty = 1)*

52	1	Time Delay - coarse	-	-	129 *(Response)*	07 *(limited qty = 1)*
52	2	Time Delay - fine	-	-	129 *(Response)*	07 *(limited qty = 1)*
60	1	Class Objects - class 0 data	1*(read)*	06 *(no range, or all)*	-	-
60	2	Class Objects - class 1 data	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	-	-
60	2	Class Objects - class 1 data	20*(enable unsol.)*	06 *(no range, or all)*	-	-
60	2	Class Objects - class 1 data	21*(disable unsol.)*	06 *(no range, or all)*	-	-
60	2	Class Objects - class 1 data	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)*	-	-
60	3	Class Objects - class 2 data	20*(enable unsol.)*	06 *(no range, or all)*	-	-
60	3	Class Objects - class 2 data	21*(disable unsol.)*	06 *(no range, or all)*	-	-
60	3	Class Objects - class 2 data	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)*	-	-
60	4	Class Objects - class 3 data	20*(enable unsol.)*	06 *(no range, or all)*	-	-
60	4	Class Objects - class 3 data	21*(disable unsol.)*	06 *(no range, or all)*	-	-
60	4	Class Objects - class 3 data	22*(assign class)*	06 *(no range, or all)*	-	-

70	0	File Control - any variation	-	-	-	-
70	0	File Control - any variation	-	-	-	-
70	2	File Control - authentication	-	-	-	-
70	3	File Control - file command	-	-	-	-
70	3	File Control - file command	-	-	-	-
70	4	File Control - file command status	-	-	-	-
70	4	File Control - file command status	-	-	-	-
70	4	File Control - file command status	-	-	-	-
70	4	File Control - file command status	-	-	-	-
70	5	File Control - file transport	-	-	-	-
70	5	File Control - file transport	-	-	-	-
70	5	File Control - file transport	-	-	-	-
70	5	File Control - file transport	-	-	-	-
70	6	File Control - file transport status	-	-	-	-
70	6	File Control - file transport status	-	-	-	-
70	7	File Control - file descriptor	-	-	-	-
70	7	File Control - file descriptor	-	-	-	-
70	8	File Control - file specification string	-	-	-	-
80	1	Internal Indications - packed format	1*(read)*	00, 01 *(start-stop)*	129 *(Response)*	00, 01 *(start-stop)*
80	1	Internal Indications - packed format	2*(write)*	00 *(start-stop)*	-	-
85	0	Data Set Prototype - any variation	-	-	-	-
85	1	Data Set Prototype - with UUID	-	-	-	-

85	1	Data Set Prototype - with UUID	-	-	-	-
86	0	Data Set Descriptor - any variation	-	-	-	-
86	0	Data Set Descriptor - any variation	-	-	-	-
86	1	Data Set Descriptor - Data Set contents	-	-	-	-
86	1	Data Set Descriptor - Data Set contents	-	-	-	-
86	2	Data Set Descriptor - characteristics	-	-	-	-
86	3	Data Set Descriptor - point index attributes	-	-	-	-
86	3	Data Set Descriptor - point index attributes	-	-	-	-
87	1	Data Set - present value	-	-	-	-
87	1	Data Set - present value	-	-	-	-
88	0	Data Set Event - any variation	-	-	-	-
88	1	Data Set Event - snapshot	-	-	-	-
88	1	Data Set Event - snapshot	-	-	-	-
91	1	Status of Requested Operation	-	-	-	-
101	1	Binary Coded Decimal Integers - small	-	-	-	-
101	2	Binary Coded Decimal Integers - medium	-	-	-	-
101	3	Binary Coded Decimal Integers - large	-	-	-	-
110	255	Octet String	-	-	-	-
110	255	Octet String	-	-	-	-
111	255	Octet String Change Event	-	-	-	-
111	255	Octet String Change Event	-	-	-	-
112	255	Virtual Terminal Output Block	-	-	-	-
113	255	Virtual Terminal Event Data	-	-	-	-

113	255	Virtual Terminal Event Data	-	-	-	-

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

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