

The Acquisition Board can respond to three Modbus addresses, one address for panel board one, next for panel board two and last if you have the option for Sub Distribution breakers.

Address 1 for panel board one and Address 2 for panel board two are the default base addresses. If you have multiple BCMS's the Addresses must be changed. These Addresses must be in sequence. The Addresses can be changed from the USB service port.

The data acquisition to the BCMS cannot be greater than 200 bytes or 100 data points per request and can't be faster than 400ms between data request. If you need to have faster data acquisition the 8212 monitor must be used.

Points list for the two Panel Boards.

All Modbus variables are stored in 16-bit integer format.

<u>#</u>	<u>R/W</u>	<u>NV</u>	<u>Description</u>
Registers 1-42 are in milliamps (100 = 10.0 Amps)			
1	R		Current, Channel 1
2	R		Current, Channel 2
3	R		Current, Channel 3
4	R		Current, Channel 4
5	R		Current, Channel 5
6	R		Current, Channel 6
7	R		Current, Channel 7
8	R		Current, Channel 8
9	R		Current, Channel 9
10	R		Current, Channel 10
11	R		Current, Channel 11
12	R		Current, Channel 12
13	R		Current, Channel 13
14	R		Current, Channel 14
15	R		Current, Channel 15
16	R		Current, Channel 16
17	R		Current, Channel 17
18	R		Current, Channel 18
19	R		Current, Channel 19
20	R		Current, Channel 20
21	R		Current, Channel 21
22	R		Current, Channel 22
23	R		Current, Channel 23
24	R		Current, Channel 24
25	R		Current, Channel 25
26	R		Current, Channel 26
27	R		Current, Channel 27
28	R		Current, Channel 28
29	R		Current, Channel 29
30	R		Current, Channel 30
31	R		Current, Channel 31
32	R		Current, Channel 32
33	R		Current, Channel 33
34	R		Current, Channel 34

35	R	Current, Channel 35
36	R	Current, Channel 36
37	R	Current, Channel 37
38	R	Current, Channel 38
39	R	Current, Channel 39
40	R	Current, Channel 40
41	R	Current, Channel 41
42	R	Current, Channel 42

Minimum Registers 43-84 are in milliamps (100 = 10.0 Amps)

43	R	Minimum Current, Channel 1
44	R	Minimum Current, Channel 2
45	R	Minimum Current, Channel 3
46	R	Minimum Current, Channel 4
47	R	Minimum Current, Channel 5
48	R	Minimum Current, Channel 6
49	R	Minimum Current, Channel 7
50	R	Minimum Current, Channel 8
51	R	Minimum Current, Channel 9
52	R	Minimum Current, Channel 10
53	R	Minimum Current, Channel 11
54	R	Minimum Current, Channel 12
55	R	Minimum Current, Channel 13
56	R	Minimum Current, Channel 14
57	R	Minimum Current, Channel 15
58	R	Minimum Current, Channel 16
59	R	Minimum Current, Channel 17
60	R	Minimum Current, Channel 18
61	R	Minimum Current, Channel 19
62	R	Minimum Current, Channel 20
63	R	Minimum Current, Channel 21
64	R	Minimum Current, Channel 22
65	R	Minimum Current, Channel 23
66	R	Minimum Current, Channel 24
67	R	Minimum Current, Channel 25
68	R	Minimum Current, Channel 26
69	R	Minimum Current, Channel 27
70	R	Minimum Current, Channel 28
71	R	Minimum Current, Channel 29
72	R	Minimum Current, Channel 30
73	R	Minimum Current, Channel 31
74	R	Minimum Current, Channel 32
75	R	Minimum Current, Channel 33
76	R	Minimum Current, Channel 34
77	R	Minimum Current, Channel 35
78	R	Minimum Current, Channel 36
79	R	Minimum Current, Channel 37
80	R	Minimum Current, Channel 38
81	R	Minimum Current, Channel 39
82	R	Minimum Current, Channel 40

83	R	Minimum Current, Channel 41
84	R	Minimum Current, Channel 42

Maximum Registers 85-126 are in milliamps (100 = 10.0 Amps)

