DNP3 Device Profile
Based on DNP XML Schema version 2.10.00

Document Name: TMW SDNP Library Device Profile

Revision History

Date	Time	Version	Reason for change	Edited by
2020-05-06	11:45:00	1.04	Version 3.20.000 SDNP SCL	ITB

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 ou Outstation)
- Recording the settings of a specific instance of a device (paramter settings for a specific instance of the device in the user´s manual 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 request 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. Na example of this is in section 1.6.8 of the Device Profile (Maximum error in the time that the Master issues freeze request) 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 na entry in the capabilities column of the Device Profile is grayed-out then there mau be information in the current value column that us pertinente to the device´s capabilities.

Unless otherwisw 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 possible qays in hich the configurable parameters may be set. Since some parameters may not be Accessible by each of these methods supported, na abrbreviation 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).

Ih the document is used to show the current values of parameters, the column 3 applies to a single connection between a máster and na outstation.

1.1 DEVICE IDENTIFICATION	Capabilities	Current Value	If configurable list methods
1.1.1 Device Function: *Masters send DnP requests while Outstation 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.*		ITB – Equipamentos Elétricos Ltda	
1.1.3 Device Name: *The model and name of device, suficiente to distinguish it from any other device from the same organization.*		CTR-3	
1.1.4 Device manufacturer´s hadware version String:		1.00 1.01	
1.1.5 Device manufacturer´s software version string:		1.05-00	

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.*		2	
1.1.7 DNP Levels Supported for: *Indicate each DNP3 Level to which the device conforms fully, For Masters, requests and responses can be indicated independently*	Outstations Only Requests and Responses ☑ None ☑ Level 1 ☑ Level 2 ☐ Level 3 ☐ Level 4	Level 2	
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)	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 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 CTR3Comm1.01 ☐ 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 **CTR3Comm** Version **1.2** Direct Protocol	Software **CTR3Comm** Vers **1.2** --------------
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 na external system, typically from a system that maintains the outstation configuration.* *External off-line XML file read permits na XML definition of new configuration to be supplied from 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	

Exernal off-line XML file write permits na XML definition of a new configuration to be supplied to off-line configuration tools.			
1.1.13 Connections Supported:	☑ Serial (complete section 1.2) ☐ IP Networking (complete section 1.3) ☐ Other, explain	Serial	Protocol ----------------- --
1.1.14 Conformance Testing: *Where conformance testing has been completed for the outstation or máster station, specify the version of the published DNP3 test procedures that was successfully passed. If independently tested, identify the organization that performed the test.*	☐ Self-tested, version ☐ Independently tested, version		

1.2 SERIAL CONNECTIONS	Capabilities	Current Value	If configurable list methods
1.2.1 Port Name: *Name used to reference the communications port defined in this section.*		232-COM1	
1.2.2 Serial Connection Parameters:	☑ Asynchronous – 8 Data Bits, 1 Start Bit, 1 Stop bit, No Parity ☐ Other, explain Note: Implemented in Target Layer	Asynchronous	

1.2.3 Baud Rate:	☐ Fixed at ☐ Configurable, range to ☑ Configurable, selectable from **2400**, **4800**, **9600**, **14400**, **19200**, **38400**, **56000**, **115200** ☐ Configurable, other, describe Note: Implemented in Target Layer	9600	

1.2.4 Hardware Flow Control (Handshaking):
 	
Describe hardware signaling requirements of the interface.
 	
Where a transmitter or receiver is inhibited until a given control signal is asserted, it is considered to require that signal prior to sending or receiving characters.
 	
Where a signal is asserted prior to transmitting, that signal will be maintained active until after the end of transmission.
 	
Where a signal is asserted to enable reception, any data sent to the device when the signal is not active could be discarded.
	☑None
	RS-232 / V.24 / V.28 Options:
	  <u>Asserts:</u>
	    ☐RTS Before Tx
	    ☐DTR Before Tx
	    ☐RTS Before Rx
	    ☐DTR Before Rx
	    ☐Always RTS
	    ☐Always DTR
	  <u>Requires Before Tx:</u>
	    CTS ☐Asserted ☐Deasserted
	    DCD☐Asserted ☐Deasserted
	    DSR ☐Asserted ☐Deasserted
	    RI ☐Asserted ☐Deasserted
	    ☐Requires Rx Inactive before Tx
	  <u>Requires Before Rx:</u>
	    CTS ☐Asserted ☐Deasserted
	    DCD☐Asserted ☐Deasserted
	    DSR ☐Asserted ☐Deasserted
	    RI ☐Asserted ☐Deasserted
	  <u>Always Ignores:</u>
	    ☐CTS
	    ☐DCD
	    ☐DSR
	    ☐RI
	  ☐Other, explain
	
	RS-422 / V.11 Options:
	    ☐Requires Indication before Rx
	    ☐Asserts Control before Tx
	    ☐Other, explain
	
	RS-485 Options:
	    ☐Requires Rx inactive before Tx
	    ☐Other, explain
	
	☑Other, explain **Sofware**
		None
		RS-232 / V.24 / V.28 Options:
		
		RS-422 / V.11 Options:
		
		RS-485Options:	

1.2.5 Interval to Request Link Status: *Indicates how often to send Data Link Layer status requests on a serial connection. This parameter is separate from the TCP Keep-alive timer.*	☑Not Supported ☐ Fixed at seconds ☐ Configurable, range to seconds ☐ Configurable, selectable from seconds ☐Configurable, other, describe	Not Supported	

1.2.6 Supports DNP3 Collision Avoidance: *Indicates whether an Outstation uses a collision avoidance algorithm.* *Collision avoidance may be implemented by a back-off timer with two parameters that define the back-off time range or by some other vendor-specific mechanism.* *The recommended back-off time is specified as being a fixed minimum delay plus a random delay, where the random delay has a maximum value specified. This defines a range of delay times that are randomly distributed between the minimum value and the minimum plus the maximum of the random value.* *If a back-off timer is implemented with only a fixed or only a random value, select the Back-off time method and set the parameter that is not supported to "Fixed at 0 ms".*	☑ No ☐ Yes, using Back-off time = (Min + Random) method ☐ Other, explain	No	
1.2.7 Receiver Inter-character Timeout: *When serial interfaces with asynchronous character framing are used, this parameter indicates if the receiver makes a check for gaps between characters. (i.e. extensions of the stop bit time of one character prior to the start bit of the following character within a message). If the receiver performs this check and the timeout is exceeded then the receiver discards the current data link frame. A receiver that does not discard data link frames on the basis of inter-character gaps is considered not to perform this check.* *Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options shall be selected.*	☑ Not Checked ☐ No gap permitted ☐ Fixed at bit times ☐ Fixed at ms ☐ Configurable, range to bit times ☐ Configurable, range to ms ☐ Configurable, selectable from bit times ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	Not Checked	
1.2.8 Inter-character gaps in transmission: *When serial interfaces with asynchronous character framing are used, this parameter indicates whether extra delay is ever introduced between characters in the message, and if so, the maximum width of the gap.* *Where no asynchronous serial interface is fitted this parameter is not applicable. In this case none of the options shall be selected.*	☑ None (always transmits with no inter-character gap) ☐ Maximum bit times ☐ Maximum ms	None	

1.4 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	0	
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	

	Capabilities	Current Value	If configurable list methods
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	0	
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	
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	Never	
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 to ms ☐ Configurable, selectable from ms ☐Configurable, other, describe ☐ Variable, explain	None	
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 to ☐ Configurable, selectable from ☐Configurable, other, describe	None	
1.4.8 Maximum number of octets Transmitted in a Data Link Frame: *This number includes the CRCs. With a length field of 255, the maximum size would be 292.*	☑ Fixed at **292** ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe	292	
1.4.9 Maximum number of octets that can be Received in a Data Link Frame: *This number includes the CRCs. With a 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	292	

1.5 APPLICATION LAYER	**Capabilities**	**Current Value**	**If configurable list methods**
1.5.1 Maximum number of octets Transmitted in an Application Layer Fragment other than File Transfer: *This size does not include any transport or frame octets.* *- Masters must provide a setting less than or equal to 249 to be compliant.* *- Outstations must provide a setting less than or equal to 2048 to be compliant.* *Note: The current value of this outstation parameter is available remotely using protocol object Group 0 Variation 240.*	☑ Fixed at **0** ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe	0	
1.5.2 Maximum number of octets Transmitted in an Application Layer Fragment containing File Transfer:	☑ Fixed at **0** ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe	0	

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 **292** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	292	
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 **0**(enter 0 if controls are not supported for CROB) ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe**The maximum allowed is limited by the maximum lenght of data link frame** ☐ Variable, explain	0	
1.5.6 Maximum number of objects allowed in a single control request for Analog Outputs (Group 41):	☑ Fixed at **0**(enter 0 if controls are not supported for Analog Outputs) ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe**The maximum allowed is limited by the maximum lenght of data link frame** ☐ Variable, explain	0	
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**The maximum allowed is limited by the maximum lenght of data link frame** ☐ 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 Control Status Codes Supported:	☐ 1 - TIMEOUT		
Indicates which control status codes are supported by the device: - Masters must indicate which control status codes they accept in outstation responses. - Outstations must indicate which control status codes they generate in responses. Control status code 0 (success) must be supported by Masters and Outstations.	☐ 2 - NO_SELECT ☐ 3 - FORMAT_ERROR ☐ 4 - NOT_SUPPORTED ☐ 5 - ALREADY_ACTIVE ☐ 6 - HARDWARE_ERROR ☐ 7 - LOCAL ☐ 8 - TOO_MANY_OBJS ☐ 9 - NOT_AUTHORIZED ☐ 10 - AUTOMATION_INHIBIT ☐ 11 - PROCESSING_LIMITED ☐ 12 - OUT_OF_RANGE ☐ 13 - DOWNSTREAM_LOCAL ☐ 14 - ALREADY_COMPLETE ☐ 15 - BLOCKED ☐ 16 - CANCELLED ☐ 17 - BLOCKED_OTHER_MASTER ☐ 18 - DOWNSTREAM_FAIL ☐ 126 - RESERVED ☐ 127 - UNDEFINED		

