DNP3 Device Profile
Based on DNP XML Schema version 2.08.00

Document Name: ControlEdge RTU and PLC Master Device Profile

Document Description: This is a DNP3 device profile for the Honeywell ControlEdge RTU and PLC master device.

Revision History

Date	Time	Version	Reason for change	Edited by
2021-08-26		1	Initial revision for firmware version SC-UCMX02 of ControlEdge 2020 Controller R170, and 900CP1-0200 of ControlEdge 900 Controller R171.	Honeywell with document ID RTDOC-X735-en-A
2021-09-09		2	Rename the document to ControlEdge RTU and PLC DNP3 Master Device Profile, because ControlEdge PLC supports DNP3 Master too; Update the maximum number of obejects allowed in a single control request for CROB, Analog Outputs and Data Sets.	Honeywell with document ID RTDOC-X735-en-B

REFERENCE DEVICE:

1 Device Properties

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

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

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

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

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

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

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

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

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

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

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

1.1 DEVICE IDENTIFICATION	Capabilities	Current Value	If configurable list methods

1.1.1 Device Function: *Masters send DNP requests, while Outstations send DNP responses. If a single physical device can perform both functions a separate Device Profile Document must be provided for each function.*	(●) Master ( ) Outstation	(●) Master ( ) Outstation	
1.1.2 Vendor Name: *The name of the organization producing the device.* *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 252.*		Honeywell	
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.*		ControlEdge RTU and PLC. Model numbers: SC-UCNN11, ControlEdge 2020 Redundant controller; SC-UCMX02, ControlEdge 2020 Non-redundant controller; 900CP1-0200, ControlEdge 900 CPM	
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.*		SC-UCMX02: Kernel Board Version B, App Board Version B; SC-UCNN11: Kernel Board Version C; 900CP1-0200	
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.*		RTU_170 and later for SC-UCMX02 and SC-UCNN11; PLC_171 and later for 900CP1-0200	
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	
1.1.7 DNP Levels Supported for: *Indicate each DNP3 Level to which the device conforms fully. For Masters, requests and responses can be indicated independently.*	Masters Only Requests Responses [ ] [ ] None [✓] [✓] Level 1 [✓] [✓] Level 2 [✓] [✓] Level 3 [✓] [✓] Level 4	For requests: Level 1 Level 2 Level 3 Level 4 For responses: Level 1 Level 2 Level 3 Level 4	
1.1.8 Supported Function Blocks:	[✓] Self Address Support [ ] Data Sets [ ] File Transfer [ ] Virtual Terminal [ ] Mapping to IEC 61850 Object Models defined in a DNP3 XML file [ ] Function code 31, activate configuration [ ] Secure Authentication (if checked then see 1.12)		

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 ControlEdge Builder170 or later ☐ 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 Vendor software named **ControlEdge Builder** Version **170 or later** Protocol	
1.1.11 DNP3 XML files available On-line: *XML configuration file names that can be read or written through DNP3 File Transfer to a device.* *A device's currently running configuration is returned by DNP3 on-line XML file read from the device.* *DNP3 on-line XML file write to a device will update the device's configuration when the Activate Configuration (function code 31) is received.*	Rd Wr Filename — Description of Contents ☐ ☐ dnpDP.xml — Complete Device Profile ☐ ☐ dnpDPCap.xml — Device Profile Capabilities ☐ ☐ dnpDPCfg.xml — Device Profile config values	Rd Wr Filename ☐ ☐ dnpDP.xml ☐ ☐ dnpDPCap.xml ☐ ☐ dnpDPCfg.xml	
1.1.12 External DNP3 XML files available Off-line: *XML configuration file names that can be read or written from an external system, typically from a system that maintains the outstation configuration.* *External off-line XML file read permits an XML definition of a new configuration to be supplied from off-line configuration tools.* *External off-line XML file write permits an XML definition of a new configuration to be supplied to off-line configuration tools.*	Rd Wr Filename — Description of Contents ☐ ☐ dnpDP.xml — Complete Device Profile ☐ ☐ dnpDPCap.xml — Device Profile Capabilities ☐ ☐ dnpDPCfg.xml — Device Profile config values	Rd Wr Filename ☐ ☐ dnpDP.xml ☐ ☐ dnpDPCap.xml ☐ ☐ dnpDPCfg.xml	
1.1.13 Connections Supported:	☐ Serial (complete section 1.2) ☑ IP Networking (complete section 1.3) ☐ Other, explain	IP Networking	