85	R	Maximum Current, Channel 1
86	R	Maximum Current, Channel 2
87	R	Maximum Current, Channel 3
88	R	Maximum Current, Channel 4
89	R	Maximum Current, Channel 5
90	R	Maximum Current, Channel 6
91	R	Maximum Current, Channel 7
92	R	Maximum Current, Channel 8
93	R	Maximum Current, Channel 9
94	R	Maximum Current, Channel 10
95	R	Maximum Current, Channel 11
96	R	Maximum Current, Channel 12
97	R	Maximum Current, Channel 13
98	R	Maximum Current, Channel 14
99	R	Maximum Current, Channel 15
100	R	Maximum Current, Channel 16
101	R	Maximum Current, Channel 17
102	R	Maximum Current, Channel 18
103	R	Maximum Current, Channel 19
104	R	Maximum Current, Channel 20
105	R	Maximum Current, Channel 21
106	R	Maximum Current, Channel 22
107	R	Maximum Current, Channel 23
108	R	Maximum Current, Channel 24
109	R	Maximum Current, Channel 25
110	R	Maximum Current, Channel 26
111	R	Maximum Current, Channel 27
112	R	Maximum Current, Channel 28
113	R	Maximum Current, Channel 29
114	R	Maximum Current, Channel 30
115	R	Maximum Current, Channel 31
116	R	Maximum Current, Channel 32
117	R	Maximum Current, Channel 33
118	R	Maximum Current, Channel 34
119	R	Maximum Current, Channel 35
120	R	Maximum Current, Channel 36
121	R	Maximum Current, Channel 37
122	R	Maximum Current, Channel 38
123	R	Maximum Current, Channel 39
124	R	Maximum Current, Channel 40
125	R	Maximum Current, Channel 41
126	R	Maximum Current, Channel 42

The following Zero Current Registers set a bit for every channel, which reads a current that has gone to zero. All alarms are active until reset by the controller, or the current returns to the channel. To reset any alarm, read the register and then write the register with the desired alarm bit cleared.

127	R/W	NV	Zero Current Register 1 bit 0: Channel 1 bit 1: Channel 2 bit 2: Channel 3 bit 3: Channel 4 bit 4: Channel 5 bit 5: Channel 6 bit 6: Channel 7 bit 7: Channel 8 bit 8: Channel 9 bit 9: Channel 10 bit 10: Channel 11 bit 11: Channel 12 bit 12: Channel 13 bit 13: Channel 14 bit 14: Channel 15 bit 15: Channel 16
128	R/W	NV	Zero Current Register 2 bit 0: Channel 17 bit 1: Channel 18 bit 2: Channel 19 bit 3: Channel 20 bit 4: Channel 21 bit 5: Channel 22 bit 6: Channel 23 bit 7: Channel 24 bit 8: Channel 25 bit 9: Channel 26 bit 10: Channel 27 bit 11: Channel 28 bit 12: Channel 29 bit 13: Channel 30 bit 14: Channel 31 bit 15: Channel 32
129	R/W	NV	Zero Current Register 3 bit 0: Channel 33 bit 1: Channel 34 bit 2: Channel 35 bit 3: Channel 36 bit 4: Channel 37 bit 5: Channel 38 bit 6: Channel 39 bit 7: Channel 40 bit 8: Channel 41 bit 9: Channel 42 bits 10 – 15: always read as 0

The following Warning Registers set a bit for every channel, which reads a current above the Warning Threshold but below the Alarm Threshold for at least the Warning Time-Delay. All

alarms are latching and must be reset by the controller. To reset any alarm, read the register and the write the register with the desired alarm bit cleared.