1.7 **FILL OUT THE FOLLOWING ITEMS FOR OUTSTATIONS ONLY**	**Capabilities**	**Current Value**	**If configurable list methods**
1.7.1 Timeout waiting for Application Confirm of solicited response message:	☑ None ☐ Fixed at ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	None	
1.7.2 How often is time synchronization required from the master: *Details of when the master needs to perform a time synchronization to ensure that the outstation clock does not drift outside of an acceptable tolerance. If the option to relate this to IIN1.4 is used then details of when IIN1.4 is asserted are in section 1.10.2.*	☐ Never needs time ☑ Within **180** seconds after IIN1.4 is set ☐ Periodically, fixed at seconds ☐ Periodically, between and seconds	Within 180 seconds of IIN1.4	
1.7.3 Device Trouble Bit IIN1.6: *If IIN1.6 device trouble bit is set under certain conditions, explain the possible causes.*	☐ Never used ☑ Reason for setting **Hardware Problem**	Used as described	
1.7.4 File Handle Timeout: *If there is no activity referencing a file handle for a configurable length of time, the outstation must do an automatic close on the file. The timeout value must be configurable up to 1 hour. When this condition occurs the outstation will send a File Transport Status Object (obj grp 70 var 6) using a status 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	Not applicable	
1.7.5 Event Buffer Overflow Behavior:	☑ Discard the oldest event ☐ Discard the newest event ☐ Other, explain	Discard oldest	

1.7.6 Event Buffer Organization: *Explain how event buffers are arranged (per Object Group, per Class, single buffer, etc) and specify the number of events that can be buffered.*	☑Per Object Group (see part 3) ☐Per Class Class 1: ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe Class 2: ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe Class 3: ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe ☐Single Buffer ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe ☐Other, describe	Per object group	
1.7.7 Sends Multi-Fragment Responses: *Indicates whether an Outstation sends multi-fragment responses (Masters do not send multi-fragment requests).*	☑Yes ☐No	Yes	
1.7.8 Last Fragment Confirmation: *Indicates whether the Outstation requests confirmation of the last fragment of a multi-fragment response.*	☐Always ☑Sometimes, explain**Only when it contains events** ☑Never	Never	
1.7.9 DNP Command Settings preserved through a device restart: *If any of these settings are written through the DNP protocol and they are not preserved through a restart of the Outstation, the Master will have to write them again after it receives a response in which the Restart IIN bit is set.*	☑Assign Class ☑Analog Deadbands ☑Data Set Prototypes ☑Data Set Descriptors ☐Function Code 31 Activate Configuration		
1.7.10 Supports configuration signature: *Indicates whether an Outstation supports the Group 0 device attribute "Configuration signature" (variation 200). If yes, list the vendor-defined name(s) of the algorithm(s) available to calculate the signature.* *Note: The algorithm used for calculating the signature is identified by name in a string that can be determined remotely using protocol object Group 0 Variation 201. If only a single algorithm is available, identifying that algorithm in this object is optional.*	☐Configuration signature supported If configuration signature is supported, then the following algorithm(s) are available for calculating the signature:	Not Supported	

| 1.7.11 Requests Application Confirmation:

Indicate if application confirmation is requested:

- when responding with events
- when sending non-final fragments of multi-fragment responses

Note: to be compliant both must be selected as "yes". | For event responses:
◉ Yes
○ No
○ Configurable

For non-final fragments:
○ Yes
○ No
◉ Configurable | Event responses: Yes

Non-final fragments: Yes | |

1.8 OUTSTATION UNSOLICITED RESPONSE SUPPORT	Capabilities	Current Value	If configurable list methods
1.8.1 Supports Unsolicited Reporting: *When the unsolicited response mode is configured "off", the device is to behave exactly like an equivalent device that has no support for unsolicited responses. If set to "on", the Outstation will send a null Unsolicited Response after it restarts, then wait for an Enable Unsolicited Response command from the master before sending additional Unsolicited Responses containing event data.*	☐ Yes ☐ No ☑ Configurable, selectable from On and Off	Off	protocol -----------------
1.8.2 Master Data Link Address: *The destination address of the master device where the unsolicited responses will be sent.*	☐ Fixed at ☑ Configurable, range **0** to **65519** ☐ Configurable, selectable from ☐ Configurable, other, describe	0	
1.8.3 Unsolicited Response Confirmation Timeout: *This is the amount of time that the outstation will wait for an Application Layer confirmation back from the master indicating that the master received the unsolicited response message. As a minimum, the range of configurable values must include times from one second to one minute. This parameter may be the same one that is used for normal, solicited, application confirmation timeouts, or it may be a separate parameter.*	☑ Fixed at **0**ms ☐ Configurable, range to ms ☐ Configurable, selectable from ms ☐ Configurable, other, describe ☐ Variable, explain	0 ms	
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 transmissions.*	☑ None ☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe ☐ Always infinite, never gives up	None	

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 **0** ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe **When exists an Class 1 configured, it always trigger Unsolicited Responses**	0	

1.9.2 Number of class 2 events:	☐ Class 2 not used to trigger Unsolicited Responses ☑ Fixed at **0** ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe**When exists an Class 2 configured, it always trigger Unsolicited Responses**	0	
1.9.3 Number of class 3 events:	☐ Class 3 not used to trigger Unsolicited Responses ☑ Fixed at **0** ☐ Configurable, range to ☐ Configurable, selectable from ☑ Configurable, other, describe**When exists an Class 3 configured, it always trigger Unsolicited Responses**	0	
1.9.4 Total number of events from any class:	☐ Total Number of Events not used to trigger Unsolicited Responses ☑ Fixed at **100** ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	100	
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 **0**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 **0**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 **0**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 **0**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:	☑ **Change of Data**	Other, **Change of Data**	

1.10 OUTSTATION PERFORMANCE	**Capabilities**	**Current Value**	**If configurable list methods**
1.10.1 Maximum Time Base Drift (milliseconds per minute): *If the device is synchronized by DNP, what is the clock drift rate over the full operating temperature range.*	☑ Fixed at **1**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	1 ms	

1.10.2　When does outstation set IIN1.4: *When does the outstation set the internal indication IIN1.4 NEED_TIME*	☐ Never ☐ Asserted at startup until first Time Synchronization request received ☐ Periodically every seconds ☑ Periodically, range **1** to **65535** seconds ☐ Periodically, selectable from seconds ☐ seconds after last time sync ☐ Range to seconds after last time sync ☐ Selectable from seconds after last time sync ☐ When time error may have drifted by ms ☐ When time error may have drifted by range to ms ☐ When time error may have drifted by selectable from ms		
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.*	☑ Fixed at **1**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	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.*	☑ Fixed at **1**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	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.*	☑ Fixed at **100**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	100 ms	
1.10.6　Maximum time from start-up to IIN 1.4 assertion (ms):	☑ Fixed at **1**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	1 ms	
1.10.7　Maximum Event Time-tag error for local Binary and Double Bit I/O (ms): *The error between the time-tag reported and the absolute time of the physical event. This error includes the Internal Time Reference Error.* *Note: The current value of this parameter is available remotely using protocol object Group 0 Variation 217.*	☑ Fixed at **150**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	150 ms	
1.10.8　Maximum Event Time-tag error for local I/O other than Binary and Double Bit data types (ms):	☑ Fixed at **150**ms ☐ Range to ms ☐ Selectable from ms ☐ Other, describe	150 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):		

1.13　BROADCAST FUNCTIONALITY	**Capabilities**	**Current Value**	**If configurable list methods**
This section indicates which functions are supported by the device when using broadcast addresses. Note that this section shows only entries that may have a meaningful purpose when used with broadcast requests.			

1.13.1 Support for broadcast functionality:	○ Disabled ◉ Enabled ○ Configurable	Enabled	
1.13.2 Write functions (FC = 2) supported with broadcast requests:	Write clock (g50v1 with qualifier code 07) ○ Disabled ○ Enabled ◉ Configurable, other (described elsewhere) Write last recorded time (g50v3 with qualifier code 07) ○ Disabled ○ Enabled ◉ Configurable, other (described elsewhere) Clear restart (g80v1 with qualifier code 00 and index = 7, value = 0) ○ Disabled ○ Enabled ◉ Configurable, other (described elsewhere) Write to any other group / variation / qualifier code ○ Disabled ○ Enabled ◉ Configurable, other (described elsewhere)	Write clock: Enabled Write last recorded time: Enabled Clear restart: Enabled Write any other: Enabled	Clock: Time: Restart: Other:
1.13.3 Direct operate functions (FC = 5) supported with broadcast requests:	○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	Enabled	
1.13.4 Direct operate, no acknowledgement functions (FC = 6) supported with broadcast requests:	○ Disabled ○ Enabled ◉ Configurable, other (described elsewhere)	Enabled	
1.13.5 Immediate freeze functions (FC = 7) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.6 Immediate freeze, no acknowledgement functions (FC = 8) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.7 Freeze and clear functions (FC = 9) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.8 Freeze and clear, no acknowledgement functions (FC = 10) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.9 Freeze at time functions (FC = 11) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.10 Freeze at time, no acknowledgement functions (FC = 12) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.11 Cold restart functions (FC = 13) supported with broadcast requests:	○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	Enabled	
1.13.12 Warm restart functions (FC = 14) supported with broadcast requests:	○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	Enabled	
1.13.13 Initialize data functions (FC = 15) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.14 Initialize application functions (FC = 16) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.15 Start application functions (FC = 17) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	