1.3 IP Networking	**Capabilities**	**Current Value**	**If configurable list methods**
1.3.1 Port Name: *Name used to reference the communications port defined in this section.*		ETH1, ETH2	
1.3.2 Type of End Point:	☑ TCP Initiating (Master Only) ☐ TCP Listening (Outstation Only) ☑ TCP Dual (required for Masters) ☐ UDP Datagram (required)	TCP Initiating TCP Dual	

1.3.3 IP Address of this Device:		*.*.*.*	software **ControlEdge Builder** Vers **170 or later**
1.3.4 Subnet Mask:		*.*.*.*	software **ControlEdge Builder** Vers **170 or later**
1.3.5 Gateway IP Address:		*.*.*.*	software **ControlEdge Builder** Vers **170 or later**
1.3.6 Accepts TCP Connections or UDP Datagrams from:	☑ Allows all (show as *.*.*.* in 1.3.7) ☐ Limits based on 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	Allows all	
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 Master, 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 to ☐ Configurable, selectable from ☐ Configurable, other, describe		
1.3.9 TCP Listen Port Number of remote device: *If Master or dual end point Outstation, port number on remote device with which to initiate connection. Required to be configurable for Masters and recommended to be configurable for Outstations.*	☑ Not Applicable (Outstation w/o dual end point) ☐ Fixed at 20,000 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe		
1.3.10 TCP Keep-alive timer: *The time period for the keep-alive timer on active TCP connections.*	☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe		
1.3.11 Local UDP port: *Local UDP port for sending and/or receiving UDP datagrams. Masters may let system choose an available port. Outstations must use one that is known by the Master.*	☐ Fixed at 20,000 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Let system choose (Master only)		
1.3.12 Destination UDP port for DNP3 Requests (Masters Only):	☐ Fixed at 20,000 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe		
1.3.13 Destination UDP port for initial unsolicited null responses (UDP only Outstations): *The destination UDP port for sending initial unsolicited Null response.*	☑ None ☐ Fixed at 20,000 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe		

1.3.14 Destination UDP port for responses (UDP only Outstations): *The destination UDP port for sending all responses other than the initial unsolicited Null response.*	☑ None ☐ Fixed at 20,000 ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Use source port number		
1.3.15 Multiple outstation connections (Masters only): *Indicates whether multiple outstation connections are supported.*	☑ Supports multiple outstations (Masters only)	True	software **ControlEdge Builder** Vers **170 or later** ----------
1.3.16 Multiple master connections (Outstations only): *Indicates whether multiple master connections are supported and the method that can be used to establish connections.*	☐ Supports multiple masters (Outstations only) If supported, the following methods may be used: ☐ Method 1 (based on IP address) - required ☐ Method 2 (based on IP port number) - recommended ☐ Method 3 (browsing for static data) - optional	Not supported	
1.3.17 Time synchronization support:	☐ DNP3 LAN procedure (function code 24) ☑ DNP3 Write Time (not recommended over LAN) ☐ Other, explain ☐ Not Supported		

1.4 Link Layer	**Capabilities**	**Current Value**	**If configurable list methods**
1.4.1 Data Link Address: *Indicates if the link address is configurable over the entire valid range of 0 to 65,519. Data link addresses 0xFFF0 through 0xFFFF are reserved for broadcast or other special purposes.*	☐ Fixed at ☑ Configurable, range **0** to **65519** ☐ Configurable, selectable from ☐ Configurable, other, describe	1	software **ControlEdge Builder** Vers **170 or later** ----------
1.4.2 DNP3 Source Address Validation: *Indicates whether the Outstation will filter out requests not from a specific source address.*	☑ Never ☑ Always, one address allowed (shown in 1.4.3) ☐ Always, any one of multiple addresses allowed (each selectable as shown in 1.4.3) ☐ Sometimes, explain	Never	software **ControlEdge Builder** Vers **170 or later** ----------
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	30000	software **ControlEdge Builder** Vers **170 or later** ----------
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 **ControlEdge Builder** Vers **170 or later** ----------
1.4.5 Sends Confirmed User Data Frames: *A list of conditions under which the device transmits confirmed link layer services (TEST_LINK_STATES, RESET_LINK_STATES, CONFIRMED_USER_DATA).*	☑ Never ☑ Always ☑ Sometimes, explain **Multi-fragment**	Never	software **ControlEdge Builder** Vers **170 or later** ----------