130	R/W	NV	<p>Warning Register 1</p> <p>bit 0: Channel 1</p> <p>bit 1: Channel 2</p> <p>bit 2: Channel 3</p> <p>bit 3: Channel 4</p> <p>bit 4: Channel 5</p> <p>bit 5: Channel 6</p> <p>bit 6: Channel 7</p> <p>bit 7: Channel 8</p> <p>bit 8: Channel 9</p> <p>bit 9: Channel 10</p> <p>bit 10: Channel 11</p> <p>bit 11: Channel 12</p> <p>bit 12: Channel 13</p> <p>bit 13: Channel 14</p> <p>bit 14: Channel 15</p> <p>bit 15: Channel 16</p>
131	R/W	NV	<p>Warning Register 2</p> <p>bit 0: Channel 17</p> <p>bit 1: Channel 18</p> <p>bit 2: Channel 19</p> <p>bit 3: Channel 20</p> <p>bit 4: Channel 21</p> <p>bit 5: Channel 22</p> <p>bit 6: Channel 23</p> <p>bit 7: Channel 24</p> <p>bit 8: Channel 25</p> <p>bit 9: Channel 26</p> <p>bit 10: Channel 27</p> <p>bit 11: Channel 28</p> <p>bit 12: Channel 29</p> <p>bit 13: Channel 30</p> <p>bit 14: Channel 31</p> <p>bit 15: Channel 32</p>
132	R/W	NV	<p>Warning Register 3</p> <p>bit 0: Channel 33</p> <p>bit 1: Channel 34</p> <p>bit 2: Channel 35</p> <p>bit 3: Channel 36</p> <p>bit 4: Channel 37</p> <p>bit 5: Channel 38</p> <p>bit 6: Channel 39</p> <p>bit 7: Channel 40</p> <p>bit 8: Channel 41</p> <p>bit 9: Channel 42</p> <p>bits 10 – 15: always read as 0</p>

The following Alarm Registers set a bit for every channel, which reads a current above the Alarm Threshold for at least the Alarm Time-Delay. All alarms are latching and must be reset by the controller. To reset any alarm, read the register and then write the register with the desired alarm bit cleared.

133	R/W	NV	<p>Alarm Register 1</p> <ul style="list-style-type: none"> bit 0: Channel 1 bit 1: Channel 2 bit 2: Channel 3 bit 3: Channel 4 bit 4: Channel 5 bit 5: Channel 6 bit 6: Channel 7 bit 7: Channel 8 bit 8: Channel 9 bit 9: Channel 10 bit 10: Channel 11 bit 11: Channel 12 bit 12: Channel 13 bit 13: Channel 14 bit 14: Channel 15 bit 15: Channel 16
134	R/W	NV	<p>Alarm Register 2</p> <ul style="list-style-type: none"> bit: 0 Channel 17 bit: 1 Channel 18 bit: 2 Channel 19 bit: 3 Channel 20 bit: 4 Channel 21 bit: 5 Channel 22 bit: 6 Channel 23 bit: 7 Channel 24 bit: 8 Channel 25 bit: 9 Channel 26 bit: 10 Channel 27 bit: 11 Channel 28 bit: 12 Channel 29 bit: 13 Channel 30 bit: 14 Channel 31 bit: 15 Channel 32
135	R/W	NV	<p>Alarm Register 3</p> <ul style="list-style-type: none"> bit:0: Channel 33 bit: 1 Channel 34 bit: 2 Channel 35 bit: 3 Channel 36 bit: 4 Channel 37 bit: 5 Channel 38 bit: 6 Channel 39 bit: 7 Channel 40 bit: 8 Channel 41 bit: 9 Channel 42 bits 10 – 15: Always read as 0

The following Breaker Size registers set the capacity of each breaker for the alarms. Units are in Amps (10 = 10 Amps). The Values that are written to the Breaker sizes must be between 20 and 100.

136	R/W	NV	Breaker Size Channel 1
137	R/W	NV	Breaker Size Channel 2
138	R/W	NV	Breaker Size Channel 3
139	R/W	NV	Breaker Size Channel 4
140	R/W	NV	Breaker Size Channel 5
141	R/W	NV	Breaker Size Channel 6
142	R/W	NV	Breaker Size Channel 7
143	R/W	NV	Breaker Size Channel 8
144	R/W	NV	Breaker Size Channel 9
145	R/W	NV	Breaker Size Channel 10
146	R/W	NV	Breaker Size Channel 11
147	R/W	NV	Breaker Size Channel 12
148	R/W	NV	Breaker Size Channel 13
149	R/W	NV	Breaker Size Channel 14
150	R/W	NV	Breaker Size Channel 15
151	R/W	NV	Breaker Size Channel 16
152	R/W	NV	Breaker Size Channel 17
153	R/W	NV	Breaker Size Channel 18
154	R/W	NV	Breaker Size Channel 19
155	R/W	NV	Breaker Size Channel 20
156	R/W	NV	Breaker Size Channel 21
157	R/W	NV	Breaker Size Channel 22
158	R/W	NV	Breaker Size Channel 23
159	R/W	NV	Breaker Size Channel 24
160	R/W	NV	Breaker Size Channel 25
161	R/W	NV	Breaker Size Channel 26
162	R/W	NV	Breaker Size Channel 27
163	R/W	NV	Breaker Size Channel 28
164	R/W	NV	Breaker Size Channel 29
165	R/W	NV	Breaker Size Channel 30
166	R/W	NV	Breaker Size Channel 31
167	R/W	NV	Breaker Size Channel 32
168	R/W	NV	Breaker Size Channel 33
169	R/W	NV	Breaker Size Channel 34
170	R/W	NV	Breaker Size Channel 35
171	R/W	NV	Breaker Size Channel 36
172	R/W	NV	Breaker Size Channel 37
173	R/W	NV	Breaker Size Channel 38
174	R/W	NV	Breaker Size Channel 39
175	R/W	NV	Breaker Size Channel 40
176	R/W	NV	Breaker Size Channel 41
177	R/W	NV	Breaker Size Channel 42