1.13.16 Stop application functions (FC = 18) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.17 Save configuration functions (FC = 19) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.18 Enable unsolicited functions (FC = 20) supported with broadcast requests:	Enable unsolicited by event Class (g60v2, g60v3 and g60v4 with qualifier code 06) ○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere) Enable unsolicited for any other group / variation / qualifier code ○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	By event class: Enabled By any other: Enabled	Class: Other:
1.13.19 Disable unsolicited functions (FC = 21) supported with broadcast requests:	Disable unsolicited by event Class (g60v2, g60v3 and g60v4 with qualifier code 06) ○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere) Disable unsolicited for any other group / variation / qualifier code ○ Disabled ◉ Enabled ○ Configurable, other (described elsewhere)	By event class: Enabled By any other: Enabled	Class: Other:
1.13.20 Assign class functions (FC = 22) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.21 Record current time functions (FC = 24) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	
1.13.22 Activate configuration functions (FC = 31) supported with broadcast requests:	◉ Disabled ○ Enabled ○ Configurable, other (described elsewhere)	Disabled	

2   Mapping between DNP3 and IEC 61850 Objects

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

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

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

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

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

3.1   BINARY INPUTS
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 - packed format ☐ Variation 2 - with flag ☐ Based on point index (add column to table in part 5)	One	
3.1.2 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for binary input events can be determined remotely using protocol object Group 0 Variation 237.*	☐ Variation 1 - without time ☑ Variation 2 - with absolute time ☐ Variation 3 - with relative time ☐ Based on point index (add column to table in part 5)	Two	
3.1.3 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.* *"All events" must be checked to be compliant.*	☐ Only most recent ☑ All events ☐ Based on point index (add column to table in part 5)	All events	
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)	If assigned	
3.1.5 Binary Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Binary Inputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events =	

	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 **0** ms (hardware may limit this further) ☐ Based on point index (add column to table in part 5)	Fixed at 0 ms	
3.3.2 Maximum pulse time allowed with Trip, Close and Pulse On commands:	☑ Fixed at **100** ms (hardware may limit this further ☐ Based on point index (add column to table in part 5)	Fixed at 100 ms	
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 - packed format ☐ Variation 2 - output status with flags ☐ Based on point index (add column to table in part 5)		

3.3.6 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for binary output events can be determined remotely using protocol object Group 0 Variation 222.*	☐ Variation 1 - status without time ☐ Variation 2 - status with time ☐ Based on point index (add column to table in part 5)		
3.3.7 Command Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - command status without time ☐ Variation 2 - command status with time ☐ Based on point index (add column to table in part 5)		
3.3.8 Event reporting mode: *When responding with event data and more than one event has occurred for a data point, an Outstation may include all events or only the most recent event.*	☐ Only most recent ☐ All events		
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)	Not Applicable	
3.3.11 Binary Outputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Binary Outputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events =	
3.3.12 Binary Output Commands Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Binary Output Commands. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events =	

3.4   COUNTERS / FROZEN COUNTERS
Counter Group Number: 20
Frozen Counter Group Number: 21
Counter Event Group Number: 22
Frozen Counter Event Group Number: 23

	Capabilities (leave tick-boxes blank if this data type is not supported)	Current Value	If configurable list methods
3.4.1 Static Counter Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☑ Variation 5 - 32-bit without flag ☐ Variation 6 - 16-bit without flag ☐ Based on point index (add column to table in part 5)	Five	
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)	Five	

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)	If assigned	
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)	All events	
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)		
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)		
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)	4,294,967,295	
3.4.10 Counters frozen by means of:	☐Master Request ☐Freezes itself without concern for time of day ☐Freezes itself and requires time of day ☑Other, explain:**Not aplicable**	Other	
3.4.11 Counters Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Counters. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe	Number of events =	

	Capabilities		
3.4.12 Frozen Counters Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Frozen Counters. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events =	
3.4.13 Reports counter events for change of value: *Indicate if counter events are created when the counter value changes.*	☐ Yes for all counters ☐ No for all counters ☐ Based on point index (add column to table in part 5)		

	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)	Three	
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)	Three	
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)	All events	
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)	If assigned	

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	C	software **CTR3Comm** Vers **1.00** ----------------
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)	Simple	
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)		
3.5.11 Analog Inputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Analog Inputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐Configurable, other, describe	Number of events =	

| 3.5.12 Frozen Analog Inputs Event Buffer Organization:

When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Frozen Analog Inputs. If event buffers are not allocated per object group then set "Fixed at 0". | ☐ Fixed at
☐ Configurable, range to
☐ Configurable, selectable from
☐ Configurable, other, describe | Number of events = | |

3.6 ANALOG OUTPUTS AND ANALOG OUTPUT COMMANDS
Analog Output Status Group Number: 40
Analog Outputs Group Number: 41
Analog Output Events Group Number: 42
Analog Output Command Events Group Number: 43

	Capabilities (leave tick-boxes blank if this data type is not supported)	Current Value	If configurable list methods
3.6.1 Static Analog Output Status Variation reported when variation 0 requested or in response to Class polls:	☑ Variation 1 - 32-bit with flag ☐ Variation 2 - 16-bit with flag ☐ Variation 3 - single-precision floating point with flag ☐ Variation 4 - double-precision floating point with flag ☐ Based on point index (add column to table in part 5)	One	
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)	Never	
3.6.3 Reports Output Command Event Objects:	☑ Never ☐ Only upon a successful Control ☐ Upon all control attempts	Never	
3.6.4 Event Variation reported when variation 0 requested or in response to Class polls: *Note: The support for analog output events can be determined remotely using protocol object Group 0 Variation 219.*	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)		
3.6.5 Command Event Variation reported when variation 0 requested or in response to Class polls:	☐ Variation 1 - 32-bit without time ☐ Variation 2 - 16-bit without time ☐ Variation 3 - 32-bit with time ☐ Variation 4 - 16-bit with time ☐ Variation 5 - single-precision floating point w/o time ☐ Variation 6 - double-precision floating point w/o time ☐ Variation 7 - single-precision floating point with time ☐ Variation 8 - double-precision floating point with time ☐ Based on point index (add column to table in part 5)		

3.6.6 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)	Not Applicable	
3.6.9 Analog Outputs Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Analog Outputs. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events =	
3.6.10 Analog Output Commands Event Buffer Organization: *When event buffers are allocated per object group (see part 1.7.6), indicate the number of events that can be buffered for Analog Output Commands. If event buffers are not allocated per object group then set "Fixed at 0".*	☐ Fixed at ☐ Configurable, range to ☐ Configurable, selectable from ☐ Configurable, other, describe	Number of events =	

3.7 FILE CONTROL
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	

3.10 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 wich object group and variations, function codes and qualifiers the device supports in both requests and responses. The Request collumns identify all requests that may be sent by a Master, or all request that must be parsed by na Outsttion. The Response columns identify all responses that must be parsed by a Master, or all responses that may be sent by na 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), 07, 08 (limited qty)		
1	1	Binary Input - Single-bit packed	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)	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), 07, 08 (limited qty)	129 (Response)	00, 01 (start-stop)
2	0	Binary Input Change Event - any variation	1(read)	06 (no range, or all), 07, 08 (limited qty)		
2	1	Binary Input Change Event - without time	1(read)	06 (no range, or all), 07, 08 (limited qty)	129 (Response)	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	Binary Input Change Event - with absolute time	1(read)	06 (no range, or all), 07, 08 (limited qty)	130 (Unsol. Resp)	17, 28 (index)
12	1	Binary Output Command (CROB) - control relay output block	3 (select)	17, 28 (index)	129 (Response)	echo of request
12	1	Binary Output Command (CROB) - control relay output block	4 (operate)	17, 28 (index)	129 (Response)	echo of request
12	1	Binary Output Command (CROB) - control relay output block	5 (direct op.)	17, 28 (index)	129 (Response)	echo of request
12	1	Binary Output Command (CROB) - control relay output block	6 (direct op, no ack)	17, 28 (index)	129 (Response)	echo of request
20	0	Counter - any variation	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)		
20	5	Counter - 32-bit without flag	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)	129 (Response)	00 (start-stop)
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)
30	0	Analog Input - any variation	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)		
30	1	Analog Input - 32-but with flag	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)	129 (Response)	00 (start-stop)
30	2	Analog Input - 16-but with flag	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)	129 (Response)	00 (start-stop)
30	3	Analog Input - 32-but without flag	1(read)	00, 01 (start-stop), 06 (no range, or all), 07, 08 (limited qty)	129 (Response)	00 (start-stop)

30	4	Analog Input - 16-but without flag	1(*read*)	00, 01 (*start-stop*), 06 (*no range, or all*), 07, 08 (*limited qty*)	129 (*Response*)	00 (*start-stop*)
32	0	Analog Input Change Event - any variaton	1(*read*)	06 (*no range, or all*), 07, 08 (*limited qty*)		
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*)
41	1	Analog Output Block - 32-bit	2(*write*)	17 (*index*)	129 (*Response*)	echo of request
50	1	Time and Date - absolute time	1(*read*)	07, 17 (*index*)	129 (*Response*)	07 (limited qty = 1)
50	1	Time and Date - absolute time	2(*write*)	07, 17 (*index*)	129 (*Response*)	07 (limited qty = 1)
60	1	Calss 0 data	1(*read*)	06 (*no range, or all*)	129 (*Response*)	00 (*start-stop*)
60	3	Class 1 data	1(*read*)	06 (*no range, or all*)		
60	4	Class 2 data	1(*read*)	06 (*no range, or all*)		
60	2	Class 3 data	1(*read*)	06 (*no range, or all*)		
80	1	Internal Indications	1(*read*)	06 (*no range, or all*)		
80	1	Internal Indications	2(*write*)	00 (*start-stop*)		

5 Data Points List (outstation only)

This part of 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.

