

# sub.net / DNP3 Device Profile

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## **1 Introduction**

The purpose of this document is to describe specific configuration and interoperability information for the 'sub.net' Substation Monitor's implementation of the Distributed Network Protocol (DNP), Version 3.0. This document, in conjunction with the DNP 3.0 Basic 4 Document Set, and the DNP Subset Definitions Document, provides complete information on how to communicate via the DNP 3.0 protocol.

This implementation of DNP 3.0 is fully compliant with DNP 3.0 Subset Definition Level 3, and contains significant functionality beyond Subset Level 3.

The DNP Protocol can be selected for the following:

- RS232
- RS485
- TCP only
- UDP only

The Substation monitor must be configured to operate DNP. Both TCP and UDP are supported for DNP, but not simultaneously. There is no support of TCP Dual End Point.

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DNP V3.0 Device Profile

<b>DNP V3.0</b> <b>DEVICE PROFILE DOCUMENT</b>	
Vendor Name: <b>Embedded Monitoring Systems, Ltd</b>	
Device Name: <b>'sub.net' Substation Monitor.</b>	
Highest DNP Level Supported:  For Requests: <b>Level 3</b> For Responses: <b>Level 3</b>	Device Function:  <input type="checkbox"/> Master <input checked="" type="checkbox"/> <b>Slave</b>
Notable objects, functions, and/or qualifiers supported in addition to the Highest DNP Levels Supported (the complete list is described in the attached table):	
Maximum Data Link Frame Size (octets):  Transmitted: <b>292</b> Received <b>292</b>	Maximum Application Fragment Size (octets):  Transmitted: <b>2048</b> Received <b>2048</b>
Maximum Data Link Re-tries:  <input type="checkbox"/> None <input type="checkbox"/> Fixed <input checked="" type="checkbox"/> <b>Configurable from 0 to 255</b>	Maximum Application Layer Re-tries:  <input checked="" type="checkbox"/> <b>None</b> <input type="checkbox"/> Configurable
Requires Data Link Layer Confirmation:  <input type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input checked="" type="checkbox"/> <b>Configurable as: Never, Only for multi-frame messages, or Always</b>	
Requires Application Layer Confirmation:  <input type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> When reporting Event Data <input checked="" type="checkbox"/> <b>When sending multi-fragment responses (Slave devices only)</b> <input type="checkbox"/> Sometimes <input type="checkbox"/> Configurable	
Timeouts while waiting for:  Data Link Confirm: <input type="checkbox"/> None <input type="checkbox"/> Fixed at ____ <input type="checkbox"/> Variable <input checked="" type="checkbox"/> <b>Configurable.</b> Complete Appl. Fragment: <input checked="" type="checkbox"/> <b>None</b> <input type="checkbox"/> Fixed at ____ <input type="checkbox"/> Variable <input type="checkbox"/> Configurable Application Confirm: <input type="checkbox"/> None <input checked="" type="checkbox"/> <b>Fixed at 10s</b> <input type="checkbox"/> Variable <input type="checkbox"/> Configurable. Complete Appl. Response: <input checked="" type="checkbox"/> <b>None</b> <input type="checkbox"/> Fixed at ____ <input type="checkbox"/> Variable <input type="checkbox"/> Configurable	
Others: <b>Transmission Delay, 0 milli-seconds</b> <b>Select/Operate Arm Timeout, 5 seconds</b> <b>Need Time Interval, 30 minutes</b> <b>Data Link Confirm Timeout, configurable 1 to 30 sec</b>	

# DNP V3.0

## DEVICE PROFILE DOCUMENT

Sends/Executes Control Operations:

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

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

Reports Binary Input Change Events when no specific variation requested:

- Never**
- Only time-tagged
- Only non-time-tagged
- Configurable

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

Sends Unsolicited Responses:

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

Sends Static Data in Unsolicited Responses:

- Never**
- When Device Restarts
- When Status Flags Change

No other options are permitted.

Default Counter Object/Variation:

- No Counters Reported**
- Configurable
- 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 Multi-Fragment Responses:

- Yes**
- No
- Configurable

Sequential File Transfer Support:

- No**

## **2 DNP V3.0 Point List**

The tables below identify all the default data points provided by the sub.net monitor.

### **2.1 Binary Input Points**

<b>Binary Input Points</b> Static (Steady-State) Object Number: <b>1</b> Static Variation reported when variation 0 requested: <b>1 (Binary Input – Packed format)</b>	
<b>Point Index</b>	<b>Name/Description</b>
0	Contact Input 1
1	Contact Input 2
2	Contact Input 3
3	Contact Input 4
4	Contact Input 5
5	Contact Input 6
6	Contact Input 7
7	Contact Input 8
8	Contact Input 9
9	Contact Input 10
10	Contact Input 11
11	Contact Input 12
12	Contact Input 13
13	Contact Input 14
14	Contact Input 15
15	Contact Input 16
16	Alarm Indicator – No Modem
17	Alarm Indicator - No GPS
18	Alarm Indicator – No Time Sync
19	Alarm Indicator – Battery
20	Alarm Indicator – Modem error

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21	Alarm Indicator – Modem DCD error
22	Fault Indicator – Circuit 1 – Phase A
23	Fault Indicator – Circuit 1 – Phase B
24	Fault Indicator – Circuit 1 – Phase C
25	Fault Indicator – Circuit 1 – G
26	Fault Indicator – Circuit 2 – Phase A
27	Fault Indicator – Circuit 2 – Phase B
28	Fault Indicator – Circuit 2 – Phase C
29	Fault Indicator – Circuit 2 – G
30	Fault Indicator – Circuit 3 – Phase A
31	Fault Indicator – Circuit 3 – Phase B
32	Fault Indicator – Circuit 3 – Phase C
33	Fault Indicator – Circuit 3 – G
34	Battery Indicator – Warning
35	Battery Indicator – Fault
36	Circuit breaker 1 - Indicator – Warning
37	Circuit breaker 1 - Indicator – Fault
38	Circuit breaker 2 - Indicator – Warning
39	Circuit breaker 2 - Indicator – Fault
40	Circuit breaker 3 - Indicator – Warning
41	Circuit breaker 3 - Indicator – Fault
42	Circuit breaker 4 - Indicator – Warning
43	Circuit breaker 4 - Indicator – Fault
44	Circuit breaker 5 - Indicator – Warning
45	Circuit breaker 5 - Indicator – Fault
46	Circuit breaker 6 - Indicator – Warning
47	Circuit breaker 6 - Indicator – Fault
48	Circuit breaker 7 - Indicator – Warning
49	Circuit breaker 7 - Indicator – Fault

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50	Circuit breaker 8 - Indicator – Warning
51	Circuit breaker 8 - Indicator – Fault
52	Circuit breaker 9 - Indicator – Warning
53	Circuit breaker 9 - Indicator – Fault
54	Circuit breaker 10 - Indicator – Warning
55	Circuit breaker 10 - Indicator – Fault
56	Circuit breaker 11 - Indicator – Warning
57	Circuit breaker 11 - Indicator – Fault
58	Circuit breaker 12 - Indicator – Warning
59	Circuit breaker 12 - Indicator – Fault
60	Circuit breaker 13 - Indicator – Warning
61	Circuit breaker 13 - Indicator – Fault
62	Circuit breaker 14 - Indicator – Warning
63	Circuit breaker 14 - Indicator – Fault
64	Circuit breaker 15 - Indicator – Warning
65	Circuit breaker 15 - Indicator – Fault
66	Circuit breaker 16 - Indicator – Warning
67	Circuit breaker 16 - Indicator – Fault

## 2.2 Analog Inputs

<b>Analog Input Points</b> Static (Steady-State) Object Number: 30 Static Variation reported when variation 0 requested: 4 ( <b>Analog Input - 16-bit without flag</b> )		
Point Index	Name/Description	Unit
0	Analogue 1	
1	Analogue 2	
2	Analogue 3	
3	Analogue 4	
4	Analogue 5	