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 **0** to **2147483647**ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	2000ms	software **ControlEdge Builder** Vers **170 or later**
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	3	software **ControlEdge Builder** Vers **170 or later**
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 ☑ Configurable, range **28** to **292** ☐ Configurable, selectable from ☐ Configurable, other, describe	292	software **ControlEdge Builder** Vers **170 or later**
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 ☑ Configurable, range **28** to **292** ☐ Configurable, selectable from ☐ Configurable, other, describe	292	software **ControlEdge Builder** Vers **170 or later**

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 ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe**249**		software **ControlEdge Builder** Vers **170 or later**
1.5.2 Maximum number of octets Transmitted in an Application Layer Fragment containing File Transfer:	☐ Fixed at ☑ Configurable, range **256** to **65535** ☐ Configurable, selectable from ☐ Configurable, other, describe	2048	software **ControlEdge Builder** Vers **170 or later**
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 ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe**249**		software **ControlEdge Builder** Vers **170 or later**

1.5.4 Timeout waiting for Complete Application Layer Fragment: *Timeout if all frames of a message fragment are not received in the specified time. Measured from time first frame of a fragment is received until the last frame is received.*	☑ None ☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	None	
1.5.5 Maximum number of objects allowed in a single control request for CROB (Group 12): *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 216.*	☐ Fixed at (enter 0 if controls are not supported for CROB) ☑ Configurable, range **1** to **100** ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ 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 for Analog Outputs) ☑ Configurable, range **1** to **100** ☐ 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 **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 mixed object groups (AOBs, CROBs and Data Sets) in the same control request:	☐ Not applicable - controls are not supported ☑ Yes ☑ No	Yes	
1.5.9. User Data: *A user data entry*			

1.6 Fill Out The Following Items For Masters Only	**Capabilities**	**Current Value**	**If configurable list methods**
1.6.1 Timeout waiting for Complete Application Layer Responses (ms): *Timeout on Master if all fragments of a response message are not received in the specified time.*	☐ None ☑ Fixed at **30000** ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain		software **ControlEdge Builder** Vers **170 or later** ---------- --
1.6.2 Maximum Application Layer Retries for Request Messages: *The number of times a Master will retransmit an application layer request message if a response is not received. This parameter must never cause a Master to retransmit time sync messages.*	☑ None ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain		
1.6.3 Incremental Timeout waiting for First or Next Fragment of an Application Layer Response:	☐ None ☑ Fixed at **10000** ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain		software **ControlEdge Builder** Vers **170 or later** ---------- --
1.6.4 Issuing controls to off-line devices: *Indicates if the Master issues control requests to devices that are thought to be off-line (i.e. the Master has not seen responses to previous Master requests).*	☐ Not applicable - controls are not supported ☑ Yes ☐ No	Yes	software **ControlEdge Builder** Vers **170 or later** ---------- --

1.6.5 Issuing controls to off-scan devices: *Indicates if the Master issues control requests to devices that are currently off-scan (i.e. the Master has been configured not to issue poll requests to the device).*	☐ Not applicable - controls are not supported ☑ Yes ☐ No	Yes	software **ControlEdge Builder** Vers **170 or later**
1.6.6 Maximum Application Layer Retries for Control Select Messages (same sequence number): *Indicates the number of times a Master will retransmit an application layer control select request message if a response is not received - using the same message sequence number.*	☑ None (required) ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain		
1.6.7 Maximum Application Layer Retries for Control Select Messages (new sequence number): *Indicates the number of times a Master will retransmit an application layer control select request message if a response is not received - using a new message sequence number.*	☑ None (required) ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Variable, explain		
1.6.8 Maximum error in the time that the Master issues freeze requests: *If the Master is scheduled to issue freeze requests at a specific time, what is the maximum error in the time that the Master may actually issue a request?*		0 ms	
1.6.9 Maximum error in the time that the Master schedules repetitive freeze requests: *If the Master is scheduled to issue freeze requests at a regular interval, what is the maximum error in the time interval that the Master may actually issue a request? (i.e. how early / late could the request actually be issued)?*		0 ms	
1.6.10 Scheduled actions that may affect the accuracy of freeze requests: *Indicates if the Master's accuracy of issuing freeze requests may be affected by other scheduled operations such as poll requests or control requests.*	☑ Freeze time may be affected by Poll requests ☑ Freeze time may be affected by Control requests	Poll Requests	software **ControlEdge Builder** Vers **170 or later**
1.6.11 Master's algorithm for scheduling request operations: *Describe the Master's algorithm for determination of which activity is performed when more than one is due at the same moment. Discuss precedence and priorities for activities such as time synchronization, poll requests, control requests and freeze requests.*			