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

Binary Input points list:

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Name for State when value is 0	Name for State when value is 1	Description
0	BI #0	none	Não está em manual	Está em manual	Manual_R1
1	BI #1	none	Não está em manual	Está em manual	Manual_R2
2	BI #2	none	Não está em manual	Está em manual	Manual_R3
3	BI #3	none	Não está em automático	Está em automático	Automático_R1
4	BI #4	none	Não está em automático	Está em automático	Automático_R2
5	BI #5	none	Não está em automático	Está em automático	Automático_R3
6	BI #6	none	Não está em travado	Está em travado	Travado_R1

7	BI #7	none	Não está em travado	Está em travado	Travado_R2
8	BI #8	none	Não está em travado	Está em travado	Travado_R3
9	BI #9	none	Direto	Inverso	Fluxo_R1
10	BI #10	none	Direto	Inverso	Fluxo_R2
11	BI #11	none	Direto	Inverso	Fluxo_R3
12	BI #12	none	Led apagado	Led aceso	Elevar_R1
13	BI #13	none	Led apagado	Led aceso	Elevar_R2
14	BI #14	none	Led apagado	Led aceso	Elevar_R3
15	BI #15	none	Led apagado	Led aceso	Abaixar_R1
16	BI #16	none	Led apagado	Led aceso	Abaixar_R2
17	BI #17	none	Led apagado	Led aceso	Abaixar_R3
18	BI #18	none	Não acionado no sentido de elevar	Acionado no sentido de elevar	Elevando_R1
19	BI #19	none	Não acionado no sentido de elevar	Acionado no sentido de elevar	Elevando_R2
20	BI #20	none	Não acionado no sentido de elevar	Acionado no sentido de elevar	Elevando_R3
21	BI #21	none	Não acionado no sentido de abaixar	Acionado no sentido de abaixar	Abaixando_R1
22	BI #22	none	Não acionado no sentido de abaixar	Acionado no sentido de abaixar	Abaixando_R2
23	BI #23	none	Não acionado no sentido de abaixar	Acionado no sentido de abaixar	Abaixando_R3
24	BI #24	none	Não acionada	Acionada	Chave Neutro_R1
25	BI #25	none	Não acionada	Acionada	Chave Neutro_R2
26	BI #26	none	Não acionada	Acionada	Chave Neutro_R3
27	BI #27	none	Led apagado	Led aceso	Falha_R1
28	BI #28	none	Led apagado	Led aceso	Falha_R2
29	BI #29	none	Led apagado	Led aceso	Falha_R3
30	BI #30	none	Não atingido	Atingido	Bfmax_R1
31	BI #31	none	Não atingido	Atingido	Bfmax_R2
32	BI #32	none	Não atingido	Atingido	Bfmax_R3
33	BI #33	none	Não atingido	Atingido	Bfmin_R1
34	BI #34	none	Não atingido	Atingido	Bfmin_R2
35	BI #35	none	Não atingido	Atingido	Bfmin_R3
36	BI #36	none	Não atingido	Atingido	Bltmax_R1
37	BI #37	none	Não atingido	Atingido	Bltmax_R2
38	BI #38	none	Não atingido	Atingido	Bltmax_R3
39	BI #39	none	Não atingido	Atingido	Bltmin_R1
40	BI #40	none	Não atingido	Atingido	Bltmin_R2
41	BI #41	none	Não atingido	Atingido	Bltmin_R3
42	BI #42	none	Direto	Inverso	CFP_R1
43	BI #43	none	Direto	Inverso	CFP_R2
44	BI #44	none	Direto	Inverso	CFP_R3
45	BI #45	none	Comutador fora da posição neutra	Comutador na posição neutra	Zerado_R1
46	BI #46	none	Comutador fora da posição neutra	Comutador na posição neutra	Zerado_R2
47	BI #47	none	Comutador fora da posição neutra	Comutador na posição neutra	Zerado_R3
48	BI #48	none	Não acionada	Acionada	Chpol_R1
49	BI #49	none	Não acionada	Acionada	Chpol_R2
50	BI #50	none	Não acionada	Acionada	Chpol_R3
51	BI #51	none	Local	Remoto	Local/Remoto
52	BI #52	none	Porta frontal USB	Porta frontal RS232	USB/RS232
53	BI #53	none	Monofásico	Trifásico	Tipo de operação
54	BI #54	none	Não acionado	Acionado	Atuação por nobreak

55	BI #55	none	Não acionada	Acionada	E1 (entrada auxiliar 1)
56	BI #56	none	Não acionada	Acionada	E2 (entrada auxiliar 2)
57	BI #57	none	Não acionada	Acionada	E3 (entrada auxiliar 3)
58	BI #58	none	Não acionada	Acionada	E4 (entrada auxiliar 4)
59	BI #59	none	Não acionada	Acionada	S1 (saída auxiliar 1)
60	BI #60	none	Não acionada	Acionada	S2 (saída auxiliar 2)
61	BI #61	none	Não acionada	Acionada	S3 (saída auxiliar 3)
62	BI #62	none	Não acionada	Acionada	V1 (variável binária virtual 1)
63	BI #63	none	Não acionada	Acionada	V2 (variável binária virtual 2)
64	BI #64	none	Não acionada	Acionada	V3 (variável binária virtual 3)
65	BI #65	none	Não acionada	Acionada	V4 (variável binária virtual 4)
66	BI #66	none	Não acionada	Acionada	V5 (variável binária virtual 5)
67	BI #67	none	Não acionada	Acionada	V6 (variável binária virtual 6)
68	BI #68	none	Não acionada	Acionada	V7 (variável binária virtual 7)
69	BI #69	none	Não acionada	Acionada	V8 (variável binária virtual 8)
70	BI #70	none	Não acionada	Acionada	V9 (variável binária virtual 9)
71	BI #71	none	Não acionada	Acionada	V10 (variável binária virtual 10)

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.

☑ 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.

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

Binary Output Status and CROB points list:

| Point Index | Name | Supported Control Operations | | | | | | | | | | | Cancel Currently Running Operation | Name for State when value is 0 | Name for State when value is 1 | Event Class Assigned (1,2,3 or none) | | Description |
		Select/ Operate	Direct Operate	Direct Operate – No Ack	Pulse On	Pulse Off	Latch On	Latch Off	Trip	Close	Count > 1				Change	Command	
0	BO #0	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Reset do Indicador Externo R1
1	BO #1	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Reset do Indicador Externo R2
2	BO #2	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Reset do Indicador Externo R3
3	BO #3	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Elevar R1
4	BO #4	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Elevar R2
5	BO #5	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Elevar R3
6	BO #6	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Abaixar R1
7	BO #7	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Abaixar R2
8	BO #8	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Abaixar R3
9	BO #9	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Reset Quantidade de Registro
10	BO #10	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Elevar banco completo
11	BO #11	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Abaixar banco completo
12	BO #12	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Reset de contagem de entradas em modo trifásico
13	BO #13	Y	Y	Y	Y	Y	Y	Y	Y	Y					none		Comandar banco no sentido de levar

Index	Point	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Description
14	BO #14	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	comutadores para posição neutra [1]
15	BO #15	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R1 em Manual
16	BO #16	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R1 em Automático
17	BO #17	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R1 em Travado
18	BO #18	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R2 em Manual
19	BO #19	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R2 em Automático
20	BO #20	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R2 em Travado
21	BO #21	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R3 em Manual
22	BO #22	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R3 em Automático
23	BO #23	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar R3 em Travado
24	BO #24	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar banco em Manual
25	BO #25	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar banco em Automatico
26	BO #26	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Colocar banco em Travado
27	BO #27	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Seta modo de regulação para monofásico
28	BO #28	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Seta modo de regulação para trifásico
29	BO #29	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda saída auxiliar 1 (S1)
30	BO #30	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda saída auxiliar 1 (S2)
31	BO #31	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda saída auxiliar 1 (S3)
32	BO #32	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 1 (V1)
33	BO #33	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 2 (V2)
34	BO #34	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 3 (V3)
35	BO #35	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 4 (V4)
36	BO #36	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 5 (V5)
37	BO #37	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 6 (V6)
38	BO #38	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 7 (V7)
39	BO #39	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 8 (V8)
40	BO #40	Y	Y	Y	Y	Y	Y	Y	Y	Y			none	Comanda variável auxiliar 9 (V9)
														Comanda variável auxiliar 10 (V10)

[1] **Somente serão levados à posição neutra os comutadores que estiverem em modo manual**

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.

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

Counter / Frozen Counter points list:

Point Index	Name	Event Class Assigned to Counter Events (1,2,3 or none)	Frozen Counter Exists (Yes or No)	Event Class Assigned to Frozen Counter Events (1,2,3 or none)	Description
0	CI #0	none	N		Quantidade de registros na pilha
1	CI #1	none	N		Quantidade de entradas em modo trifásico
2	CI #2	none	N		Regulador 1 – Quantidade total de operações
3	CI #3	none	N		Regulador 2 – Quantidade total de operações
4	CI #4	none	N		Regulador 3 – Quantidade total de operações
5	CI #5	none	N		Posição atual da pilha de registros

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.