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5	Analogue 6	
6	Analogue 7	
7	Analogue 8	
8	Analogue 9	
9	Analogue 10	
10	Analogue 11	
11	Analogue 12	
12	Frequency	0.01 Hz
13	Circuit 1 – Van	V
14	Circuit 1 – Vbn	V
15	Circuit 1 – Vcn	V
16	Circuit 1 – Vn	V
17	Circuit 1 – Vab	V
18	Circuit 1 – Vbc	V
19	Circuit 1 – Vca	V
20	Circuit 1 – Ia	A
21	Circuit 1 – Ib	A
22	Circuit 1 – Ic	A
23	Circuit 1 – In	A
24	Circuit 1 – Power Factor A	0.001
25	Circuit 1 – Power Factor B	0.001
26	Circuit 1 – Power Factor C	0.001
27	Circuit 1 – Power Factor Total	0.001
28	Circuit 1 – KW Phase A	kW
29	Circuit 1 – KW Phase B	kW
30	Circuit 1 – KW Phase C	kW
31	Circuit 1 – KW Total	kW
32	Circuit 1 – KVAR Phase A	KVAR
33	Circuit 1 – KVAR Phase B	KVAR



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34	Circuit 1 – KVAR Phase C	KVAR
35	Circuit 1 – KVAR Total	KVAR
36	Circuit 1 – KVA Phase A	kVA
37	Circuit 1 – KVA Phase B	kVA
38	Circuit 1 – KVA Phase C	kVA
39	Circuit 1 – KVA Total	kVA
40	Circuit 1 – KWH Import	KWH
41	Circuit 1 – MWH Import	MWH
42	Circuit 1 – KWH Export	KMH
43	Circuit 1 – MWH Export	MWH
44	Circuit 1 – KWH Total	KWH
45	Circuit 1 – MWH Total	MWH
46	Circuit 1 – KVARH Import	KVARH
47	Circuit 1 – MVARH Import	MVARH
48	Circuit 1 – KVARH Export	KVARH
49	Circuit 1 – MVARH Export	MVARH
50	Circuit 1 – KVAH	KVAH
51	Circuit 1 – MVAH	MVAH
52	Circuit 2 – Van	V
53	Circuit 2 – Vbn	V
54	Circuit 2 – Vcn	V
55	Circuit 2 – Vn	V
56	Circuit 2 – Vab	V
57	Circuit 2 – Vbc	V
58	Circuit 2 – Vca	V
59	Circuit 2 – Ia	A
60	Circuit 2 – Ib	A
61	Circuit 2 – Ic	A
62	Circuit 2 – In	A

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63	Circuit 2 – Power Factor A	0.001
64	Circuit 2 – Power Factor B	0.001
65	Circuit 2 – Power Factor C	0.001
66	Circuit 2 – Power Factor Total	0.001
67	Circuit 2 – KW Phase A	KW
68	Circuit 2 – KW Phase B	KW
69	Circuit 2 – KW Phase C	KW
70	Circuit 2 – KW Total	KW
71	Circuit 2 – KVAR Phase A	KVAR
72	Circuit 2 – KVAR Phase B	KVAR
73	Circuit 2 – KVAR Phase C	KVAR
74	Circuit 2 – KVAR Total	KVAR
75	Circuit 2 – KVA Phase A	KVA
76	Circuit 2 – KVA Phase B	KVA
77	Circuit 2 – KVA Phase C	KVA
78	Circuit 2 – KVA Total	KVA
79	Circuit 2 – KWH Import	KWH
80	Circuit 2 – MWH Import	MWH
81	Circuit 2 – KWH Export	KMH
82	Circuit 2 – MWH Export	MWH
83	Circuit 2 – KWH Total	KWH
84	Circuit 2 – MWH Total	MWH
85	Circuit 2 – KVARH Import	KVARH
86	Circuit 2 – MVARH Import	MVARH
87	Circuit 2 – KVARH Export	KVARH
88	Circuit 2 – MVARH Export	MVARH
89	Circuit 2 – KVAH	KVAH
90	Circuit 2 – MVAH	MVAH
91	Circuit 3 – Van	V

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92	Circuit 3 – Vbn	V
93	Circuit 3 – Vcn	V
94	Circuit 3 – Vn	V
95	Circuit 3 – Vab	V
96	Circuit 3 – Vbc	V
97	Circuit 3 – Vca	V
98	Circuit 3 – Ia	A
99	Circuit 3 – Ib	A
100	Circuit 3 – Ic	A
101	Circuit 3 – In	A
102	Circuit 3 – Power Factor A	0.001
103	Circuit 3 – Power Factor B	0.001
104	Circuit 3 – Power Factor C	0.001
105	Circuit 3 – Power Factor Total	0.001
106	Circuit 3 – KW Phase A	kW
107	Circuit 3 – KW Phase B	kW
108	Circuit 3 – KW Phase C	kW
109	Circuit 3 – KW Total	kW
110	Circuit 3 – KVAR Phase A	kVAR
111	Circuit 3 – KVAR Phase B	kVAR
112	Circuit 3 – KVAR Phase C	kVAR
113	Circuit 3 – KVAR Total	kVAR
114	Circuit 3 – KVA Phase A	kVA
115	Circuit 3 – KVA Phase B	kVA
116	Circuit 3 – KVA Phase C	kVA
117	Circuit 3 – KVA Total	kVA
118	Circuit 3 – KWH Import	KWH
119	Circuit 3 – MWH Import	MWH
120	Circuit 3 – KWH Export	KMH

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121	Circuit 3 – MWH Export	MWH
122	Circuit 3 – KWH Total	KWH
123	Circuit 3 – MWH Total	MWH
124	Circuit 3 – KVARH Import	KVARH
125	Circuit 3 – MVARH Import	MVARH
126	Circuit 3 – KVARH Export	KVARH
127	Circuit 3 – MVARH Export	MVARH
128	Circuit 3 – KVAH	KVAH
129	Circuit 3 – MVAH	MVAH
130	Circuit Breaker 1 – TRIP operation counter	
131	Circuit Breaker 1 – TRIP Current accumulator Phase A	KA
132	Circuit Breaker 1 – TRIP Current accumulator Phase B	KA
133	Circuit Breaker 1 – TRIP Current accumulator Phase C	KA
134	Circuit Breaker 1 – TRIP Current accumulator Phase A	0.1 % (of limit)
135	Circuit Breaker 1 – TRIP Current accumulator Phase B	0.1 % (of limit)
136	Circuit Breaker 1 – TRIP Current accumulator Phase C	0.1 % (of limit)
137	Circuit Breaker 1 – TRIP I <sup>2</sup> t accumulator Phase A	KA <sup>2</sup> S
138	Circuit Breaker 1 – TRIP I <sup>2</sup> t accumulator Phase B	KA <sup>2</sup> S
139	Circuit Breaker 1 – TRIP I <sup>2</sup> t accumulator Phase C	KA <sup>2</sup> S
140	Circuit Breaker 1 – TRIP I <sup>2</sup> t accumulator Phase A	0.1 % (of limit)
141	Circuit Breaker 1 – TRIP I <sup>2</sup> t accumulator Phase B	0.1 % (of limit)
142	Circuit Breaker 1 – TRIP I <sup>2</sup> t accumulator Phase C	0.1 % (of limit)
143	Circuit Breaker 1 – TRIP operate time Phase A (max)	0.1 ms
144	Circuit Breaker 1 – TRIP operate time Phase A (min)	0.1 ms
145	Circuit Breaker 1 – TRIP operate time Phase A (avg)	0.1 ms
146	Circuit Breaker 1 – TRIP operate time Phase A (max)	0.1 ms
147	Circuit Breaker 1 – TRIP operate time Phase A (min)	0.1 ms
148	Circuit Breaker 1 – TRIP operate time Phase A (avg)	0.1 ms
149	Circuit Breaker 1 – TRIP operate time Phase A (max)	0.1 ms

