

EP3 SERIAL COMMUNICATION

Communication Protocol: DNP3

Transmission Rate: 1,200 to 57,600 (Auto Baud Rate)

Data Bits: 8

Parity: None

Stop Bits: 1

Address DNP3	Reading Range	Bits Index	State	Point Name	Write Reading	Scale
1	0 – 2000	-	-	Sensor 1 alarm temperature;	W / R	1:10
2	0 – 2000	-	-	Sensor 2 alarm temperature;	W / R	1:10
3	0 – 2000	-	-	Sensor 3 alarm temperature;	W / R	1:10
9	0 – 100	-	-	Alarm Hysteresis Value.	W / R	1:10
10	0 – 2000	-	-	Sensor 1 shutdown temperature;	W / R	1:10
11	0 – 2000	-	-	Sensor 2 shutdown temperature;	W / R	1:10
12	0 – 2000	-	-	Sensor 3 shutdown temperature;	W / R	1:10
18	0 – 20	-	-	Shutdown delay time in minutes.	W / R	1:1
28	-	-		Register - Commands:		-
		2	1	Maximum Temperature Reset;	W / R	-
		3	1	CPU reset;	W / R	-
29	0 – 2000	-	-	Temperature measured by sensor 1;	R	1:10
30	0 – 2000	-	-	Temperature measured by sensor 2;	R	1:10
31	0-2000	-	-	Temperature measured by sensor 3;	R	1:10
37	0-2000	-	-	Maximum Temperature reached by Sensor 1;	R	1:10
38	0-2000	-	-	Maximum Temperature reached by Sensor 2;	R	1:10
39	0-2000	-	-	Maximum Temperature reached by Sensor 3;	R	1:10

CONTINUED EP 3 SERIAL COMMUNICATION TABLE

Address DNP3	Reading Range	Bits Index	State	Descrição Point Name	Write Reading	Scale
42	-	-		Register - Sensor Status:	-	
		0	0	Sensor 1 Disabled;	W / R	-
			1	Sensor 1 Enabled;	W / R	-
		1	0	Sensor 2 Disabled;	W / R	-
			1	Sensor 2 Enabled;	W / R	-
		2	0	Sensor 3 Disabled;	W / R	-
			1	Sensor 3 Enabled;	W / R	-
45	-	-		Register - Alarm Status:	-	
		0	1	High temperature alarm on Sensor 1;	R	-
		1	1	High temperature alarm on Sensor 2;	R	-
		2	1	High temperature alarm on Sensor 3;	R	-
		8	1	High temperature alarm relay activated;	R	-
46	-	-		Register - Shutdown Count Status:	-	
		0	1	Sensor 1 High Temperature Shutdown Count;	R	-
		1	1	Sensor 2 High Temperature Shutdown Count;	R	-
		2	1	Sensor 3 High Temperature Shutdown Count;	R	-
		8	1	Time count for Shutdown triggered;	R	
47	-	-		Register - Termination Status:	-	
		0	1	High Temperature Shutdown Sensor 1	R	-
		1	1	High Temperature Shutdown Sensor 2	R	-
		2	1	High Temperature Shutdown Sensor 3	R	-
		8	1	High Temperature Shutdown triggered;	R	-

CONTINUED EP 3 SERIAL COMMUNICATION TABLE

Address DNP3	Reading Range	Bits Index	State	Descrição Point Name	Write Reading	Scale
49	-	-		Register - Failure Status:	R	-
		0	1	Sensor 1 Reading Failure;	R	-
		1	1	Sensor 2 Reading Failure;	R	-
		2	1	Sensor 3 Reading Failure;	R	-
		8	1	Sensor Failure triggered;	R	-
50	1-254	-	-	Serial Network Address	R	-
56	0 – 2	-		Register - Display Presentation Mode:	-	-
		-	0	Display fixed at the highest temperature;	W / R	-
		-	1	Set the display to SCAN mode;	W / R	-
		-	2	Set the display to Manual mode;	W / R	-
57	0 - 7	-		Register - Relay activation logic:	W / R	-
		0	0	Normal relay 1 logic;	W / R	-
			1	Inverse relay 1 logic;	W / R	-
		1	0	Normal relay 2 logic;	W / R	-
			1	Relay 2 logic inverse;	W / R	-
		2	0	Normal relay 3 logic;	W / R	-
			1	Inverse relay 3 logic;	W / R	-
60	1-31	-	-	Calibration Day;	R	-
61	1-12	-	-	Calibration Month;	R	-
62	2017-2099	-	-	Calibration Year;	R	-
63	0-65535	-	-	Equipment Serial Number – LSB;	R	-
64	0-255	-	-	Equipment Serial Number – MSB;	R	-

DNP V3.00

DEVICE PROFILE DOCUMENT

Vendor Name: ELECTRON DO BRASIL

Device Name: Thermal Protection Relay EP3

Highest DNP Level Supported:

For Requests: 1

For Responses: 1

Device Function:

Master ☐ Slave ☒

Notable objects, functions, and/or qualifiers supported in addition to the Highest DNP Level Supported (the complete list is described in the attached table).