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

Analog Input points list:

Transmitted Value	Scaling	Description

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Min int / flt	Max int / flt	Multiplier	Offset	Units	Resolution	
0	AI #0	none	/	/	100	0		0,01	Firmware [informa versão firmware]
1	AI #1	none	/	/	100	0		0,01	Hardware [informa versão hardware]
2	AI #2	none	/	/		0		1	Número serie [informa n.º série]
3	AI #3	none	/	/		0		1	Ano fabricação [informa ano fabricação]
4	AI #4	none	/	/		0		1	Norma [informa norma de fabricação]
5	AI #5	none	/	/		0		1	Idioma [informa idioma]
6	AI #6	none	/	/		0		1	TAP_R1 [tap atual R1]
7	AI #7	none	/	/		0		1	Manual_Automatico_TravadoR1 [modo operação R1]
8	AI #8	none	/	/		0		1	TAPMAX_R1 [tap máximo R1]
9	AI #9	none	/	/		0		1	TAPMIN_R1 [tap mínimo R1]
10	AI #10	none	/	/		0	Hz	1	FREQ [Hz]_R1 [frequência R1]
11	AI #11	none	/	/	100	0		0,01	FPOT_R1 [fator de potência R1]
12	AI #12	none	/	/	10	0	V	0,1	TBLC [V]_R1 [tensão secundária carga R1]
13	AI #13	none	/	/	10	0	mA	0,1	ICb [mA]_R1 [corrente secundária carga R1]
14	AI #14	none	/	/	10	0	kV	0,1	VC [kV]_R1 [tensão primária carga R1]
15	AI #15	none	/	/	10	0	A	0,1	IC [A]_R1 [corrente primária carga R1]
16	AI #16	none	/	/	10	0	V	0,1	TBLF [V]_R1 [tensão secundária fonte R1]
17	AI #17	none	/	/	10	0	mA	0,1	IFb [mA]_R1 [corrente secundária fonte R1]
18	AI #18	none	/	/	10	0	kV	0,1	VF [kV]_R1 [tensão primária fonte R1]
19	AI #19	none	/	/	10	0	A	0,1	IF [A]_R1 [corrente primária fonte R1]
20	AI #20	none	/	/	10	0	KVA	0,1	P [kVA]_R1 [potência aparente R1]
21	AI #21	none	/	/	10	0	kW	0,1	PA [kW]_R1 [potência ativa R1]
22	AI #22	none	/	/	10	0	kVAr	0,1	PR [kVAr]_R1 [potência reativa R1]
23	AI #23	none	/	/	10	0	°C	0,1	TEMP [°C]_R1 [temperatura R1]
24	AI #24	none	/	/	10	0		0,1	COP_R1 [contador operação R1]
25	AI #25	none	/	/		0	%	1	DHTV_R1 [harmônico total de tensão R1]
26	AI #26	none	/	/		0	%	1	1ª_V_R1 [1ª harmônica de tensão R1]
27	AI #27	none	/	/		0	%	1	3ª_R1 [3ª harmônica de tensão R1]
28	AI #28	none	/	/		0	%	1	5ª_V_R1 [5ª harmônica de tensão R1]
29	AI #29	none	/	/		0	%	1	7ª_V_R1 [7ª harmônica de tensão R1]
30	AI #30	none	/	/		0	%	1	9ª_V_R1 [9ª harmônica de tensão R1]
31	AI #31	none	/	/		0	%	1	11ª_V_R1 [11ª harmônica de tensão R1]
32	AI #32	none	/	/		0	%	1	13ª_V_R1 [13ª harmônica de tensão R1]
33	AI #33	none	/	/		0	%	1	15ª_V_R1 [15ª harmônica de tensão R1]
34	AI #34	none	/	/		0	%	1	DHTI_R1 [harmônico total de corrente R1]
35	AI #35	none	/	/		0	%	1	1ª_I_R1 [1ª harmônica de corrente R1]
36	AI #36	none	/	/		0	%	1	3ª_I_R1 [3ª harmônica de corrente R1]
37	AI #37	none	/	/		0	%	1	5ª_I_R1 [5ª harmônica de corrente R1]
38	AI #38	none	/	/		0	%	1	7ª_I_R1 [7ª harmônica de corrente R1]
39	AI #39	none	/	/		0	%	1	9ª_I_R1 [9ª harmônica de corrente R1]
40	AI #40	none	/	/		0	%	1	11ª_I_R1 [11ª harmônica de corrente R1]
41	AI #41	none	/	/		0	%	1	13ª_I_R1 [13ª harmônica de corrente R1]
42	AI #42	none	/	/		0	%	1	15ª_I_R1 [15ª harmônica de corrente R1]
43	AI #43	none	/	/	10	0		0,1	RTPC_R1 [relação de tensão R1]
44	AI #44	none	/	/		0		1	RTCC_R1 [relação corrente R1]
45	AI #45	none	/	/	10	0	V	0,1	VREF _R1 [tensão de referência MD R1]
46	AI #46	none	/	/	10	0	%	0,1	INS _R1 [insensibilidade MD R1]
47	AI #47	none	/	/		0	s	1	TMP _R1 [temporização MD R1]
48	AI #48	none	/	/		0	%	1	UR _R1 [LDC U MD R1]
49	AI #49	none	/	/		0	%	1	UX _R1 [LDC X MD R1]
50	AI #50	none	/	/		0	%	1	LVMIN_R1 [limitador tensão mínimo MD R1]
51	AI #51	none	/	/		0	%	1	LVMAX_R1 [limitador tensão máximo MD R1]
52	AI #52	none	/	/		0	V	1	VREF _R1 [tensão de referência MI R1]
53	AI #53	none	/	/	10	0	%	0,1	INS _R1 [insensibilidade MI R1]
54	AI #54	none	/	/		0	s	1	TMP _R1 [temporização MI R1]
55	AI #55	none	/	/		0	%	1	UR _R1 [LDC U MI R1]
56	AI #56	none	/	/		0	%	1	UX _R1 [LDC X MI R1]
57	AI #57	none	/	/		0	%	1	LVMIN_R1 [limitador tensão mínimo MI R1]
58	AI #58	none	/	/		0	%	1	LVMAX_R1 [limitador tensão máximo MI R1]
59	AI #59	none	/	/		0	V	1	VREF _R1 [tensão de referência MC R1]
60	AI #60	none	/	/	10	0	%	0,1	INS _R1 [insensibilidade MC R1]
61	AI #61	none	/	/		0	s	1	TMP _R1 [temporização MC R1]
62	AI #62	none	/	/		0	%	1	UR _R1 [LDC U MC R1]

63	AI #63	none	/	/		0	%	1	UX_R1 [LDC X MC R1]
64	AI #64	none	/	/		0	%	1	LVMIN_R1 [limitador tensão mínimo MC R1]
65	AI #65	none	/	/		0	%	1	LVMAX_R1 [limitador tensão máximo MC R1]
66	AI #66	none	/	/		0		1	MODABL_R1 [habilita bônus de carga R1]
67	AI #67	none	/	/		0		1	BMAX_R1 [bloqueio máximo de posição R1]
68	AI #68	none	/	/		0		1	BMIN_R1 [bloqueio mínimo de posição R1]
69	AI #69	none	/	/		0	%	1	BSC_R1 [bloqueio sobre corrente R1]
70	AI #70	none	/	/		0		1	MAFP_R1 [modo atuação fluxo inverso R1]
71	AI #71	none	/	/	10	0	%	0,1	LIM_R1 [limiar do fluxo inverso R1]
72	AI #72	none	/	/		0		1	HTINV_R1 [temporização inversa R1]
73	AI #73	none	/	/		0		1	DTAQ [período aquisição de dados]
74	AI #74	none	/	/		0		1	MODREG [modo provocar regulação]
75	AI #75	none	/	/		0		1	CON [conexão do banco]
76	AI #76	none	/	/		0		1	GDL [grau de liberdade]
77	AI #77	none	/	/		0		1	DTAP_R1 [diferença fixa para o mestre R1]
78	AI #78	none	/	/		0		1	DEFVC_R1 [defasagem V e I R1]
79	AI #79	none	/	/		0		1	HREG_R1 [habilita regulador R1]
80	AI #80	none	/	/		0		1	MTR [seleciona regulador mestre]
81	AI #81	none	/	/		0		1	MIPCOM_R1 [modo indicação comutador R1]
82	AI #82	none	/	/		0		1	TAC_R1 [modo atuação comutador R1]
83	AI #83	none	/	/		0		1	TREG_R1 [tipo do regulador A ou B R1]
84	AI #84	none	/	/		0		1	TPM_R1 [tempo pulso motor R1]
85	AI #85	none	/	/		0		1	Mapa adotado em R1
86	AI #86	none	/	/		0		1	HCMP [hora de auditoria do rastreio]
87	AI #87	none	/	/		0		1	SCMP [dia de auditoria do rastreio]
88	AI #88	none	/	/		0		1	TPES [tempo permanência em sincronismo]
89	AI #89	none	/	/		0		1	HESP_P2 [habilita respostas automáticas P2]
90	AI #90	none	/	/		0		1	ENDREM_P2 [endereço msg automáticas P2]
91	AI #91	none	/	/		0		1	HESP_P3 [habilita respostas automáticas P3]
92	AI #92	none	/	/		0		1	ENDREM_P3 [endereço msg automáticas P3]
93	AI #93	none	/	/		0		1	ESERIAL [endereço para comunicação serial]
94	AI #94	none	/	/		0		1	BAUD1 [taxa transmissão dados porta 1]
95	AI #95	none	/	/		0		1	BAUD2 [taxa transmissão dados porta 2]
96	AI #96	none	/	/		0		1	BAUD3 [taxa transmissão dados porta 3]
97	AI #97		/	/		0		1	TNOBREAK [tempo para atuação em caso de uso do nobreak]. 0 valor 0, indica desabilitado.
98	AI #98	none	/	/		0		1	SENHA View/Reset [senha operador]
99	AI #99	none	/	/		0		1	SENHA ADMIN [senha administrador]
100	AI #100	none	/	/		0		1	TAP_R2 [tap atual R2]
101	AI #101	none	/	/		0		1	Manual_Automatico_Travado _R2 [modo operação R2]
102	AI #102	none	/	/		0		1	TAPMAX_R2 [tap máximo R2]
103	AI #103	none	/	/		0		1	TAPMIN_R2 [tap mínimo R2]
104	AI #104	none	/	/		0	Hz	1	FREQ [Hz]_R2 [frequência R2]
105	AI #105	none	/	/	100	0		0,01	FPOT_R2 [fator de potência R2]
106	AI #106	none	/	/	10	0	V	0,1	TBLC [V]_R2 [tensão secundária carga R2]
107	AI #107	none	/	/	10	0	mA	0,1	ICb [mA]_R2 [corrente secundária carga R2]
108	AI #108	none	/	/	10	0	kV	0,1	VC [kV]_R2 [tensão primária carga R2]
109	AI #109	none	/	/	10	0	A	0,1	IC [A]_R2 [corrente primária carga R2]
110	AI #110	none	/	/	10	0	V	0,1	TBLF [V]_R2 [tensão secundária fonte R2]
111	AI #111	none	/	/	10	0	mA	0,1	IFb [mA]_R2 [corrente secundária fonte R2]
112	AI #112	none	/	/	10	0	kV	0,1	VF [kV]_R2 [tensão primária fonte R2]
113	AI #113	none	/	/	10	0	A	0,1	IF [A]_R2 [corrente primária fonte R2]
114	AI #114	none	/	/	10	0	kVA	0,1	P [kVA]_R2 [potência aparente R2]
115	AI #115	none	/	/	10	0	kW	0,1	PA [kW]_R2 [potência ativa R2]
116	AI #116	none	/	/	10	0	kVAr	0,1	PR [kVAr]_R2 [potência reativa R2]
117	AI #117	none	/	/	10	0	°C	0,1	TEMP [°C]_R2 [temperatura R2]
118	AI #118	none	/	/		0		1	COP_R2 [contador operação R2]
119	AI #119	none	/	/		0	%	1	DHTV_R2 [harmônico total de tensão R2]
120	AI #120	none	/	/		0	%	1	1ª_V_R2 [1ª harmônica de tensão R2]
121	AI #121	none	/	/		0	%	1	3ª_R2 [3ª harmônica de tensão R2]
122	AI #122	none	/	/		0	%	1	5ª_V_R2 [5ª harmônica de tensão R2]
123	AI #123	none	/	/		0	%	1	7ª_V_R2 [7ª harmônica de tensão R2]
124	AI #124	none	/	/		0	%	1	9ª_V_R2 [9ª harmônica de tensão R2]
125	AI #125	none	/	/		0	%	1	11ª_V_R2 [11ª harmônica de tensão R2]
126	AI #126	none	/	/		0	%	1	13ª_V_R2 [13ª harmônica de tensão R2]
127	AI #127	none	/	/		0	%	1	15ª_V_R2 [15ª harmônica de tensão R2]
128	AI #128	none	/	/		0	%	1	DHTI_R2 [harmônico total de corrente R2]
129	AI #129	none	/	/		0	%	1	1ª_I_R2 [1ª harmônica de corrente R2]