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150	Circuit Breaker 1 – TRIP operate time Phase A (min)	0.1 ms
151	Circuit Breaker 1 – TRIP operate time Phase A (avg)	0.1 ms
152	Circuit Breaker 1 – TRIP coil current (max)	0.1 A
153	Circuit Breaker 1 – TRIP coil current (min)	0.1 A
154	Circuit Breaker 1 – TRIP coil current (avg)	0.1 A
155	Circuit Breaker 1 – TRIP aux time (max)	0.1 ms
156	Circuit Breaker 1 – TRIP aux time (min)	0.1 ms
157	Circuit Breaker 1 – TRIP aux time (avg)	0.1 ms
158	Circuit Breaker 1 – TRIP pulse width (max)	0.1 ms
159	Circuit Breaker 1 – TRIP pulse width (min)	0.1 ms
160	Circuit Breaker 1 – TRIP pulse width (avg)	0.1 ms
161	Circuit Breaker 1 – CLOSE operation counter	
162	Circuit Breaker 1 – CLOSE coil current (max)	0.1 A
163	Circuit Breaker 1 – CLOSE coil current (min)	0.1 A
164	Circuit Breaker 1 – CLOSE coil current (avg)	0.1 A
165	Circuit Breaker 1 – CLOSE aux time (max)	0.1 ms
166	Circuit Breaker 1 – CLOSE aux time (min)	0.1 ms
167	Circuit Breaker 1 – CLOSE aux time (avg)	0.1 ms
168	Circuit Breaker 1 – CLOSE pulse width (max)	0.1 ms
169	Circuit Breaker 1 – CLOSE pulse width (min)	0.1 ms
170	Circuit Breaker 1 – CLOSE pulse width (avg)	0.1 ms
171	Circuit Breaker 2 – TRIP operation counter	
172	Circuit Breaker 2 – TRIP Current accumulator Phase A	KA
173	Circuit Breaker 2 – TRIP Current accumulator Phase B	KA
174	Circuit Breaker 2 – TRIP Current accumulator Phase C	KA
175	Circuit Breaker 2 – TRIP Current accumulator Phase A	0.1 % (of limit)
176	Circuit Breaker 2 – TRIP Current accumulator Phase B	0.1 % (of limit)
177	Circuit Breaker 2 – TRIP Current accumulator Phase C	0.1 % (of limit)
178	Circuit Breaker 2 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S

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179	Circuit Breaker 2 – TRIP I <sup>2</sup> t accumulator Phase B	KA <sup>2</sup> S
180	Circuit Breaker 2 – TRIP I <sup>2</sup> t accumulator Phase C	KA <sup>2</sup> S
181	Circuit Breaker 2 – TRIP I <sup>2</sup> t accumulator Phase A	0.1 % (of limit)
182	Circuit Breaker 2 – TRIP I <sup>2</sup> t accumulator Phase B	0.1 % (of limit)
183	Circuit Breaker 2 – TRIP I <sup>2</sup> t accumulator Phase C	0.1 % (of limit)
184	Circuit Breaker 2 – TRIP operate time Phase A (max)	0.1 ms
185	Circuit Breaker 2 – TRIP operate time Phase A (min)	0.1 ms
186	Circuit Breaker 2 – TRIP operate time Phase A (avg)	0.1 ms
187	Circuit Breaker 2 – TRIP operate time Phase A (max)	0.1 ms
188	Circuit Breaker 2 – TRIP operate time Phase A (min)	0.1 ms
189	Circuit Breaker 2 – TRIP operate time Phase A (avg)	0.1 ms
190	Circuit Breaker 2 – TRIP operate time Phase A (max)	0.1 ms
191	Circuit Breaker 2 – TRIP operate time Phase A (min)	0.1 ms
192	Circuit Breaker 2 – TRIP operate time Phase A (avg)	0.1 ms
193	Circuit Breaker 2 – TRIP coil current (max)	0.1 A
194	Circuit Breaker 2 – TRIP coil current (min)	0.1 A
195	Circuit Breaker 2 – TRIP coil current (avg)	0.1 A
196	Circuit Breaker 2 – TRIP aux time (max)	0.1 ms
197	Circuit Breaker 2 – TRIP aux time (min)	0.1 ms
198	Circuit Breaker 2 – TRIP aux time (avg)	0.1 ms
199	Circuit Breaker 2 – TRIP pulse width (max)	0.1 ms
200	Circuit Breaker 2 – TRIP pulse width (min)	0.1 ms
201	Circuit Breaker 2 – TRIP pulse width (avg)	0.1 ms
202	Circuit Breaker 2 – CLOSE operation counter	
203	Circuit Breaker 2 – CLOSE coil current (max)	0.1 A
204	Circuit Breaker 2 – CLOSE coil current (min)	0.1 A
205	Circuit Breaker 2 – CLOSE coil current (avg)	0.1 A
206	Circuit Breaker 2 – CLOSE aux time (max)	0.1 ms
207	Circuit Breaker 2 – CLOSE aux time (min)	0.1 ms

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208	Circuit Breaker 2 – CLOSE aux time (avg)	0.1 ms
209	Circuit Breaker 2 – CLOSE pulse width (max)	0.1 ms
210	Circuit Breaker 2 – CLOSE pulse width (min)	0.1 ms
211	Circuit Breaker 2 – CLOSE pulse width (avg)	0.1 ms
212	Circuit Breaker 3 – TRIP operation counter	
213	Circuit Breaker 3 – TRIP Current accumulator Phase A	KA
214	Circuit Breaker 3 – TRIP Current accumulator Phase B	KA
215	Circuit Breaker 3 – TRIP Current accumulator Phase C	KA
216	Circuit Breaker 3 – TRIP Current accumulator Phase A	0.1 % (of limit)
217	Circuit Breaker 3 – TRIP Current accumulator Phase B	0.1 % (of limit)
218	Circuit Breaker 3 – TRIP Current accumulator Phase C	0.1 % (of limit)
219	Circuit Breaker 3 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
220	Circuit Breaker 3 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
221	Circuit Breaker 3 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
222	Circuit Breaker 3 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
223	Circuit Breaker 3 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
224	Circuit Breaker 3 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
225	Circuit Breaker 3 – TRIP operate time Phase A (max)	0.1 ms
226	Circuit Breaker 3 – TRIP operate time Phase A (min)	0.1 ms
227	Circuit Breaker 3 – TRIP operate time Phase A (avg)	0.1 ms
228	Circuit Breaker 3 – TRIP operate time Phase A (max)	0.1 ms
229	Circuit Breaker 3 – TRIP operate time Phase A (min)	0.1 ms
230	Circuit Breaker 3 – TRIP operate time Phase A (avg)	0.1 ms
231	Circuit Breaker 3 – TRIP operate time Phase A (max)	0.1 ms
232	Circuit Breaker 3 – TRIP operate time Phase A (min)	0.1 ms
233	Circuit Breaker 3 – TRIP operate time Phase A (avg)	0.1 ms
234	Circuit Breaker 3 – TRIP coil current (max)	0.1 A
235	Circuit Breaker 3 – TRIP coil current (min)	0.1 A
236	Circuit Breaker 3 – TRIP coil current (avg)	0.1 A

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237	Circuit Breaker 3 – TRIP aux time (max)	0.1 ms
238	Circuit Breaker 3 – TRIP aux time (min)	0.1 ms
239	Circuit Breaker 3 – TRIP aux time (avg)	0.1 ms
240	Circuit Breaker 3 – TRIP pulse width (max)	0.1 ms
241	Circuit Breaker 3 – TRIP pulse width (min)	0.1 ms
242	Circuit Breaker 3 – TRIP pulse width (avg)	0.1 ms
243	Circuit Breaker 3 – CLOSE operation counter	
244	Circuit Breaker 3 – CLOSE coil current (max)	0.1 A
245	Circuit Breaker 3 – CLOSE coil current (min)	0.1 A
246	Circuit Breaker 3 – CLOSE coil current (avg)	0.1 A
247	Circuit Breaker 3 – CLOSE aux time (max)	0.1 ms
248	Circuit Breaker 3 – CLOSE aux time (min)	0.1 ms
249	Circuit Breaker 3 – CLOSE aux time (avg)	0.1 ms
250	Circuit Breaker 3 – CLOSE pulse width (max)	0.1 ms
251	Circuit Breaker 3 – CLOSE pulse width (min)	0.1 ms
252	Circuit Breaker 3 – CLOSE pulse width (avg)	0.1 ms
253	Circuit Breaker 4 – TRIP operation counter	
254	Circuit Breaker 4 – TRIP Current accumulator Phase A	KA
255	Circuit Breaker 4 – TRIP Current accumulator Phase B	KA
256	Circuit Breaker 4 – TRIP Current accumulator Phase C	KA
257	Circuit Breaker 4 – TRIP Current accumulator Phase A	0.1 % (of limit)
258	Circuit Breaker 4 – TRIP Current accumulator Phase B	0.1 % (of limit)
259	Circuit Breaker 4 – TRIP Current accumulator Phase C	0.1 % (of limit)
260	Circuit Breaker 4 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
261	Circuit Breaker 4 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
262	Circuit Breaker 4 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
263	Circuit Breaker 4 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
264	Circuit Breaker 4 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
265	Circuit Breaker 4 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)