2 Mapping between DNP3 and IEC 61850 Objects

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

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

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

MAPPING BETWEEN DNP3 AND IEC 61850 OBJECTS

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

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

3.1 Single-Bit Binary Input Points **Static (Steady-State) Object Number: 1** **Event Object Number: 2**			
	Capabilities (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.1.1 Static Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - Single-bit packed format ☐ Variation 2 - Single-bit with flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.1.2 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for binary input events can be determined remotely using protocol object Group 0 Variation 237.*	☐ Variation 1 - without time ☐ Variation 2 - with absolute time ☐ Variation 3 - with relative time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.1.3 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.* *"All events" must be checked to be compliant.*	☐ Only most recent ☐ All events ☐ Based on point index (add column to table in part 5)		
3.1.4 Binary Inputs included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		

3.2 Double-bit Input Points **Static (Steady-State) Object Number: 3** **Event Object Number: 4**			
	Capabilities (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.2.1 Static Variation reported when variation 0 requested or in response to Class polls: *Note: The support for double-bit inputs can be determined remotely using protocol object Group 0 Variation 234.*	☐ Variation 1 - Double-bit packed format ☐ Variation 2 - Double-bit with flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.2.2 Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - without time ☐ Variation 2 - with absolute time ☐ Variation 3 - with relative time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.2.3 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.* *"All events" must be checked to be compliant.*	☐ Only most recent ☐ All events ☐ Based on point index (add column to table in part 5)		

3.2.4 Double Bit Inputs included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		

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 (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.3.1 Minimum pulse time allowed with Trip, Close and Pulse On commands:	☐ Fixed at ms (hardware may limit this further) ☐ Based on point index (add column to table in part 5)		
3.3.2 Maximum pulse time allowed with Trip, Close and Pulse On commands:	☐ Fixed at ms (hardware may limit this further ☐ Based on point index (add column to table in part 5)		
3.3.3 Binary Output Status included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		
3.3.4 Reports Output Command Event Objects:	☐ Never ☐ Only upon a successful Control ☐ Upon all control attempts		
3.3.5 Static Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - Continuous control ☐ Variation 2 - Continuous control, binary output status ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --
3.3.6 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for binary output events can be determined remotely using protocol object Group 0 Variation 222.*	☐ Variation 1 - without time ☐ Variation 2 - with absolute time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --
3.3.7 Command Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - without time ☐ Variation 2 - with absolute time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --
3.3.8 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		
3.3.9 Command Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		

3.3.10 Maximum Time between Select and Operate:	☐ Not Applicable ☐ Fixed at seconds ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐ Configurable, other, describe ☐ Variable, explain ☐ Based on point index (add column to table in part 5)		software **ControlEdge Builder** Vers **170 or later** ---------- --

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 (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.4.1 Static Counter Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 5 - 32-bit without flag ☐ Variation 6 - 16-bit without flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --
3.4.2 Counter Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for counter events can be determined remotely using protocol object Group 0 Variation 227.*	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 5 - 32-bit with flag and time ☐ Variation 6 - 16-bit with flag and time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --
3.4.3 Counters included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		
3.4.4 Counter Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. Only the most recent event is typically reported for Counters. When reporting only the most recent event the counter value returned in the response may be either the value at the time that the event is queued or it may be the value at the time of the response.*	☐ A: Only most recent (value at time of event) ☐ B: Only most recent (value at time of response) ☐ C: All events ☐ Based on point index (add column to table in part 5)		
3.4.5 Static Frozen Counter Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 5 - 32-bit with flag and time ☐ Variation 6 - 16-bit with flag and time ☐ Variation 9 - 32-bit without flag ☐ Variation 10 - 16-bit without flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --
3.4.6 Frozen Counter Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for frozen counter events can be determined remotely using protocol object Group 0 Variation 225.*	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 5 - 32-bit without flag ☐ Variation 6 - 16-bit without flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later** ---------- --

3.4.7 Frozen Counters included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		
3.4.8 Frozen Counter Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. All events are typically reported for Frozen Counters*	☐ Only most recent frozen value ☐ All frozen values ☐ Based on point index (add column to table in part 5)		
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 point index (add column to table in part 5)		
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:		

3.5 Analog Input Points **Static (Steady-State) Object Number: 30** **Event Object Number: 32** **Deadband Object Number: 34**			
	Capabilities **(leave tick-boxes blank if this data type is not supported)**	**Current Value**	**If configurable list methods**
3.5.1 Static Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 3 - 32-bit without flag ☐ Variation 4 - 16-bit without flag ☐ Variation 5 - single-precision floating point with flag ☐ Variation 6 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.5.2 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for analog input events can be determined remotely using protocol object Group 0 Variation 231.*	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**