The following Warning Threshold registers set the thresholds for the Warning alarms. A Warning alarm will occur if the measured current is above the Warning Threshold but below the Alarm Threshold for at least size determined in registers 136-177 (75 = 75 %) Range is 0-100. Default is all set to 70%. Note that a Warning will not always be generated if the current instantaneously jumps from below the Warning Threshold to above the Alarm

Threshold. The Values that are written to the Warning Threshold must be between 40 and 100.

178	R/W	NV	Warning Threshold Channel 1
179	R/W	NV	Warning Threshold Channel 2
180	R/W	NV	Warning Threshold Channel 3
181	R/W	NV	Warning Threshold Channel 4
182	R/W	NV	Warning Threshold Channel 5
183	R/W	NV	Warning Threshold Channel 6
184	R/W	NV	Warning Threshold Channel 7
185	R/W	NV	Warning Threshold Channel 8
186	R/W	NV	Warning Threshold Channel 9
187	R/W	NV	Warning Threshold Channel 10
188	R/W	NV	Warning Threshold Channel 11
189	R/W	NV	Warning Threshold Channel 12
190	R/W	NV	Warning Threshold Channel 13
191	R/W	NV	Warning Threshold Channel 14
192	R/W	NV	Warning Threshold Channel 15
193	R/W	NV	Warning Threshold Channel 16
194	R/W	NV	Warning Threshold Channel 17
195	R/W	NV	Warning Threshold Channel 18
196	R/W	NV	Warning Threshold Channel 19
197	R/W	NV	Warning Threshold Channel 20
198	R/W	NV	Warning Threshold Channel 21
199	R/W	NV	Warning Threshold Channel 22
200	R/W	NV	Warning Threshold Channel 23
201	R/W	NV	Warning Threshold Channel 24
202	R/W	NV	Warning Threshold Channel 25
203	R/W	NV	Warning Threshold Channel 26
204	R/W	NV	Warning Threshold Channel 27
205	R/W	NV	Warning Threshold Channel 28
206	R/W	NV	Warning Threshold Channel 29
207	R/W	NV	Warning Threshold Channel 30
208	R/W	NV	Warning Threshold Channel 31
209	R/W	NV	Warning Threshold Channel 32
210	R/W	NV	Warning Threshold Channel 33
211	R/W	NV	Warning Threshold Channel 34
212	R/W	NV	Warning Threshold Channel 35
213	R/W	NV	Warning Threshold Channel 36
214	R/W	NV	Warning Threshold Channel 37
215	R/W	NV	Warning Threshold Channel 38
216	R/W	NV	Warning Threshold Channel 39
217	R/W	NV	Warning Threshold Channel 40
218	R/W	NV	Warning Threshold Channel 41
219	R/W	NV	Warning Threshold Channel 42

The following Alarm Threshold registers set the thresholds for the Alarms. An Alarm will occur if the measured current is above the Alarm Threshold for at least the Alarm Time Delay. Units are percentage, based on the breaker size determined in registers 136-177 (75 = 75%). Range is 0-100. Default is all set to 80%. The Values that are written to the Alarm Threshold must be between 50 and 100.