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266	Circuit Breaker 4 – TRIP operate time Phase A (max)	0.1 ms
267	Circuit Breaker 4 – TRIP operate time Phase A (min)	0.1 ms
268	Circuit Breaker 4 – TRIP operate time Phase A (avg)	0.1 ms
269	Circuit Breaker 4 – TRIP operate time Phase A (max)	0.1 ms
270	Circuit Breaker 4 – TRIP operate time Phase A (min)	0.1 ms
271	Circuit Breaker 4 – TRIP operate time Phase A (avg)	0.1 ms
272	Circuit Breaker 4 – TRIP operate time Phase A (max)	0.1 ms
273	Circuit Breaker 4 – TRIP operate time Phase A (min)	0.1 ms
274	Circuit Breaker 4 – TRIP operate time Phase A (avg)	0.1 ms
275	Circuit Breaker 4 – TRIP coil current (max)	0.1 A
276	Circuit Breaker 4 – TRIP coil current (min)	0.1 A
277	Circuit Breaker 4 – TRIP coil current (avg)	0.1 A
278	Circuit Breaker 4 – TRIP aux time (max)	0.1 ms
279	Circuit Breaker 4 – TRIP aux time (min)	0.1 ms
280	Circuit Breaker 4 – TRIP aux time (avg)	0.1 ms
281	Circuit Breaker 4 – TRIP pulse width (max)	0.1 ms
282	Circuit Breaker 4 – TRIP pulse width (min)	0.1 ms
283	Circuit Breaker 4 – TRIP pulse width (avg)	0.1 ms
284	Circuit Breaker 4 – CLOSE operation counter	
285	Circuit Breaker 4 – CLOSE coil current (max)	0.1 A
286	Circuit Breaker 4 – CLOSE coil current (min)	0.1 A
287	Circuit Breaker 4 – CLOSE coil current (avg)	0.1 A
288	Circuit Breaker 4 – CLOSE aux time (max)	0.1 ms
289	Circuit Breaker 4 – CLOSE aux time (min)	0.1 ms
290	Circuit Breaker 4 – CLOSE aux time (avg)	0.1 ms
291	Circuit Breaker 4 – CLOSE pulse width (max)	0.1 ms
292	Circuit Breaker 4 – CLOSE pulse width (min)	0.1 ms
293	Circuit Breaker 4 – CLOSE pulse width (avg)	0.1 ms
294	Circuit Breaker 5 – TRIP operation counter	

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295	Circuit Breaker 5 – TRIP Current accumulator Phase A	KA
296	Circuit Breaker 5 – TRIP Current accumulator Phase B	KA
297	Circuit Breaker 5 – TRIP Current accumulator Phase C	KA
298	Circuit Breaker 5 – TRIP Current accumulator Phase A	0.1 % (of limit)
299	Circuit Breaker 5 – TRIP Current accumulator Phase B	0.1 % (of limit)
300	Circuit Breaker 5 – TRIP Current accumulator Phase C	0.1 % (of limit)
301	Circuit Breaker 5 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
302	Circuit Breaker 5 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
303	Circuit Breaker 5 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
304	Circuit Breaker 5 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
305	Circuit Breaker 5 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
306	Circuit Breaker 5 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
307	Circuit Breaker 5 – TRIP operate time Phase A (max)	0.1 ms
308	Circuit Breaker 5 – TRIP operate time Phase A (min)	0.1 ms
309	Circuit Breaker 5 – TRIP operate time Phase A (avg)	0.1 ms
310	Circuit Breaker 5 – TRIP operate time Phase A (max)	0.1 ms
311	Circuit Breaker 5 – TRIP operate time Phase A (min)	0.1 ms
312	Circuit Breaker 5 – TRIP operate time Phase A (avg)	0.1 ms
313	Circuit Breaker 5 – TRIP operate time Phase A (max)	0.1 ms
314	Circuit Breaker 5 – TRIP operate time Phase A (min)	0.1 ms
315	Circuit Breaker 5 – TRIP operate time Phase A (avg)	0.1 ms
316	Circuit Breaker 5 – TRIP coil current (max)	0.1 A
317	Circuit Breaker 5 – TRIP coil current (min)	0.1 A
318	Circuit Breaker 5 – TRIP coil current (avg)	0.1 A
319	Circuit Breaker 5 – TRIP aux time (max)	0.1 ms
320	Circuit Breaker 5 – TRIP aux time (min)	0.1 ms
321	Circuit Breaker 5 – TRIP aux time (avg)	0.1 ms
322	Circuit Breaker 5 – TRIP pulse width (max)	0.1 ms
323	Circuit Breaker 5 – TRIP pulse width (min)	0.1 ms

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324	Circuit Breaker 5 – TRIP pulse width (avg)	0.1 ms
325	Circuit Breaker 5 – CLOSE operation counter	
326	Circuit Breaker 5 – CLOSE coil current (max)	0.1 A
327	Circuit Breaker 5 – CLOSE coil current (min)	0.1 A
328	Circuit Breaker 5 – CLOSE coil current (avg)	0.1 A
329	Circuit Breaker 5 – CLOSE aux time (max)	0.1 ms
330	Circuit Breaker 5 – CLOSE aux time (min)	0.1 ms
331	Circuit Breaker 5 – CLOSE aux time (avg)	0.1 ms
332	Circuit Breaker 5 – CLOSE pulse width (max)	0.1 ms
333	Circuit Breaker 5 – CLOSE pulse width (min)	0.1 ms
334	Circuit Breaker 5 – CLOSE pulse width (avg)	0.1 ms
335	Circuit Breaker 6 – TRIP operation counter	
336	Circuit Breaker 6 – TRIP Current accumulator Phase A	KA
337	Circuit Breaker 6 – TRIP Current accumulator Phase B	KA
338	Circuit Breaker 6 – TRIP Current accumulator Phase C	KA
339	Circuit Breaker 6 – TRIP Current accumulator Phase A	0.1 % (of limit)
340	Circuit Breaker 6 – TRIP Current accumulator Phase B	0.1 % (of limit)
341	Circuit Breaker 6 – TRIP Current accumulator Phase C	0.1 % (of limit)
342	Circuit Breaker 6 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
343	Circuit Breaker 6 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
344	Circuit Breaker 6 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
345	Circuit Breaker 6 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
346	Circuit Breaker 6 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
347	Circuit Breaker 6 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
348	Circuit Breaker 6 – TRIP operate time Phase A (max)	0.1 ms
349	Circuit Breaker 6 – TRIP operate time Phase A (min)	0.1 ms
350	Circuit Breaker 6 – TRIP operate time Phase A (avg)	0.1 ms
351	Circuit Breaker 6 – TRIP operate time Phase A (max)	0.1 ms
352	Circuit Breaker 6 – TRIP operate time Phase A (min)	0.1 ms

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353	Circuit Breaker 6 – TRIP operate time Phase A (avg)	0.1 ms
354	Circuit Breaker 6 – TRIP operate time Phase A (max)	0.1 ms
355	Circuit Breaker 6 – TRIP operate time Phase A (min)	0.1 ms
356	Circuit Breaker 6 – TRIP operate time Phase A (avg)	0.1 ms
357	Circuit Breaker 6 – TRIP coil current (max)	0.1 A
358	Circuit Breaker 6 – TRIP coil current (min)	0.1 A
359	Circuit Breaker 6 – TRIP coil current (avg)	0.1 A
360	Circuit Breaker 6 – TRIP aux time (max)	0.1 ms
361	Circuit Breaker 6 – TRIP aux time (min)	0.1 ms
362	Circuit Breaker 6 – TRIP aux time (avg)	0.1 ms
363	Circuit Breaker 6 – TRIP pulse width (max)	0.1 ms
364	Circuit Breaker 6 – TRIP pulse width (min)	0.1 ms
365	Circuit Breaker 6 – TRIP pulse width (avg)	0.1 ms
366	Circuit Breaker 6 – CLOSE operation counter	
367	Circuit Breaker 6 – CLOSE coil current (max)	0.1 A
368	Circuit Breaker 6 – CLOSE coil current (min)	0.1 A
369	Circuit Breaker 6 – CLOSE coil current (avg)	0.1 A
370	Circuit Breaker 6 – CLOSE aux time (max)	0.1 ms
371	Circuit Breaker 6 – CLOSE aux time (min)	0.1 ms
372	Circuit Breaker 6 – CLOSE aux time (avg)	0.1 ms
373	Circuit Breaker 6 – CLOSE pulse width (max)	0.1 ms
374	Circuit Breaker 6 – CLOSE pulse width (min)	0.1 ms
375	Circuit Breaker 6 – CLOSE pulse width (avg)	0.1 ms
376	Circuit Breaker 7 – TRIP operation counter	
377	Circuit Breaker 7 – TRIP Current accumulator Phase A	KA
378	Circuit Breaker 7 – TRIP Current accumulator Phase B	KA
379	Circuit Breaker 7 – TRIP Current accumulator Phase C	KA
380	Circuit Breaker 7 – TRIP Current accumulator Phase A	0.1 % (of limit)
381	Circuit Breaker 7 – TRIP Current accumulator Phase B	0.1 % (of limit)