3.5.3 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. Only the most recent event is typically reported for Analog Inputs. When reporting only the most recent event the analog value returned in the response may be either the value at the time that the event is queued or it may be the value at the time of the response.*	☐ A: Only most recent (value at time of event) ☐ B: Only most recent (value at time of response) ☐ C: All events ☐ Based on point index (add column to table in part 5)		
3.5.4 Analog Inputs included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		
3.5.5 How Deadbands are set:	☐ A. Global Fixed ☐ B. Configurable through DNP ☐ C. Configurable via other means ☐ D. Other, explain: ☐ Based on point index - column in part 5 specifies which of the options applies, B, C, or D		software **ControlEdge Builder** Vers **170 or later** ----------
3.5.6 Analog Deadband Algorithm: simple- just compares the difference from the previous reported value integrating- keeps track of the accumulated change other- indicating another algorithm	☐ Simple ☐ Integrating ☐ Other, explain: ☐ Based on point index (add column to table in part 5)		
3.5.7 Static Frozen Analog Input Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 3 - 32-bit with time-of-freeze ☐ Variation 4 - 16-bit with time-of-freeze ☐ Variation 5 - 32-bit without flag ☐ Variation 6 - 16-bit without flag ☐ Variation 7 - single-precision floating point with flag ☐ Variation 8 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)		
3.5.8 Frozen Analog Input Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for frozen analog input events can be determined remotely using protocol object Group 0 Variation 230.*	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)		
3.5.9 Frozen Analog Inputs included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		

3.5.10 Frozen Analog Input Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event. All events are typically reported for Frozen Analog Inputs.*	☐ Only most recent frozen value ☐ All frozen values ☐ Based on point index (add column to table in part 5)		

3.6 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 (leave tick-boxes blank if this data type is not supported)	**Current Value**	**If configurable list methods**
3.6.1 Static Analog Output Status Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 3 - single-precision floating point with flag ☐ Variation 4 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.6.2 Analog Output Status included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		
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 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)	Seven Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**
3.6.5 Command Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)	Note: Configurable on a per-object basis.	software **ControlEdge Builder** Vers **170 or later**

3.6.6 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		
3.6.7 Command Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		
3.6.8 Maximum Time between Select and Operate:	☐ Not Applicable ☐ Fixed at seconds ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐ Configurable, other, describe ☐ Variable, explain ☐ Based on point index (add column to table in part 5)		software **ControlEdge Builder** Vers **170 or later** ---------- --

3.7 Sequential File Transfer
Object Number: 70

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

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 ☐ Based on point index (add column to table in part 5)		
3.8.2 Octet Strings included in Class 0 response:	☐ Always ☐ Never ☐ Only if point is assigned to a class ☐ Based on point index (add column to table in part 5)		

3.10 Data Set Prototype **Object Number: 85** **Variation Number: 1**			
	Capabilities	**Current Value**	**If configurable list methods**

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

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

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

4 Implementation Table

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

DNP OBJECT GROUP & VARIATION			**REQUEST** **Master may issue** **Outstation must parse**		**RESPONSE** **Master must parse** **Outstation may issue**	
Object Group Number	**Variation Number**	**Description**	**Function Codes (dec)**	**Qualifier Codes (hex)**	**Function Codes (dec)**	**Qualifier Codes (hex)**
0	211	Device Attributes - Identification of support for user-specific attributes	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	212	Device Attributes - Number of master-defined data set prototypes	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	213	Device Attributes - Number of outstation-defined data set prototypes	1 *(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*

0	214	Device Attributes - Number of master-defined data sets	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	215	Device Attributes - Number of outstation-defined data sets	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	216	Device Attributes - Maximum number of binary output objects per request	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	217	Device Attributes - Local timing accuracy	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	218	Device Attributes - Duration of time accuracy	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	219	Device Attributes - Support for analog output events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	220	Device Attributes - Maximum analog output index	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	221	Device Attributes - Number of analog outputs	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*

0	222	Device Attributes - Support for binary output events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	223	Device Attributes - Maximum binary output index	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	224	Device Attributes - Number of binary outputs	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	225	Device Attributes - Support for frozen counter events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	226	Device Attributes - Support for frozen counters	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	227	Device Attributes - Support for counter events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	228	Device Attributes - Maximum counter index	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	229	Device Attributes - Number of counter points	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*