130	AI #130	none	/	/		0	%	1	3ª_I_R2 [3ª harmônica de corrente R2]
131	AI #131	none	/	/		0	%	1	5ª_I_R2 [5ª harmônica de corrente R2]
132	AI #132	none	/	/		0	%	1	7ª_I_R2 [7ª harmônica de corrente R2]
133	AI #133	none	/	/		0	%	1	9ª_I_R2 [9ª harmônica de corrente R2]
134	AI #134	none	/	/		0	%	1	11ª_I_R2 [11ª harmônica de corrente R2]
135	AI #135	none	/	/		0	%	1	13ª_I_R2 [13ª harmônica de corrente R2]
136	AI #136	none	/	/		0	%	1	15ª_I_R2 [15ª harmônica de corrente R2]
137	AI #137	none	/	/	10	0		0,1	RTPC_R2 [relação de tensão R2]
138	AI #138	none	/	/		0		1	RTCC_R2 [relação corrente R2]
139	AI #139	none	/	/		0	V	1	VREF _R2 [tensão de referência MD R2]
140	AI #140	none	/	/	10	0	%	0,1	INS _R2 [insensibilidade MD R2]
141	AI #141	none	/	/		0	s	1	TMP _R2 [temporização MD R2]
142	AI #142	none	/	/		0	%	1	UR _R2 [LDC U MD R2]
143	AI #143	none	/	/		0	%	1	UX _R2 [LDC X MD R2]
144	AI #144	none	/	/		0	%	1	LVMIN_R2 [limitador tensão mínimo MD R2]
145	AI #145	none	/	/		0	%	1	LVMAX_R2 [limitador tensão máximo MD R2]
146	AI #146	none	/	/		0	V	1	VREF _R2 [tensão de referência MI R2]
147	AI #147	none	/	/	10	0	%	0,1	INS _R2 [insensibilidade MI R2]
148	AI #148	none	/	/		0	s	1	TMP _R2 [temporização MI R2]
149	AI #149	none	/	/		0	%	1	UR _R2 [LDC U MI R2]
150	AI #150	none	/	/		0	%	1	UX _R2 [LDC X MI R2]
151	AI #151	none	/	/		0	%	1	LVMIN_R2 [limitador tensão mínimo MI R2]
152	AI #152	none	/	/		0	%	1	LVMAX_R2 [limitador tensão máximo MI R2]
153	AI #153	none	/	/		0	V	1	VREF _R2 [tensão de referência MC R2]
154	AI #154	none	/	/	10	0	%	0,1	INS _R2 [insensibilidade MC R2]
155	AI #155	none	/	/		0	s	1	TMP _R2 [temporização MC R2]
156	AI #156	none	/	/		0	%	1	UR _R2 [LDC U MC R2]
157	AI #157	none	/	/		0	%	1	UX _R2 [LDC X MC R2]
158	AI #158	none	/	/		0	%	1	LVMIN_R2 [limitador tensão mínimo MC R2]
159	AI #159	none	/	/		0	%	1	LVMAX_R2 [limitador tensão máximo MC R2]
160	AI #160	none	/	/		0		1	MODABL_R2 [habilita bônus de carga R2]
161	AI #161	none	/	/		0		1	BMAX_R2 [bloqueio máximo de posição R2]
162	AI #162	none	/	/		0		1	BMIN_R2 [bloqueio mínimo de posição R2]
163	AI #163	none	/	/		0	%	1	BSC_R2 [bloqueio sobre corrente R2]
164	AI #164	none	/	/		0		1	MAFP_R2 [modo atuação fluxo inverso R2]
165	AI #165	none	/	/		0	%	1	LIM_R2 [limiar do fluxo inverso R2]
166	AI #166	none	/	/		0		1	HTINV_R2 [temporização inversa R2]
167	AI #167	none	/	/		0		1	DTAP_R2 [diferença fixa para o mestre R2]
168	AI #168	none	/	/		0		1	DEFVC_R2 [defasagem V e I R2]
169	AI #169	none	/	/		0		1	HREG_R2 [habilita regulador R2]
170	AI #170	none	/	/		0		1	MIPCOM_R2 [modo indicação comutador R2]
171	AI #171	none	/	/		0		1	TAC_R2 [modo atuação comutador R2]
172	AI #172	none	/	/		0		1	TREG_R2 [tipo do regulador A ou B R2]
173	AI #173	none	/	/		0		1	TPM_R2 [tempo pulso motor R2]
174	AI #174	none	/	/		0		1	Mapa adotado em R2
175	AI #175	none	/	/		0		1	TAP_R3 [tap atual R3]
176	AI #176	none	/	/		0		1	Manual_Automatico_Travado_R3 [modo operação R3]
177	AI #177	none	/	/		0		1	TAPMAX_R3 [tap máximo R3]
178	AI #178	none	/	/		0		1	TAPMIN_R3 [tap mínimo R3]
179	AI #179	none	/	/		0	Hz	1	FREQ [Hz]_R3 [frequência R3]
180	AI #180	none	/	/	100	0		0,01	FPOT_R3 [fator de potência R3]
181	AI #181	none	/	/	10	0	V	0,1	TBLC [V]_R3 [tensão secundária carga R3]
182	AI #182	none	/	/	10	0	mA	0,1	ICb [mA]_R3 [corrente secundária carga R3]
183	AI #183	none	/	/	10	0	kV	0,1	VC [kV]_R3 [tensão primária carga R3]
184	AI #184	none	/	/	10	0	A	0,1	IC [A]_R3 [corrente primária carga R3]
185	AI #185	none	/	/	10	0	V	0,1	TBLF [V]_R3 [tensão secundária fonte R3]
186	AI #186	none	/	/	10	0	mA	0,1	IFb [mA]_R3 [corrente secundária fonte R3]
187	AI #187	none	/	/	10	0	kV	0,1	VF [kV]_R3 [tensão primária fonte R3]
188	AI #188	none	/	/	10	0	A	0,1	IF [A]_R3 [corrente primária fonte R3]
189	AI #189	none	/	/	10	0	kVA	0,1	P [kVA]_R3 [potência aparente R3]
190	AI #190	none	/	/	10	0	kW	0,1	PA [kW]_R3 [potência ativa R3]
191	AI #191	none	/	/	10	0	kVAr	0,1	PR [kVAr]_R3 [potência reativa R3]
192	AI #192	none	/	/	10	0	°C	0,1	TEMP [°C]_R3 [temperatura R3]
193	AI #193	none	/	/		0		1	COP_R3 [contador operação R3]
194	AI #194	none	/	/		0	%	1	DHTV_R3 [harmônico total de tensão R3]
195	AI #195	none	/	/		0	%	1	1ª_V_R3 [1ª harmônica de tensão R3]
196	AI #196	none	/	/		0	%	1	3ª_R3 [3ª harmônica de tensão R3]
197	AI #197	none	/	/		0	%	1	5ª_V_R3 [5ª harmônica de tensão R3]