220	R/W	NV	Alarm Threshold Channel 1
221	R/W	NV	Alarm Threshold Channel 2

222	R/W	NV	Alarm Threshold Channel 3
223	R/W	NV	Alarm Threshold Channel 4
224	R/W	NV	Alarm Threshold Channel 5
225	R/W	NV	Alarm Threshold Channel 6
226	R/W	NV	Alarm Threshold Channel 7
227	R/W	NV	Alarm Threshold Channel 8
228	R/W	NV	Alarm Threshold Channel 9
229	R/W	NV	Alarm Threshold Channel 10
230	R/W	NV	Alarm Threshold Channel 11
231	R/W	NV	Alarm Threshold Channel 12
232	R/W	NV	Alarm Threshold Channel 13
233	R/W	NV	Alarm Threshold Channel 14
234	R/W	NV	Alarm Threshold Channel 15
235	R/W	NV	Alarm Threshold Channel 16
236	R/W	NV	Alarm Threshold Channel 17
237	R/W	NV	Alarm Threshold Channel 18
238	R/W	NV	Alarm Threshold Channel 19
239	R/W	NV	Alarm Threshold Channel 20
240	R/W	NV	Alarm Threshold Channel 21
241	R/W	NV	Alarm Threshold Channel 22
242	R/W	NV	Alarm Threshold Channel 23
243	R/W	NV	Alarm Threshold Channel 24
244	R/W	NV	Alarm Threshold Channel 25
245	R/W	NV	Alarm Threshold Channel 26
246	R/W	NV	Alarm Threshold Channel 27
247	R/W	NV	Alarm Threshold Channel 28
248	R/W	NV	Alarm Threshold Channel 29
249	R/W	NV	Alarm Threshold Channel 30
250	R/W	NV	Alarm Threshold Channel 31
251	R/W	NV	Alarm Threshold Channel 32
252	R/W	NV	Alarm Threshold Channel 33
253	R/W	NV	Alarm Threshold Channel 34
254	R/W	NV	Alarm Threshold Channel 35
255	R/W	NV	Alarm Threshold Channel 36
256	R/W	NV	Alarm Threshold Channel 37
257	R/W	NV	Alarm Threshold Channel 38
258	R/W	NV	Alarm Threshold Channel 39
259	R/W	NV	Alarm Threshold Channel 40
260	R/W	NV	Alarm Threshold Channel 41
261	R/W	NV	Alarm Threshold Channel 42

Each of the following Warning Time Delay registers set the minimum time required for the current to exist above the Warning Threshold before the Warning alarm in set. Units are in seconds. The Values that are written to the Warning Time Delays must be between less than 100.

262	R/W	NV	Warning Time Delay Channel 1
263	R/W	NV	Warning Time Delay Channel 2
264	R/W	NV	Warning Time Delay Channel 3
265	R/W	NV	Warning Time Delay Channel 4
266	R/W	NV	Warning Time Delay Channel 5
267	R/W	NV	Warning Time Delay Channel 6

268	R/W	NV	Warning Time Delay Channel 7
269	R/W	NV	Warning Time Delay Channel 8
270	R/W	NV	Warning Time Delay Channel 9
271	R/W	NV	Warning Time Delay Channel 10
272	R/W	NV	Warning Time Delay Channel 11
273	R/W	NV	Warning Time Delay Channel 12
274	R/W	NV	Warning Time Delay Channel 13
275	R/W	NV	Warning Time Delay Channel 14
276	R/W	NV	Warning Time Delay Channel 15
277	R/W	NV	Warning Time Delay Channel 16
278	R/W	NV	Warning Time Delay Channel 17
279	R/W	NV	Warning Time Delay Channel 18
280	R/W	NV	Warning Time Delay Channel 19
281	R/W	NV	Warning Time Delay Channel 20
282	R/W	NV	Warning Time Delay Channel 21
283	R/W	NV	Warning Time Delay Channel 22
284	R/W	NV	Warning Time Delay Channel 23
285	R/W	NV	Warning Time Delay Channel 24
286	R/W	NV	Warning Time Delay Channel 25
287	R/W	NV	Warning Time Delay Channel 26
288	R/W	NV	Warning Time Delay Channel 27
289	R/W	NV	Warning Time Delay Channel 28
290	R/W	NV	Warning Time Delay Channel 29
291	R/W	NV	Warning Time Delay Channel 30
292	R/W	NV	Warning Time Delay Channel 31
293	R/W	NV	Warning Time Delay Channel 32
294	R/W	NV	Warning Time Delay Channel 33
295	R/W	NV	Warning Time Delay Channel 34
296	R/W	NV	Warning Time Delay Channel 35
297	R/W	NV	Warning Time Delay Channel 36
298	R/W	NV	Warning Time Delay Channel 37
299	R/W	NV	Warning Time Delay Channel 38
300	R/W	NV	Warning Time Delay Channel 39
301	R/W	NV	Warning Time Delay Channel 40
302	R/W	NV	Warning Time Delay Channel 41
303	R/W	NV	Warning Time Delay Channel 42