0	230	Device Attributes - Support for frozen analog inputs	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	231	Device Attributes - Support for analog input events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	232	Device Attributes - Maximum analog input index	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	233	Device Attributes - Number of analog input points	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	234	Device Attributes - Support for double-bit binary input events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	235	Device Attributes - Maximum double-bit binary index	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	236	Device Attributes - Number of double-bit binary input points	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	237	Device Attributes - Support for binary input events	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*

0	238	Device Attributes - Maximum binary input index	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	239	Device Attributes - Number of binary input points	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	240	Device Attributes - Maximum transmit fragment size	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	240	Device Attributes - Maximum transmit fragment size	2*(write)*	00 *(start-stop)*, 01 *(start-stop)*		
0	241	Device Attributes - Maximum receive fragment size	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	242	Device Attributes - Device manufacturer's software version	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	243	Device Attributes - Device manufacturer's hardware version	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	245	Device Attributes - User-assigned location name	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	245	Device Attributes - User-assigned location name	2*(write)*	00 *(start-stop)*, 01 *(start-stop)*		

0	246	Device Attributes - User assigned ID code/number	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	246	Device Attributes - User assigned ID code/number	2*(write)*	00 *(start-stop)*, 01 *(start-stop)*		
0	247	Device Attributes - User-assigned device name	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	247	Device Attributes - User-assigned device name	2*(write)*	00 *(start-stop)*, 01 *(start-stop)*		
0	248	Device Attributes - Device serial number	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	250	Device Attributes - Device manufacturer's product name and model	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	252	Device Attributes - Device manufacturer's name	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 17 *(index)*, 28 *(index)*
0	254	Device Attributes - Non-specific all attributes request	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
0	255	Device Attributes - List of attribute variations	1*(read)*	00 *(start-stop)*, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00 *(start-stop)*, 01 *(start-stop)*, 5B *(free format)*

1	0	Binary Input - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
1	0	Binary Input - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
1	1	Binary Input - Single-bit packed	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
1	2	Binary Input - Single-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
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)*	17, 28 *(index)*
2	1	Binary Input Change Event - without time			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	Binary Input Change Event - with absolute time			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)*	17, 28 *(index)*
2	3	Binary Input Change Event - with relative time			130 *(Unsol. Resp.)*	17, 28 *(index)*
3	0	Double-bit Input - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
3	0	Double-bit Input - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		

3	1	Double-bit Input - Double-bit packed	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
3	2	Double-bit Input - with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
4	0	Double-bit Input Change Event - any variation	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*		
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	Double-bit Input Change Event - without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
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			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			130 *(Unsol. Resp.)*	17, 28 *(index)*
10	0	Binary Output - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 28 *(index)*		
10	0	Binary Output - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
10	1	Binary Output - packed format	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
10	1	Binary Output - packed format	2*(write)*	00, 01 *(start-stop)*		
10	2	Continuous Control - output status with flags	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
11	0	Binary Output Change Event - any variation	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*		

11	1	Binary Output Change Event - status without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
11	1	Binary Output Change Event - status without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
11	2	Binary Output Change Event - status with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
11	2	Binary Output Change Event - status with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
12	0	Binary Output Command (CROB) - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
12	1	Binary Output Command (CROB) - control relay output block	3*(select)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
12	1	Binary Output Command (CROB) - control relay output block	4*(operate)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
12	1	Binary Output Command (CROB) - control relay output block	5*(direct op.)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
12	1	Binary Output Command (CROB) - control relay output block	6*(direct op, no ack)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
12	2	Binary Output Command - pattern control block	3*(select)*	07 *(limited qty = 1)*	129 *(Response)*	echo of request
12	2	Binary Output Command - pattern control block	4*(operate)*	07 *(limited qty = 1)*	129 *(Response)*	echo of request
12	2	Binary Output Command - pattern control block	5*(direct op.)*	07 *(limited qty = 1)*	129 *(Response)*	echo of request
12	2	Binary Output Command - pattern control block	6*(direct op, no ack)*	07 *(limited qty = 1)*	129 *(Response)*	echo of request
12	3	Binary Output Command - pattern mask	3*(select)*	00, 01 *(start-stop)*	129 *(Response)*	echo of request
12	3	Binary Output Command - pattern mask	4*(operate)*	00, 01 *(start-stop)*	129 *(Response)*	echo of request
12	3	Binary Output Command - pattern mask	5*(direct op.)*	00, 01 *(start-stop)*	129 *(Response)*	echo of request
12	3	Binary Output Command - pattern mask	6*(direct op, no ack)*	00, 01 *(start-stop)*	129 *(Response)*	echo of request
13	0	Binary Output Command Event - any variation	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*		
13	1	Binary Output Command Event - without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
13	1	Binary Output Command Event - without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
13	2	Binary Output Command Event - with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
13	2	Binary Output Command Event - with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
20	0	Counter - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		