198	AI #198	none	/	/		0	%	1	7ª_V_R3 [7ª harmônica de tensão R3]
199	AI #199	none	/	/		0	%	1	9ª_V_R3 [9ª harmônica de tensão R3]
200	AI #200	none	/	/		0	%	1	11ª_V_R3 [11ª harmônica de tensão R3]
201	AI #201	none	/	/		0	%	1	13ª_V_R3 [13ª harmônica de tensão R3]
202	AI #202	none	/	/		0	%	1	15ª_V_R3 [15ª harmônica de tensão R3]
203	AI #203	none	/	/		0	%	1	DHTI_R3 [harmônico total de corrente R3]
204	AI #204	none	/	/		0	%	1	1ª_I_R3 [1ª harmônica de corrente R3]
205	AI #205	none	/	/		0	%	1	3ª_I_R3 [3ª harmônica de corrente R3]
206	AI #206	none	/	/		0	%	1	5ª_I_R3 [5ª harmônica de corrente R3]
207	AI #207	none	/	/		0	%	1	7ª_I_R3 [7ª harmônica de corrente R3]
208	AI #208	none	/	/		0	%	1	9ª_I_R3 [9ª harmônica de corrente R3]
209	AI #209	none	/	/		0	%	1	11ª_I_R3 [11ª harmônica de corrente R3]
210	AI #210	none	/	/		0	%	1	13ª_I_R3 [13ª harmônica de corrente R3]
211	AI #211	none	/	/		0	%	1	15ª_I_R3 [15ª harmônica de corrente R3]
212	AI #212	none	/	/	10	0		0,1	RTPC_R3 [relação de tensão R3]
213	AI #213	none	/	/		0		1	RTCC_R3 [relação corrente R3]
214	AI #214	none	/	/		0	V	1	VREF _R3 [tensão de referência MD R3]
215	AI #215	none	/	/	10	0	%	0,1	INS _R3 [insensibilidade MD R3]
216	AI #216	none	/	/		0	s	1	TMP _R3 [temporização MD R3]
217	AI #217	none	/	/		0	%	1	UR _R3 [LDC U MD R3]
218	AI #218	none	/	/		0	%	1	UX _R3 [LDC X MD R3]
219	AI #219	none	/	/		0	%	1	LVMIN_R3 [limitador tensão mínimo MD R3]
220	AI #220	none	/	/		0	%	1	LVMAX_R3 [limitador tensão máximo MD R3]
221	AI #221	none	/	/		0	V	1	VREF _R3 [tensão de referência MI R3]
222	AI #222	none	/	/	10	0	%	0,1	INS _R3 [insensibilidade MI R3]
223	AI #223	none	/	/		0	s	1	TMP _R3 [temporização MI R3]
224	AI #224	none	/	/		0	%	1	UR _R3 [LDC U MI R3]
225	AI #225	none	/	/		0	%	1	UX _R3 [LDC X MI R3]
226	AI #226	none	/	/		0	%	1	LVMIN_R3 [limitador tensão mínimo MI R3]
227	AI #227	none	/	/		0	%	1	LVMAX_R3 [limitador tensão máximo MI R3]
228	AI #228	none	/	/		0	V	1	VREF _R3 [tensão de referência MC R3]
229	AI #229	none	/	/	10	0	%	0,1	INS _R3 [insensibilidade MC R3]
230	AI #230	none	/	/		0	s	1	TMP _R3 [temporização MC R3]
231	AI #231	none	/	/		0	%	1	UR _R3 [LDC U MC R3]
232	AI #232	none	/	/		0	%	1	UX _R3 [LDC X MC R3]
233	AI #233	none	/	/		0	%	1	LVMIN_R3 [limitador tensão mínimo MC R3]
234	AI #234	none	/	/		0	%	1	LVMAX_R3 [limitador tensão máximo MC R3]
235	AI #235	none	/	/		0		1	MODABL_R3 [habilita bônus de carga R3]
236	AI #236	none	/	/		0		1	BMAX_R3 [bloqueio máximo de posição R3]
237	AI #237	none	/	/		0		1	BMIN_R3 [bloqueio mínimo de posição R3]
238	AI #238	none	/	/		0	%	1	BSC_R3 [bloqueio sobre corrente R3]
239	AI #239	none	/	/		0		1	MAFP_R3 [modo atuação fluxo inverso R3]
240	AI #240	none	/	/	10	0	%	0,1	LIM_R3 [limiar do fluxo inverso R3]
241	AI #241	none	/	/		0		1	HTINV_R3 [temporização inversa R3]
242	AI #242	none	/	/		0		1	DTAP_R3 [diferença fixa para o mestre R3]
243	AI #243	none	/	/		0		1	DEFVC_R3 [defasagem V e I R3]
244	AI #244	none	/	/		0		1	HREG_R3 [habilita regulador R3]
245	AI #245	none	/	/		0		1	MIPCOM_R3 [modo indicação comutador R3]
246	AI #246	none	/	/		0		1	TAC_R3 [modo atuação comutador R3]
247	AI #247	none	/	/		0		1	TREG_R3 [tipo do regulador A ou B R3]
248	AI #248	none	/	/		0		1	TPM_R3 [tempo pulso motor R3]
249	AI #249	none	/	/		0		1	Mapa adotado em R3

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

Analog Output points list:

Point Index	Name	Supported Control operations			Transmitted Value		Scaling				Event Class Assigned (1, 2, 3 or none)		Description
		Select/Operate	Direct Operate	Direct Operate - No Ack	Min	Max	Min	Max	Units	Resolution	Change	Command	
0	AO #0				0	2		0		1	none	none	Manual_Automatico_Travado R1 [modo operação R1]
1	AO #1				250	2830		0		0,1	none	none	RTPC_R1 [relação de tensão R1]
2	AO #2				25	6000		0		1	none	none	RTCC_R1 [relação corrente R1]
3	AO #3				4000	38000		0		1	none	none	VREF _R1 [tensão de referência MD R1]
4	AO #4				8	50		0		1	none	none	INS _R1 [insensibilidade MD R1]
5	AO #5				10	180		0		1	none	none	TMP _R1 [temporização MD R1]
6	AO #6				-25	25		0		1	none	none	UR _R1 [LDC U MD R1]
7	AO #7				-25	25		0		1	none	none	UX _R1 [LDC X MD R1]
8	AO #8				1	13		0		1	none	none	LVMIN_R1 [limitador tensão mínimo MD R1]
9	AO #9				1	13		0		1	none	none	LVMAX_R1 [limitador tensão máximo MD R1]
10	AO #10				4000	38000		0		1	none	none	VREFI _R1 [tensão de referência MI R1]
11	AO #11				8	50		0		1	none	none	INSI _R1 [insensibilidade MI R1]
12	AO #12				10	180		0		1	none	none	TMPI _R1 [temporização MI R1]
13	AO #13				-25	25		0		1	none	none	RI _R1 [LDC U MI R1]
14	AO #14				-25	25		0		1	none	none	XI _R1 [LDC X MI R1]
15	AO #15				1	13		0		1	none	none	LVMINI_R1 [limitador tensão mínimo MI R1]
16	AO #16				1	13		0		1	none	none	LVMAXI_R1 [limitador tensão máximo MI R1]
17	AO #17				4000	38000		0		1	none	none	VREFC_R1 [tensão de referência MC R1]
18	AO #18				8	50		0		1	none	none	INSC _R1 [insensibilidade MC R1]
19	AO #19				10	180		0		1	none	none	TMPC _R1 [temporização MC R1]
20	AO #20				-25	25		0		1	none	none	RC _R1 [LDC U MC R1]
21	AO #21				-25	25		0		1	none	none	XC _R1 [LDC X MC R1]
22	AO #22				1	13		0		1	none	none	LVMINC_R1 [limitador tensão mínimo MC R1]
23	AO #23				1	13		0		1	none	none	LVMAXC_R1 [limitador tensão máximo MC R1]
24	AO #24				0	1		0		1	none	none	MODABL_R1 [habilita bônus de carga R1]
25	AO #25				8	16		0		1	none	none	BMAX_R1 [bloqueio máximo de posição R1]
26	AO #26				-16	8		0		1	none	none	BMIN_R1 [bloqueio mínimo de posição R1]
27	AO #27				50	210		0		1	none	none	BSC_R1 [bloqueio sobre corrente R1]
28	AO #28				0	8		0		1	none	none	MAFP_R1 [modo atuação fluxo inverso R1]
29	AO #29				10	50		0		1	none	none	LIM_R1 [limiar do fluxo inverso R1]
30	AO #30				0	1		0		1	none	none	HTINV_R1 [temporização inversa R1]
31	AO #31				1	60		0		1	none	none	DTAQ [período aquisição de dados]
32	AO #32				0	5		0		1	none	none	MODREG [modo provocar regulação]
33	AO #33				0	3		0		1	none	none	CON [conexão do banco]
34	AO #34				0	33		0		1	none	none	GDL [grau de liberdade]
35	AO #35				-5	5		0		1	none	none	DTAP_R1 [diferença fixa para o mestre R1]
36	AO #36				0	2		0		1	none	none	DEFVC_R1 [defasagem V e I R1]
37	AO #37				0	1		0		1	none	none	HREG_R1 [habilita regulador R1]
38	AO #38				1	3		0		1	none	none	MTR [seleciona regulador mestre]
39	AO #39				0	7		0		1	none	none	MIPCOM_R1 [modo indicação comutador R1]
40	AO #40				0	1		0		1	none	none	TAC_R1 [modo atuação comutador R1]
41	AO #41				0	1		0		1	none	none	TREG_R1 [tipo do regulador A ou B R1]
42	AO #42				10	5000		0		1	none	none	TPM_R1 [tempo pulso motor R1]
43	AO #43				0	23		0		1	none	none	HCMP [hora de auditoria do rastreio]
44	AO #44				0	8		0		1	none	none	SCMP [dia de auditoria do rastreio]
45	AO #45				10	1440		0		1	none	none	TPES [tempo permanência em sincronismo]
46	AO #46				0	1		0		1	none	none	HESP_P2 [habilita respostas automáticas P2]
47	AO #47				0	65519		0		1	none	none	ENDREM_P2 [endereço msg automáticas P2]
48	AO #48				0	1		0		1	none	none	HESP_P3 [habilita respostas automáticas P3]
49	AO #49				0	65519		0		1	none	none	ENDREM_P3 [endereço msg automáticas P3]
50	AO #50				0	65519		0		1	none	none	ESERIAL [endereço para comunicação serial]
51	AO #51				0	7		0		1	none	none	BAUD1 [taxa transmissão dados porta 1]
52	AO #52				0	7		0		1	none	none	BAUD2 [taxa transmissão dados porta 2]
53	AO #53				0	7		0		1	none	none	BAUD3 [taxa transmissão dados porta 3]
54	AO #54				0	65535		0		1	none	none	TNOBREAK [tempo de espera para atuação do nobreak em segundos]. O valor 0, indica que está desabilitado.
55	AO #55				0	999999		0		1	none	none	SENHA View/Reset [senha operador]
56	AO #56				0	999999		0		1	none	none	SENHA ADMIN [senha administrador]
57	AO #57				0	2		0		1	none	none	Manual_Automatico_Travado R2 [modo operação R2]
58	AO #58				250	2830		0		0,1	none	none	RTPC_R2 [relação de tensão R2]
59	AO #59				25	6000		0		1	none	none	RTCC_R2 [relação corrente R2]
60	AO #60				4000	38000		0		1	none	none	VREF _R2 [tensão de referência MD R2]
61	AO #61				8	50		0		1	none	none	INS _R2 [insensibilidade MD R2]