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382	Circuit Breaker 7 – TRIP Current accumulator Phase C	0.1 % (of limit)
383	Circuit Breaker 7 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
384	Circuit Breaker 7 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
385	Circuit Breaker 7 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
386	Circuit Breaker 7 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
387	Circuit Breaker 7 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
388	Circuit Breaker 7 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
389	Circuit Breaker 7 – TRIP operate time Phase A (max)	0.1 ms
390	Circuit Breaker 7 – TRIP operate time Phase A (min)	0.1 ms
391	Circuit Breaker 7 – TRIP operate time Phase A (avg)	0.1 ms
392	Circuit Breaker 7 – TRIP operate time Phase A (max)	0.1 ms
393	Circuit Breaker 7 – TRIP operate time Phase A (min)	0.1 ms
394	Circuit Breaker 7 – TRIP operate time Phase A (avg)	0.1 ms
395	Circuit Breaker 7 – TRIP operate time Phase A (max)	0.1 ms
396	Circuit Breaker 7 – TRIP operate time Phase A (min)	0.1 ms
397	Circuit Breaker 7 – TRIP operate time Phase A (avg)	0.1 ms
398	Circuit Breaker 7 – TRIP coil current (max)	0.1 A
399	Circuit Breaker 7 – TRIP coil current (min)	0.1 A
400	Circuit Breaker 7 – TRIP coil current (avg)	0.1 A
401	Circuit Breaker 7 – TRIP aux time (max)	0.1 ms
402	Circuit Breaker 7 – TRIP aux time (min)	0.1 ms
403	Circuit Breaker 7 – TRIP aux time (avg)	0.1 ms
404	Circuit Breaker 7 – TRIP pulse width (max)	0.1 ms
405	Circuit Breaker 7 – TRIP pulse width (min)	0.1 ms
406	Circuit Breaker 7 – TRIP pulse width (avg)	0.1 ms
407	Circuit Breaker 7 – CLOSE operation counter	
408	Circuit Breaker 7 – CLOSE coil current (max)	0.1 A
409	Circuit Breaker 7 – CLOSE coil current (min)	0.1 A
410	Circuit Breaker 7 – CLOSE coil current (avg)	0.1 A

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411	Circuit Breaker 7 – CLOSE aux time (max)	0.1 ms
412	Circuit Breaker 7 – CLOSE aux time (min)	0.1 ms
413	Circuit Breaker 7 – CLOSE aux time (avg)	0.1 ms
414	Circuit Breaker 7 – CLOSE pulse width (max)	0.1 ms
415	Circuit Breaker 7 – CLOSE pulse width (min)	0.1 ms
416	Circuit Breaker 7 – CLOSE pulse width (avg)	0.1 ms
417	Circuit Breaker 8 – TRIP operation counter	
418	Circuit Breaker 8 – TRIP Current accumulator Phase A	KA
419	Circuit Breaker 8 – TRIP Current accumulator Phase B	KA
420	Circuit Breaker 8 – TRIP Current accumulator Phase C	KA
421	Circuit Breaker 8 – TRIP Current accumulator Phase A	0.1 % (of limit)
422	Circuit Breaker 8 – TRIP Current accumulator Phase B	0.1 % (of limit)
423	Circuit Breaker 8 – TRIP Current accumulator Phase C	0.1 % (of limit)
424	Circuit Breaker 8 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
425	Circuit Breaker 8 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
426	Circuit Breaker 8 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
427	Circuit Breaker 8 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
428	Circuit Breaker 8 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
429	Circuit Breaker 8 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
430	Circuit Breaker 8 – TRIP operate time Phase A (max)	0.1 ms
431	Circuit Breaker 8 – TRIP operate time Phase A (min)	0.1 ms
432	Circuit Breaker 8 – TRIP operate time Phase A (avg)	0.1 ms
433	Circuit Breaker 8 – TRIP operate time Phase A (max)	0.1 ms
434	Circuit Breaker 8 – TRIP operate time Phase A (min)	0.1 ms
435	Circuit Breaker 8 – TRIP operate time Phase A (avg)	0.1 ms
436	Circuit Breaker 8 – TRIP operate time Phase A (max)	0.1 ms
437	Circuit Breaker 8 – TRIP operate time Phase A (min)	0.1 ms
438	Circuit Breaker 8 – TRIP operate time Phase A (avg)	0.1 ms
439	Circuit Breaker 8 – TRIP coil current (max)	0.1 A

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440	Circuit Breaker 8 – TRIP coil current (min)	0.1 A
441	Circuit Breaker 8 – TRIP coil current (avg)	0.1 A
442	Circuit Breaker 8 – TRIP aux time (max)	0.1 ms
443	Circuit Breaker 8 – TRIP aux time (min)	0.1 ms
444	Circuit Breaker 8 – TRIP aux time (avg)	0.1 ms
445	Circuit Breaker 8 – TRIP pulse width (max)	0.1 ms
446	Circuit Breaker 8 – TRIP pulse width (min)	0.1 ms
447	Circuit Breaker 8 – TRIP pulse width (avg)	0.1 ms
448	Circuit Breaker 8 – CLOSE operation counter	
449	Circuit Breaker 8 – CLOSE coil current (max)	0.1 A
450	Circuit Breaker 8 – CLOSE coil current (min)	0.1 A
451	Circuit Breaker 8 – CLOSE coil current (avg)	0.1 A
452	Circuit Breaker 8 – CLOSE aux time (max)	0.1 ms
453	Circuit Breaker 8 – CLOSE aux time (min)	0.1 ms
454	Circuit Breaker 8 – CLOSE aux time (avg)	0.1 ms
455	Circuit Breaker 8 – CLOSE pulse width (max)	0.1 ms
456	Circuit Breaker 8 – CLOSE pulse width (min)	0.1 ms
457	Circuit Breaker 8 – CLOSE pulse width (avg)	0.1 ms
458	Circuit Breaker 9 – TRIP operation counter	
459	Circuit Breaker 9 – TRIP Current accumulator Phase A	KA
460	Circuit Breaker 9 – TRIP Current accumulator Phase B	KA
461	Circuit Breaker 9 – TRIP Current accumulator Phase C	KA
462	Circuit Breaker 9 – TRIP Current accumulator Phase A	0.1 % (of limit)
463	Circuit Breaker 9 – TRIP Current accumulator Phase B	0.1 % (of limit)
464	Circuit Breaker 9 – TRIP Current accumulator Phase C	0.1 % (of limit)
465	Circuit Breaker 9 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
466	Circuit Breaker 9 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
467	Circuit Breaker 9 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
468	Circuit Breaker 9 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)

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469	Circuit Breaker 9 – TRIP I <sup>2</sup> t accumulator Phase B	0.1 % (of limit)
470	Circuit Breaker 9 – TRIP I <sup>2</sup> t accumulator Phase C	0.1 % (of limit)
471	Circuit Breaker 9 – TRIP operate time Phase A (max)	0.1 ms
472	Circuit Breaker 9 – TRIP operate time Phase A (min)	0.1 ms
473	Circuit Breaker 9 – TRIP operate time Phase A (avg)	0.1 ms
474	Circuit Breaker 9 – TRIP operate time Phase A (max)	0.1 ms
475	Circuit Breaker 9 – TRIP operate time Phase A (min)	0.1 ms
476	Circuit Breaker 9 – TRIP operate time Phase A (avg)	0.1 ms
477	Circuit Breaker 9 – TRIP operate time Phase A (max)	0.1 ms
478	Circuit Breaker 9 – TRIP operate time Phase A (min)	0.1 ms
479	Circuit Breaker 9 – TRIP operate time Phase A (avg)	0.1 ms
480	Circuit Breaker 9 – TRIP coil current (max)	0.1 A
481	Circuit Breaker 9 – TRIP coil current (min)	0.1 A
482	Circuit Breaker 9 – TRIP coil current (avg)	0.1 A
483	Circuit Breaker 9 – TRIP aux time (max)	0.1 ms
484	Circuit Breaker 9 – TRIP aux time (min)	0.1 ms
485	Circuit Breaker 9 – TRIP aux time (avg)	0.1 ms
486	Circuit Breaker 9 – TRIP pulse width (max)	0.1 ms
487	Circuit Breaker 9 – TRIP pulse width (min)	0.1 ms
488	Circuit Breaker 9 – TRIP pulse width (avg)	0.1 ms
489	Circuit Breaker 9 – CLOSE operation counter	
490	Circuit Breaker 9 – CLOSE coil current (max)	0.1 A
491	Circuit Breaker 9 – CLOSE coil current (min)	0.1 A
492	Circuit Breaker 9 – CLOSE coil current (avg)	0.1 A
493	Circuit Breaker 9 – CLOSE aux time (max)	0.1 ms
494	Circuit Breaker 9 – CLOSE aux time (min)	0.1 ms
495	Circuit Breaker 9 – CLOSE aux time (avg)	0.1 ms
496	Circuit Breaker 9 – CLOSE pulse width (max)	0.1 ms
497	Circuit Breaker 9 – CLOSE pulse width (min)	0.1 ms