Supports class data requests only and SBO and direct operate analog commands. Answers are analog group objects variations 4, for static data (in class 0 requests), and variation 2, for event data (events are reported in class 1, 2 or 3 request)

Maximum Data Link Frame Size
(octets):

Transmitted 292
Received (must be 292)

Maximum Application Fragment Size
(octets):

Transmitted 1024
Received 249

Maximum Data Link Retries:

- ☒ None
☐ Fixed at _____
☐ Configurable, range ____ to ____

Maximum Application Layer Retries:

- ☒ None
☐ Configurable, range ____ to ____

Requires Application Layer Confirmation:

- ☐ Never
☐ Always
☒ Sometimes if "sometimes", when? Sending analog events
☐ Configurable if "configurable", how? _____

Requires Application Layer Confirmation:

- ☐ Never
☐ Always (not recommended)
☒ When reporting Event Data (Slave device only)
☐ When sending multi-fragment responses (Slave devices only)
☐ Sometimes if "sometimes", when? _____
☐ Configurable if "configurable", how? _____

Timeouts while waiting for:

Data Link Confirm	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable
Complete Appl. Fragment	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable
Application Confirm	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable
Complete Appl. Response	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable

Others _____

Attach explanation if "Variable" or "Configurable" was checked for any timeout.

Sends/Executes Control Operations:

WRITE Binary Outputs ☒ Never ☐ Always ☐ Sometimes ☐ Configurable

SELECT/OPERATE	<input type="checkbox"/> Never	<input type="checkbox"/> Always	<input checked="" type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
DIRECT OPERATE	<input type="checkbox"/> Never	<input type="checkbox"/> Always	<input checked="" type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
DIRECT OPERATE – NO ACK	<input type="checkbox"/> Never	<input type="checkbox"/> Always	<input checked="" type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Count > 1	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Pulse On	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Pulse Off	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Latch On	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Latch Off	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Queue	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
Clear Queue	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable

Attach explanation if “Sometimes” or “Configurable” was checked for any operation.

Accepts analog commands only, in SBO or direct operate mode

FILL OUT THE FOLLOWING ITEM FOR MASTER DEVICER ONLY

Expects Binary Input Change Events:

- ☐ Either time-tagged or non-time-tagged for a single event
- ☐ Both time-tagged and non-time-tagged for a single event
- ☐ Configurable (attach explanation)

FILL OUT THE FOLLOWING ITEMS FOR SLAVE DEVICES ONLY

Reports Binary Input Change Events
When no specific variation requested:

- ☒ Never
- ☐ Only time-tagged
- ☐ Only non-time-tagged
- ☐ Configurable to send both, one or the other (attach explanation)

Reports time-tagged Binary
Input Change Events when no
Specific variation requested:

- ☒ Never
- ☐ Binary Input Change With Time
- ☐ Binary Input Change With Relative Time
- ☐ Configurable (attach explanation)

Sends Unsolicited Responses:

- ☒ Never
- ☐ Configurable (attach explanation)
- ☐ Only certain objects
Sometimes (attach explanation)
- ☐ ENABLE/DISABLE UNSOLICITED
Function codes supported

Sends Static Data Unsolicited
Responses:

- ☒ Never
- ☐ When Device Restarts
- ☐ When Status Flags Change
- No other options are permitted

Default Counter Object/Variation:

- ☒ No Counters Reported
- ☐ Configurable (attach explanation)
- ☐ Default Object _____
Default Variation _____
- ☐ Point-by-point list attached

Counters Roll Over at:

- ☒ No Counters Reported
- ☐ Configurable (attach explanation)
- ☐ 16 Bits
- ☐ 32 Bits
- ☐ Other Value _____
- ☐ Point-by-point list attached

Sends Mult-Fragment Responses: ☐ Yes ☒ No

OBJECT			REQUEST (slave must parse)		RESPONSE (master must parse)	
Obj	Var	Description	Func Codes (dec)	Qual Codes (hex)	Func Codes	Qual Codes (hex)
30	4	16 Bit Analog Input without Flag			129	00
32	0	Analog Change Event – All Variations				
32	1	32 Bit Analog Change Event without Time				
32	2	16 Bit Analog Change Event without Time			129	17
41	1	32 Bit Analog Output Block	3,4,5,6	17, 28	129	Echo of request
41	2	16 Bit Analog Output Block	3,4,5,6	17, 28	129	Echo of request
50	1	Time and Date	2	07 quantity = 1		
60	0	Not Defined				
60	1	Class 0 Date	1	06		
60	2	Class 1 Date	1	06,07,08		
60	3	Class 2 Date	1	06,07,08		
60	4	Class 3 Date	1	06,07,08		
70	1	File Identifier				
80	1	Internal Indications	2	00 index = 7		