62	AO #62				10	180	0	1	none	none	TMP _R2 [temporização MD R2]
63	AO #63				-25	25	0	1	none	none	UR _R2 [LDC U MD R2]
64	AO #64				-25	25	0	1	none	none	UX _R2 [LDC X MD R2]
65	AO #65				1	23	0	1	none	none	LVMIN_R2 [limitador tensão mínimo MD R2]
66	AO #66				1	13	0	1	none	none	LVMAX_R2 [limitador tensão máximo MD R2]
67	AO #67				4000	38000	0	1	none	none	VREFI _R2 [tensão de referência MI R2]
68	AO #68				8	50	0	1	none	none	INSI _R2 [insensibilidade MI R2]
69	AO #69				10	180	0	1	none	none	TMPI_R2 [temporização MI R2]
70	AO #70				-25	25	0	1	none	none	RI _R2 [LDC U MI R2]
71	AO #71				-25	25	0	1	none	none	XI _R2 [LDC X MI R2]
72	AO #72				1	23	0	1	none	none	LVMINI_R2 [limitador tensão mínimo MI R2]
73	AO #73				1	13	0	1	none	none	LVMAXI_R2 [limitador tensão máximo MI R2]
74	AO #74				4000	38000	0	1	none	none	VREFC _R2 [tensão de referência MC R2]
75	AO #75				8	50	0	1	none	none	INSC _R2 [insensibilidade MC R2]
76	AO #76				10	180	0	1	none	none	TMPC _R2 [temporização MC R2]
77	AO #77				-25	25	0	1	none	none	RC _R2 [LDC U MC R2]
78	AO #78				-25	25	0	1	none	none	XC _R2 [LDC X MC R2]
79	AO #79				1	23	0	1	none	none	LVMINC_R2 [limitador tensão mínimo MC R2]
80	AO #80				1	13	0	1	none	none	LVMAXC_R2 [limitador tensão máximo MC R2]
81	AO #81				0	1	0	1	none	none	MODABL_R2 [habilita bônus de carga R2]
82	AO #82				8	16	0	1	none	none	BMAX_R2 [bloqueio máximo de posição R2]
83	AO #83				-16	8	0	1	none	none	BMIN_R2 [bloqueio mínimo de posição R2]
84	AO #84				50	210	0	1	none	none	BSC_R2 [bloqueio sobre corrente R2]
85	AO #85				0	8	0	1	none	none	MAFP_R2 [modo atuação fluxo inverso R2]
86	AO #86				10	50	0	1	none	none	LIM_R2 [limiar do fluxo inverso R2]
87	AO #87				0	1	0	1	none	none	HTINV_R2 [temporização inversa R2]
88	AO #88				-5	5	0	1	none	none	DTAP_R2 [diferença fixa para o mestre R2]
89	AO #89				0	2	0	1	none	none	DEFVC_R2 [defasagem V e I R2]
90	AO #90				0	1	0	1	none	none	HREG_R2 [habilita regulador R2]
91	AO #91				0	7	0	1	none	none	MIPCOM_R2 [modo indicação comutador R2]
92	AO #92				0	1	0	1	none	none	TAC_R2 [modo atuação comutador R2]
93	AO #93				0	1	0	1	none	none	TREG_R2 [tipo do regulador A ou B R2]
94	AO #94				10	5000	0	1	none	none	TPM_R2 [tempo pulso motor R2]
95	AO #95				0	2	0	1	none	none	Manual_Automatico_Travado R3 [modo operação R3]
96	AO #96				250	2830	0	0,1	none	none	RTPC_R3 [relação de tensão R3]
97	AO #97				25	6000	0	1	none	none	RTCC_R3 [relação corrente R3]
98	AO #98				4000	38000	0	1	none	none	VREF _R3 [tensão de referência MD R3]
99	AO #99				8	50	0	1	none	none	INS _R3 [insensibilidade MD R3]
100	AO #100				10	180	0	1	none	none	TMP _R3 [temporização MD R3]
101	AO #101				-25	25	0	1	none	none	UR _R3 [LDC U MD R3]
102	AO #102				-25	25	0	1	none	none	UX _R3 [LDC X MD R3]
103	AO #103				1	13	0	1	none	none	LVMIN_R3 [limitador tensão mínimo MD R3]
104	AO #104				1	13	0	1	none	none	LVMAX_R3 [limitador tensão máximo MD R3]
105	AO #105				4000	38000	0	1	none	none	VREFI _R3 [tensão de referência MI R3]
106	AO #106				8	50	0	1	none	none	INSI _R3 [insensibilidade MI R3]
107	AO #107				10	180	0	1	none	none	TMPI _R3 [temporização MI R3]
108	AO #108				-25	25	0	1	none	none	RI _R3 [LDC U MI R3]
109	AO #109				-25	25	0	1	none	none	XI _R3 [LDC X MI R3]
110	AO #110				1	13	0	1	none	none	LVMINI_R3 [limitador tensão mínimo MI R3]
111	AO #111				1	13	0	1	none	none	LVMAXI_R3 [limitador tensão máximo MI R3]
112	AO #112				4000	38000	0	1	none	none	VREFC _R3 [tensão de referência MC R3]
113	AO #113				8	50	0	1	none	none	INSC _R3 [insensibilidade MC R3]
114	AO #114				10	180	0	1	none	none	TMPC _R3 [temporização MC R3]
115	AO #115				-25	25	0	1	none	none	RC _R3 [LDC U MC R3]
116	AO #116				-25	25	0	1	none	none	XC _R3 [LDC X MC R3]
117	AO #117				1	13	0	1	none	none	LVMINC_R3 [limitador tensão mínimo MC R3]
118	AO #118				1	13	0	1	none	none	LVMAXC_R3 [limitador tensão máximo MC R3]
119	AO #119				0	1	0	1	none	none	MODABL_R3 [habilita bônus de carga R3]
120	AO #120				8	16	0	1	none	none	BMAX_R3 [bloqueio máximo de posição R3]
121	AO #121				-16	8	0	1	none	none	BMIN_R3 [bloqueio mínimo de posição R3]
122	AO #122				50	210	0	1	none	none	BSC_R3 [bloqueio sobre corrente R3]
123	AO #123				0	8	0	1	none	none	MAFP_R3 [modo atuação fluxo inverso R3]
124	AO #124				10	50	0	1	none	none	LIM_R3 [limiar do fluxo inverso R3]
125	AO #125				0	1	0	1	none	none	HTINV_R3 [temporização inversa R3]
126	AO #126				-5	5	0	1	none	none	DTAP_R3 [diferença fixa para o mestre R3]
127	AO #127				0	2	0	1	none	none	DEFVC_R3 [defasagem V e I R3]
128	AO #128				0	1	0	1	none	none	HREG_R3 [habilita regulador R3]
129	AO #129				0	7	0	1	none	none	MIPCOM_R3 [modo indicação comutador R3]

130	AO #130			0	1	0		1	none	none	TAC_R3 [modo atuação comutador R3]
131	AO #131			0	1	0		1	none	none	TREG_R3 [tipo do regulador A ou B R3]
132	AO #132			10	5000	0		1	none	none	TPM_R3 [tempo pulso motor R3]

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

Sequential Files list:

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

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

Octet String and Extended Octet String points list:

Point Index	Name	Event Class Assigned (1, 2, 3 or none)	Group Number used to transport the object	Description

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

Ports list:

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

5.10 Definition of Data Set Prototypes: *List of all data set prototypes. The following table is repeated for each Data Set Prototype defined.*	☐ 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.*	☐ Fixed, list shown in table below ☐ Configurable (current list may be shown in table below) ☐ Other, explain:

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

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