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498	Circuit Breaker 9 – CLOSE pulse width (avg)	0.1 ms
499	Circuit Breaker 10 – TRIP operation counter	
500	Circuit Breaker 10 – TRIP Current accumulator Phase A	KA
501	Circuit Breaker 10 – TRIP Current accumulator Phase B	KA
502	Circuit Breaker 10 – TRIP Current accumulator Phase C	KA
503	Circuit Breaker 10 – TRIP Current accumulator Phase A	0.1 % (of limit)
504	Circuit Breaker 10 – TRIP Current accumulator Phase B	0.1 % (of limit)
505	Circuit Breaker 10 – TRIP Current accumulator Phase C	0.1 % (of limit)
506	Circuit Breaker 10 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
507	Circuit Breaker 10 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
508	Circuit Breaker 10 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
509	Circuit Breaker 10 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
510	Circuit Breaker 10 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
511	Circuit Breaker 10 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
512	Circuit Breaker 10 – TRIP operate time Phase A (max)	0.1 ms
513	Circuit Breaker 10 – TRIP operate time Phase A (min)	0.1 ms
514	Circuit Breaker 10 – TRIP operate time Phase A (avg)	0.1 ms
515	Circuit Breaker 10 – TRIP operate time Phase A (max)	0.1 ms
516	Circuit Breaker 10 – TRIP operate time Phase A (min)	0.1 ms
517	Circuit Breaker 10 – TRIP operate time Phase A (avg)	0.1 ms
518	Circuit Breaker 10 – TRIP operate time Phase A (max)	0.1 ms
519	Circuit Breaker 10 – TRIP operate time Phase A (min)	0.1 ms
520	Circuit Breaker 10 – TRIP operate time Phase A (avg)	0.1 ms
521	Circuit Breaker 10 – TRIP coil current (max)	0.1 A
522	Circuit Breaker 10 – TRIP coil current (min)	0.1 A
523	Circuit Breaker 10 – TRIP coil current (avg)	0.1 A
524	Circuit Breaker 10 – TRIP aux time (max)	0.1 ms
525	Circuit Breaker 10 – TRIP aux time (min)	0.1 ms
526	Circuit Breaker 10 – TRIP aux time (avg)	0.1 ms

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527	Circuit Breaker 10 – TRIP pulse width (max)	0.1 ms
528	Circuit Breaker 10 – TRIP pulse width (min)	0.1 ms
529	Circuit Breaker 10 – TRIP pulse width (avg)	0.1 ms
530	Circuit Breaker 10 – CLOSE operation counter	
531	Circuit Breaker 10 – CLOSE coil current (max)	0.1 A
532	Circuit Breaker 10 – CLOSE coil current (min)	0.1 A
533	Circuit Breaker 10 – CLOSE coil current (avg)	0.1 A
534	Circuit Breaker 10 – CLOSE aux time (max)	0.1 ms
535	Circuit Breaker 10 – CLOSE aux time (min)	0.1 ms
536	Circuit Breaker 10 – CLOSE aux time (avg)	0.1 ms
537	Circuit Breaker 10 – CLOSE pulse width (max)	0.1 ms
538	Circuit Breaker 10 – CLOSE pulse width (min)	0.1 ms
539	Circuit Breaker 10 – CLOSE pulse width (avg)	0.1 ms
540	Circuit Breaker 11 – TRIP operation counter	
541	Circuit Breaker 11 – TRIP Current accumulator Phase A	KA
542	Circuit Breaker 11 – TRIP Current accumulator Phase B	KA
543	Circuit Breaker 11 – TRIP Current accumulator Phase C	KA
544	Circuit Breaker 11 – TRIP Current accumulator Phase A	0.1 % (of limit)
545	Circuit Breaker 11 – TRIP Current accumulator Phase B	0.1 % (of limit)
546	Circuit Breaker 11 – TRIP Current accumulator Phase C	0.1 % (of limit)
547	Circuit Breaker 11 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
548	Circuit Breaker 11 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
549	Circuit Breaker 11 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
550	Circuit Breaker 11 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
551	Circuit Breaker 11 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
552	Circuit Breaker 11 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
553	Circuit Breaker 11 – TRIP operate time Phase A (max)	0.1 ms
554	Circuit Breaker 11 – TRIP operate time Phase A (min)	0.1 ms
555	Circuit Breaker 11 – TRIP operate time Phase A (avg)	0.1 ms

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556	Circuit Breaker 11 – TRIP operate time Phase A (max)	0.1 ms
557	Circuit Breaker 11 – TRIP operate time Phase A (min)	0.1 ms
558	Circuit Breaker 11 – TRIP operate time Phase A (avg)	0.1 ms
559	Circuit Breaker 11 – TRIP operate time Phase A (max)	0.1 ms
560	Circuit Breaker 11 – TRIP operate time Phase A (min)	0.1 ms
561	Circuit Breaker 11 – TRIP operate time Phase A (avg)	0.1 ms
562	Circuit Breaker 11 – TRIP coil current (max)	0.1 A
563	Circuit Breaker 11 – TRIP coil current (min)	0.1 A
564	Circuit Breaker 11 – TRIP coil current (avg)	0.1 A
565	Circuit Breaker 11 – TRIP aux time (max)	0.1 ms
566	Circuit Breaker 11 – TRIP aux time (min)	0.1 ms
567	Circuit Breaker 11 – TRIP aux time (avg)	0.1 ms
568	Circuit Breaker 11 – TRIP pulse width (max)	0.1 ms
569	Circuit Breaker 11 – TRIP pulse width (min)	0.1 ms
570	Circuit Breaker 11 – TRIP pulse width (avg)	0.1 ms
571	Circuit Breaker 11 – CLOSE operation counter	
572	Circuit Breaker 11 – CLOSE coil current (max)	0.1 A
573	Circuit Breaker 11 – CLOSE coil current (min)	0.1 A
574	Circuit Breaker 11 – CLOSE coil current (avg)	0.1 A
575	Circuit Breaker 11 – CLOSE aux time (max)	0.1 ms
576	Circuit Breaker 11 – CLOSE aux time (min)	0.1 ms
577	Circuit Breaker 11 – CLOSE aux time (avg)	0.1 ms
578	Circuit Breaker 11 – CLOSE pulse width (max)	0.1 ms
579	Circuit Breaker 11 – CLOSE pulse width (min)	0.1 ms
580	Circuit Breaker 11 – CLOSE pulse width (avg)	0.1 ms
581	Circuit Breaker 12 – TRIP operation counter	
582	Circuit Breaker 12 – TRIP Current accumulator Phase A	KA
583	Circuit Breaker 12 – TRIP Current accumulator Phase B	KA
584	Circuit Breaker 12 – TRIP Current accumulator Phase C	KA