20	0	Counter - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
20	0	Counter - any variation	7*(freeze)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*		
20	0	Counter - any variation	8*(freeze, no ack)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*		
20	0	Counter - any variation	9*(freeze & clear)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*		
20	0	Counter - any variation	10*(frz & clr, no ack)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*		
20	1	Counter - 32-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
20	2	Counter - 16-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
20	5	Counter - 32-bit with flag and time	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
20	6	Counter - 16-bit with flag and time	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
21	0	Frozen Counter - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		

21	0	Frozen Counter - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
21	1	Frozen Counter - 32-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
21	2	Frozen Counter - 16-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
21	5	Frozen Counter - 32-bit with flag and time	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
21	6	Frozen Counter - 16-bit with flag and time	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
21	9	Frozen Counter - 32-bit with flag and time	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
21	10	Frozen Counter - 16-bit with flag and time	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
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			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			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			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			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)*	17, 28 *(index)*
23	1	Frozen Counter Change Event - 32-bit with flag			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)*	17, 28 *(index)*
23	2	Frozen Counter Change Event - 16-bit with flag			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)*	17, 28 *(index)*
23	5	Frozen Counter Change Event - 32-bit with flag and time			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)*	17, 28 *(index)*
23	6	Frozen Counter Change Event - 16-bit with flag and time			130 *(Unsol. Resp.)*	17, 28 *(index)*
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)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
30	1	Analog Input - 32-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
30	2	Analog Input - 16-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*

30	3	Analog Input - 32-bit without flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
30	4	Analog Input - 16-bit without flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
30	5	Analog Input - single-precision, floating-point with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
30	6	Analog Input - double-precision, floating-point with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
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 Event – 32-bit without time			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			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			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			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)*	17, 28 *(index)*
32	5	Analog Input Change Event - single-precision, floating-point without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
32	6	Analog Input Change Event - double-precision, floating-point without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
32	6	Analog Input Change Event - double-precision, floating-point without time			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)*	17, 28 *(index)*
32	7	Analog Input Change Event - single-precision, floating-point with time			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)*	17, 28 *(index)*
32	8	Analog Input Change Event - double-precision, floating-point with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
34	0	Analog Input Deadband - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
34	1	Analog Input Deadband - 16-bit	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
34	1	Analog Input Deadband - 16-bit	2*(write)*	00, 01 *(start-stop)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
34	2	Analog Input Deadband - 32-bit	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
34	2	Analog Input Deadband - 32-bit	2*(write)*	00, 01 *(start-stop)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
34	3	Analog Input Deadband - single-precision, floating-point	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
34	3	Analog Input Deadband - single-precision, floating-point	2*(write)*	00, 01 *(start-stop)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
40	0	Analog Output Status - any variation	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		

40	0	Analog Output Status - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
40	1	Analog Output Status - 32-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
40	2	Analog Output Status - 16-bit with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
40	3	Analog Output Status - single-precision, floating-point with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
40	4	Analog Output Status - double-precision, floating-point with flag	1*(read)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*	129 *(Response)*	00, 01 *(start-stop)*, 17, 28 *(index)*
41	0	Analog Output Block - any variation	22*(assign class)*	00, 01 *(start-stop)*, 06 *(no range, or all)*, 07, 08 *(limited qty)*, 17, 27, 28 *(index)*		
41	1	Analog Output Block - 32-bit	3*(select)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	1	Analog Output Block - 32-bit	4*(operate)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	1	Analog Output Block - 32-bit	5*(direct op.)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	1	Analog Output Block - 32-bit	6*(direct op, no ack)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	3*(select)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	4*(operate)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	5*(direct op.)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	2	Analog Output Block - 16-bit	6*(direct op, no ack)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	3*(select)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	4*(operate)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	3	Analog Output Block - single-precision, floating-point	5*(direct op.)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request