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585	Circuit Breaker 12 – TRIP Current accumulator Phase A	0.1 % (of limit)
586	Circuit Breaker 12 – TRIP Current accumulator Phase B	0.1 % (of limit)
587	Circuit Breaker 12 – TRIP Current accumulator Phase C	0.1 % (of limit)
588	Circuit Breaker 12 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
589	Circuit Breaker 12 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
590	Circuit Breaker 12 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
591	Circuit Breaker 12 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
592	Circuit Breaker 12 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
593	Circuit Breaker 12 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
594	Circuit Breaker 12 – TRIP operate time Phase A (max)	0.1 ms
595	Circuit Breaker 12 – TRIP operate time Phase A (min)	0.1 ms
596	Circuit Breaker 12 – TRIP operate time Phase A (avg)	0.1 ms
597	Circuit Breaker 12 – TRIP operate time Phase A (max)	0.1 ms
598	Circuit Breaker 12 – TRIP operate time Phase A (min)	0.1 ms
599	Circuit Breaker 12 – TRIP operate time Phase A (avg)	0.1 ms
600	Circuit Breaker 12 – TRIP operate time Phase A (max)	0.1 ms
601	Circuit Breaker 12 – TRIP operate time Phase A (min)	0.1 ms
602	Circuit Breaker 12 – TRIP operate time Phase A (avg)	0.1 ms
603	Circuit Breaker 12 – TRIP coil current (max)	0.1 A
604	Circuit Breaker 12 – TRIP coil current (min)	0.1 A
605	Circuit Breaker 12 – TRIP coil current (avg)	0.1 A
606	Circuit Breaker 12 – TRIP aux time (max)	0.1 ms
607	Circuit Breaker 12 – TRIP aux time (min)	0.1 ms
608	Circuit Breaker 12 – TRIP aux time (avg)	0.1 ms
609	Circuit Breaker 12 – TRIP pulse width (max)	0.1 ms
610	Circuit Breaker 12 – TRIP pulse width (min)	0.1 ms
611	Circuit Breaker 12 – TRIP pulse width (avg)	0.1 ms
612	Circuit Breaker 12 – CLOSE operation counter	
613	Circuit Breaker 12 – CLOSE coil current (max)	0.1 A

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614	Circuit Breaker 12 – CLOSE coil current (min)	0.1 A
615	Circuit Breaker 12 – CLOSE coil current (avg)	0.1 A
616	Circuit Breaker 12 – CLOSE aux time (max)	0.1 ms
617	Circuit Breaker 12 – CLOSE aux time (min)	0.1 ms
618	Circuit Breaker 12 – CLOSE aux time (avg)	0.1 ms
619	Circuit Breaker 12 – CLOSE pulse width (max)	0.1 ms
620	Circuit Breaker 12 – CLOSE pulse width (min)	0.1 ms
621	Circuit Breaker 12 – CLOSE pulse width (avg)	0.1 ms
622	Circuit Breaker 13 – TRIP operation counter	
623	Circuit Breaker 13 – TRIP Current accumulator Phase A	KA
624	Circuit Breaker 13 – TRIP Current accumulator Phase B	KA
625	Circuit Breaker 13 – TRIP Current accumulator Phase C	KA
626	Circuit Breaker 13 – TRIP Current accumulator Phase A	0.1 % (of limit)
627	Circuit Breaker 13 – TRIP Current accumulator Phase B	0.1 % (of limit)
628	Circuit Breaker 13 – TRIP Current accumulator Phase C	0.1 % (of limit)
629	Circuit Breaker 13 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
630	Circuit Breaker 13 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
631	Circuit Breaker 13 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
632	Circuit Breaker 13 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
633	Circuit Breaker 13 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
634	Circuit Breaker 13 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
635	Circuit Breaker 13 – TRIP operate time Phase A (max)	0.1 ms
636	Circuit Breaker 13 – TRIP operate time Phase A (min)	0.1 ms
637	Circuit Breaker 13 – TRIP operate time Phase A (avg)	0.1 ms
638	Circuit Breaker 13 – TRIP operate time Phase A (max)	0.1 ms
639	Circuit Breaker 13 – TRIP operate time Phase A (min)	0.1 ms
640	Circuit Breaker 13 – TRIP operate time Phase A (avg)	0.1 ms
641	Circuit Breaker 13 – TRIP operate time Phase A (max)	0.1 ms
642	Circuit Breaker 13 – TRIP operate time Phase A (min)	0.1 ms

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643	Circuit Breaker 13 – TRIP operate time Phase A (avg)	0.1 ms
644	Circuit Breaker 13 – TRIP coil current (max)	0.1 A
645	Circuit Breaker 13 – TRIP coil current (min)	0.1 A
646	Circuit Breaker 13 – TRIP coil current (avg)	0.1 A
647	Circuit Breaker 13 – TRIP aux time (max)	0.1 ms
648	Circuit Breaker 13 – TRIP aux time (min)	0.1 ms
649	Circuit Breaker 13 – TRIP aux time (avg)	0.1 ms
650	Circuit Breaker 13 – TRIP pulse width (max)	0.1 ms
651	Circuit Breaker 13 – TRIP pulse width (min)	0.1 ms
652	Circuit Breaker 13 – TRIP pulse width (avg)	0.1 ms
653	Circuit Breaker 13 – CLOSE operation counter	
654	Circuit Breaker 13 – CLOSE coil current (max)	0.1 A
655	Circuit Breaker 13 – CLOSE coil current (min)	0.1 A
656	Circuit Breaker 13 – CLOSE coil current (avg)	0.1 A
657	Circuit Breaker 13 – CLOSE aux time (max)	0.1 ms
658	Circuit Breaker 13 – CLOSE aux time (min)	0.1 ms
659	Circuit Breaker 13 – CLOSE aux time (avg)	0.1 ms
660	Circuit Breaker 13 – CLOSE pulse width (max)	0.1 ms
661	Circuit Breaker 13 – CLOSE pulse width (min)	0.1 ms
662	Circuit Breaker 13 – CLOSE pulse width (avg)	0.1 ms
663	Circuit Breaker 14 – TRIP operation counter	
664	Circuit Breaker 14 – TRIP Current accumulator Phase A	KA
665	Circuit Breaker 14 – TRIP Current accumulator Phase B	KA
666	Circuit Breaker 14 – TRIP Current accumulator Phase C	KA
667	Circuit Breaker 14 – TRIP Current accumulator Phase A	0.1 % (of limit)
668	Circuit Breaker 14 – TRIP Current accumulator Phase B	0.1 % (of limit)
669	Circuit Breaker 14 – TRIP Current accumulator Phase C	0.1 % (of limit)
670	Circuit Breaker 14 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
671	Circuit Breaker 14 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S

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672	Circuit Breaker 14 – TRIP I <sup>2</sup> t accumulator Phase C	KA <sup>2</sup> S
673	Circuit Breaker 14 – TRIP I <sup>2</sup> t accumulator Phase A	0.1 % (of limit)
674	Circuit Breaker 14 – TRIP I <sup>2</sup> t accumulator Phase B	0.1 % (of limit)
675	Circuit Breaker 14 – TRIP I <sup>2</sup> t accumulator Phase C	0.1 % (of limit)
676	Circuit Breaker 14 – TRIP operate time Phase A (max)	0.1 ms
677	Circuit Breaker 14 – TRIP operate time Phase A (min)	0.1 ms
678	Circuit Breaker 14 – TRIP operate time Phase A (avg)	0.1 ms
679	Circuit Breaker 14 – TRIP operate time Phase A (max)	0.1 ms
680	Circuit Breaker 14 – TRIP operate time Phase A (min)	0.1 ms
681	Circuit Breaker 14 – TRIP operate time Phase A (avg)	0.1 ms
682	Circuit Breaker 14 – TRIP operate time Phase A (max)	0.1 ms
683	Circuit Breaker 14 – TRIP operate time Phase A (min)	0.1 ms
684	Circuit Breaker 14 – TRIP operate time Phase A (avg)	0.1 ms
685	Circuit Breaker 14 – TRIP coil current (max)	0.1 A
686	Circuit Breaker 14 – TRIP coil current (min)	0.1 A
687	Circuit Breaker 14 – TRIP coil current (avg)	0.1 A
688	Circuit Breaker 14 – TRIP aux time (max)	0.1 ms
689	Circuit Breaker 14 – TRIP aux time (min)	0.1 ms
690	Circuit Breaker 14 – TRIP aux time (avg)	0.1 ms
691	Circuit Breaker 14 – TRIP pulse width (max)	0.1 ms
692	Circuit Breaker 14 – TRIP pulse width (min)	0.1 ms
693	Circuit Breaker 14 – TRIP pulse width (avg)	0.1 ms
694	Circuit Breaker 14 – CLOSE operation counter	
695	Circuit Breaker 14 – CLOSE coil current (max)	0.1 A
696	Circuit Breaker 14 – CLOSE coil current (min)	0.1 A
697	Circuit Breaker 14 – CLOSE coil current (avg)	0.1 A
698	Circuit Breaker 14 – CLOSE aux time (max)	0.1 ms
699	Circuit Breaker 14 – CLOSE aux time (min)	0.1 ms
700	Circuit Breaker 14 – CLOSE aux time (avg)	0.1 ms

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701	Circuit Breaker 14 – CLOSE pulse width (max)	0.1 ms
702	Circuit Breaker 14 – CLOSE pulse width (min)	0.1 ms
703	Circuit Breaker 14 – CLOSE pulse width (avg)	0.1 ms
704	Circuit Breaker 15 – TRIP operation counter	
705	Circuit Breaker 15 – TRIP Current accumulator Phase A	KA
706	Circuit Breaker 15 – TRIP Current accumulator Phase B	KA
707	Circuit Breaker 15 – TRIP Current accumulator Phase C	KA
708	Circuit Breaker 15 – TRIP Current accumulator Phase A	0.1 % (of limit)
709	Circuit Breaker 15 – TRIP Current accumulator Phase B	0.1 % (of limit)
710	Circuit Breaker 15 – TRIP Current accumulator Phase C	0.1 % (of limit)
711	Circuit Breaker 15 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
712	Circuit Breaker 15 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
713	Circuit Breaker 15 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
714	Circuit Breaker 15 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
715	Circuit Breaker 15 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
716	Circuit Breaker 15 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
717	Circuit Breaker 15 – TRIP operate time Phase A (max)	0.1 ms
718	Circuit Breaker 15 – TRIP operate time Phase A (min)	0.1 ms
719	Circuit Breaker 15 – TRIP operate time Phase A (avg)	0.1 ms
720	Circuit Breaker 15 – TRIP operate time Phase A (max)	0.1 ms
721	Circuit Breaker 15 – TRIP operate time Phase A (min)	0.1 ms
722	Circuit Breaker 15 – TRIP operate time Phase A (avg)	0.1 ms
723	Circuit Breaker 15 – TRIP operate time Phase A (max)	0.1 ms
724	Circuit Breaker 15 – TRIP operate time Phase A (min)	0.1 ms
725	Circuit Breaker 15 – TRIP operate time Phase A (avg)	0.1 ms
726	Circuit Breaker 15 – TRIP coil current (max)	0.1 A
727	Circuit Breaker 15 – TRIP coil current (min)	0.1 A
728	Circuit Breaker 15 – TRIP coil current (avg)	0.1 A
729	Circuit Breaker 15 – TRIP aux time (max)	0.1 ms



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730	Circuit Breaker 15 – TRIP aux time (min)	0.1 ms
731	Circuit Breaker 15 – TRIP aux time (avg)	0.1 ms
732	Circuit Breaker 15 – TRIP pulse width (max)	0.1 ms
733	Circuit Breaker 15 – TRIP pulse width (min)	0.1 ms
734	Circuit Breaker 15 – TRIP pulse width (avg)	0.1 ms
735	Circuit Breaker 15 – CLOSE operation counter	
736	Circuit Breaker 15 – CLOSE coil current (max)	0.1 A
737	Circuit Breaker 15 – CLOSE coil current (min)	0.1 A
738	Circuit Breaker 15 – CLOSE coil current (avg)	0.1 A
739	Circuit Breaker 15 – CLOSE aux time (max)	0.1 ms
740	Circuit Breaker 15 – CLOSE aux time (min)	0.1 ms
741	Circuit Breaker 15 – CLOSE aux time (avg)	0.1 ms
742	Circuit Breaker 15 – CLOSE pulse width (max)	0.1 ms
743	Circuit Breaker 15 – CLOSE pulse width (min)	0.1 ms
744	Circuit Breaker 15 – CLOSE pulse width (avg)	0.1 ms
745	Circuit Breaker 16 – TRIP operation counter	
746	Circuit Breaker 16 – TRIP Current accumulator Phase A	KA
747	Circuit Breaker 16 – TRIP Current accumulator Phase B	KA
748	Circuit Breaker 16 – TRIP Current accumulator Phase C	KA
749	Circuit Breaker 16 – TRIP Current accumulator Phase A	0.1 % (of limit)
750	Circuit Breaker 16 – TRIP Current accumulator Phase B	0.1 % (of limit)
751	Circuit Breaker 16 – TRIP Current accumulator Phase C	0.1 % (of limit)
752	Circuit Breaker 16 – TRIP $I^2t$ accumulator Phase A	KA <sup>2</sup> S
753	Circuit Breaker 16 – TRIP $I^2t$ accumulator Phase B	KA <sup>2</sup> S
754	Circuit Breaker 16 – TRIP $I^2t$ accumulator Phase C	KA <sup>2</sup> S
755	Circuit Breaker 16 – TRIP $I^2t$ accumulator Phase A	0.1 % (of limit)
756	Circuit Breaker 16 – TRIP $I^2t$ accumulator Phase B	0.1 % (of limit)
757	Circuit Breaker 16 – TRIP $I^2t$ accumulator Phase C	0.1 % (of limit)
758	Circuit Breaker 16 – TRIP operate time Phase A (max)	0.1 ms

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759	Circuit Breaker 16 – TRIP operate time Phase A (min)	0.1 ms
760	Circuit Breaker 16 – TRIP operate time Phase A (avg)	0.1 ms
761	Circuit Breaker 16 – TRIP operate time Phase A (max)	0.1 ms
762	Circuit Breaker 16 – TRIP operate time Phase A (min)	0.1 ms
763	Circuit Breaker 16 – TRIP operate time Phase A (avg)	0.1 ms
764	Circuit Breaker 16 – TRIP operate time Phase A (max)	0.1 ms
765	Circuit Breaker 16 – TRIP operate time Phase A (min)	0.1 ms
766	Circuit Breaker 16 – TRIP operate time Phase A (avg)	0.1 ms
767	Circuit Breaker 16 – TRIP coil current (max)	0.1 A
768	Circuit Breaker 16 – TRIP coil current (min)	0.1 A
769	Circuit Breaker 16 – TRIP coil current (avg)	0.1 A
770	Circuit Breaker 16 – TRIP aux time (max)	0.1 ms
771	Circuit Breaker 16 – TRIP aux time (min)	0.1 ms
772	Circuit Breaker 16 – TRIP aux time (avg)	0.1 ms
773	Circuit Breaker 16 – TRIP pulse width (max)	0.1 ms
774	Circuit Breaker 16 – TRIP pulse width (min)	0.1 ms
775	Circuit Breaker 16 – TRIP pulse width (avg)	0.1 ms
776	Circuit Breaker 16 – CLOSE operation counter	
777	Circuit Breaker 16 – CLOSE coil current (max)	0.1 A
778	Circuit Breaker 16 – CLOSE coil current (min)	0.1 A
779	Circuit Breaker 16 – CLOSE coil current (avg)	0.1 A
780	Circuit Breaker 16 – CLOSE aux time (max)	0.1 ms
781	Circuit Breaker 16 – CLOSE aux time (min)	0.1 ms
782	Circuit Breaker 16 – CLOSE aux time (avg)	0.1 ms
783	Circuit Breaker 16 – CLOSE pulse width (max)	0.1 ms
784	Circuit Breaker 16 – CLOSE pulse width (min)	0.1 ms
785	Circuit Breaker 16 – CLOSE pulse width (avg)	0.1 ms
786	Fault Indicator – Circuit 1 – Fault Resistance	0.001 R
787	Fault Indicator – Circuit 1 – Fault level	A

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788	Fault Indicator – Circuit 2 – Fault Resistance	0.001 R
789	Fault Indicator – Circuit 2 – Fault level	A
790	Fault Indicator – Circuit 3 – Fault Resistance	0.001 R
791	Fault Indicator – Circuit 3 – Fault level	A
792	Distribution DTF circuit number	
793	TRIP Battery - operation counter	
794	TRIP Battery – Voltage (max)	0.01 V
795	TRIP Battery – Voltage (min)	0.01 V
796	TRIP Battery – Voltage (avg)	0.01 V
797	TRIP Battery – Impedance (max)	0.01 V
798	TRIP Battery – Impedance (min)	0.01 V
799	TRIP Battery – Impedance (avg)	0.01 V
800	AUX Battery – Voltage (max)	0.01 V
801	AUX Battery – Voltage (min)	0.01 V
802	AUX Battery – Voltage (avg)	0.01 V