41	3	Analog Output Block - single-precision, floating-point	6*(direct op, no ack)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	4	Analog Output Block - double-precision, floating-point	3*(select)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	4	Analog Output Block - double-precision, floating-point	4*(operate)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	4	Analog Output Block - double-precision, floating-point	5*(direct op.)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
41	4	Analog Output Block - double-precision, floating-point	6*(direct op, no ack)*	17, 27, 28 *(index)*	129 *(Response)*	echo of request
42	0	Analog Output Change Event - any variation	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*		
42	1	Analog Output Change Event - 32-bit without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	1	Analog Output Change Event - 32-bit without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	2	Analog Output Change Event - 16-bit without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	2	Analog Output Change Event - 16-bit without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	3	Analog Output Change Event - 32-bit with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	3	Analog Output Change Event - 32-bit with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	4	Analog Output Change Event - 16-bit with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	4	Analog Output Change Event - 16-bit with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	5	Analog Output Change Event - single-precision, floating-point without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	5	Analog Output Change Event - single-precision, floating-point without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	6	Analog Output Change Event - double-precision, floating-point without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	6	Analog Output Change Event - double-precision, floating-point without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	7	Analog Output Change Event - single-precision, floating-point with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	7	Analog Output Change Event - single-precision, floating-point with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
42	8	Analog Output Change Event - double-precision, floating-point with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
42	8	Analog Output Change Event - double-precision, floating-point with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	0	Analog Output Command Event - any variation	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*		
43	1	Analog Output Command Event - 32-bit without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	1	Analog Output Command Event - 32-bit without time			130 *(Unsol. Resp.)*	17, 28 *(index)*

43	2	Analog Output Command Event - 16-bit without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	2	Analog Output Command Event - 16-bit without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	3	Analog Output Command Event - 32-bit with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	3	Analog Output Command Event - 32-bit with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	4	Analog Output Command Event - 16-bit with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	4	Analog Output Command Event - 16-bit with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	5	Analog Output Command Event - single-precision, floating-point without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	5	Analog Output Command Event - single-precision, floating-point without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	6	Analog Output Command Event - double-precision, floating-point without time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	6	Analog Output Command Event - double-precision, floating-point without time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	7	Analog Output Command Event - single-precision, floating-point with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	7	Analog Output Command Event - single-precision, floating-point with time			130 *(Unsol. Resp.)*	17, 28 *(index)*
43	8	Analog Output Command Event - double-precision, floating-point with time	1*(read)*	06 *(no range, or all)*, 07, 08 *(limited qty)*	129 *(Response)*	17, 28 *(index)*
43	8	Analog Output Command Event - double-precision, floating-point with time			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)*
50	1	Time and Date - absolute time	2*(write)*	07 *(limited qty = 1)*		
50	3	Time and Date - absolute time at last recorded time	2*(write)*	07 *(limited qty = 1)*		
51	1	Time and Date CTO - absolute time, synchronized			129 *(Response)*	07 *(limited qty = 1)*
51	1	Time and Date CTO - absolute time, synchronized			130 *(Unsol. Resp.)*	07 *(limited qty = 1)*
51	2	Time and Date CTO - absolute time, un-synchronized			129 *(Response)*	07 *(limited qty = 1)*
51	2	Time and Date CTO - absolute time, un-synchronized			130 *(Unsol. Resp.)*	07 *(limited qty = 1)*
52	1	Time Delay - coarse			129 *(Response)*	07 *(limited qty = 1)*
52	2	Time Delay - fine			129 *(Response)*	07 *(limited qty = 1)*
60	1	Class Objects - class 0 data	1*(read)*	06 *(no range, or all)*		
60	1	Class Objects - class 0 data	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)*		

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)*		
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)*		
91	1	Status of Requested Operation			129 *(Response)*	07 *(limited qty = 1)*

5 Data Points List (outstation only)

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

5.1 Definition of Binary Input Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.* *Note: the number of binary inputs present in the device, and the maximum binary input index, are available remotely using object Group 0 Variations 239 and 238.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐ Other, explain:

Binary Input points list:

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

5.2 Definition of Double Bit Input Point List: *List of addressable points. Points that do not exist (for example, because an option is not installed) are omitted from the table.* *Note: the number of double-bit inputs present in the device, and the maximum double-bit input index, are available remotely using object Group 0 Variations 236 and 235.*	☐ Fixed, list shown in table below ☑ Configurable (current list may be shown in table below) ☐ Other, explain:

Double-bit Input points list:

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

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

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

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

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

Binary Output Status and CROB points list:

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

5.4 Definition of Counter / Frozen Counter Point List:

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

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

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

Counter / Frozen Counter points list:

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

5.5 Definition of Analog Input Point List:

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

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

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

Analog Input points list:

			Transmitted Value		Scaling				
Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Min int / flt	Max int / flt	Multiplier	Offset	Units	Resolution	Description

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

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

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

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

Analog Output points list:

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

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

Sequential Files list:

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

5.8 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	Event Class Assigned (1, 2, 3 or none)	Description

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

Ports list:

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

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

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

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

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

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