Each of the following Alarm Time Delay registers set the minimum time required for the current to exist above the alarm Threshold before the Alarm is set. Units are in seconds. The Values that are written to the Alarm Time Delays must be less than 100.

304	R/W	NV	Alarm Time Delay Channel 1
305	R/W	NV	Alarm Time Delay Channel 2
306	R/W	NV	Alarm Time Delay Channel 3
307	R/W	NV	Alarm Time Delay Channel 4
308	R/W	NV	Alarm Time Delay Channel 5
309	R/W	NV	Alarm Time Delay Channel 6
310	R/W	NV	Alarm Time Delay Channel 7
311	R/W	NV	Alarm Time Delay Channel 8
312	R/W	NV	Alarm Time Delay Channel 9
313	R/W	NV	Alarm Time Delay Channel 10
314	R/W	NV	Alarm Time Delay Channel 11
315	R/W	NV	Alarm Time Delay Channel 12

316	R/W	NV	Alarm Time Delay Channel 13
317	R/W	NV	Alarm Time Delay Channel 14
318	R/W	NV	Alarm Time Delay Channel 15
319	R/W	NV	Alarm Time Delay Channel 16
320	R/W	NV	Alarm Time Delay Channel 17
321	R/W	NV	Alarm Time Delay Channel 18
322	R/W	NV	Alarm Time Delay Channel 19
323	R/W	NV	Alarm Time Delay Channel 20
324	R/W	NV	Alarm Time Delay Channel 21
325	R/W	NV	Alarm Time Delay Channel 22
326	R/W	NV	Alarm Time Delay Channel 23
327	R/W	NV	Alarm Time Delay Channel 24
328	R/W	NV	Alarm Time Delay Channel 25
329	R/W	NV	Alarm Time Delay Channel 26
330	R/W	NV	Alarm Time Delay Channel 27
331	R/W	NV	Alarm Time Delay Channel 28
332	R/W	NV	Alarm Time Delay Channel 29
333	R/W	NV	Alarm Time Delay Channel 30
334	R/W	NV	Alarm Time Delay Channel 31
335	R/W	NV	Alarm Time Delay Channel 32
336	R/W	NV	Alarm Time Delay Channel 33
337	R/W	NV	Alarm Time Delay Channel 34
338	R/W	NV	Alarm Time Delay Channel 35
339	R/W	NV	Alarm Time Delay Channel 36
340	R/W	NV	Alarm Time Delay Channel 37
341	R/W	NV	Alarm Time Delay Channel 38
342	R/W	NV	Alarm Time Delay Channel 39
343	R/W	NV	Alarm Time Delay Channel 40
344	R/W	NV	Alarm Time Delay Channel 41
345	R/W	NV	Alarm Time Delay Channel 42

Writing this register will set all the Breakers size registers to the value written. The Values that are written to the Breaker sizes must be between 20 and 100.

346 W Global Breaker Size

Writing this register will set all the Warning Threshold registers to the value written. The Values that are written to the Warning Thresholds must be between 40 and 100.

347 W Global Warning Threshold

Writing this register will set all the Alarm Threshold registers to the value written. The Values that are written to the Alarm Thresholds must be between 50 and 100.

348 W Global Alarm Threshold

Writing this register will set all the Warning Time Delay registers to the value written. The Values that are written to the Warning Time Delay must be less than 100.

349 W Global Warning Time Delay

Writing this register will set all the Alarm Time Delay registers to the value written. The Values that are written to the Alarm Time Delay must be less than 100.

350 W Global Alarm Time Delay

bit 2: Digital alarm 3
bit 3: Digital alarm 4
bits 4 – 15: Not Used

This register shows the setting for the main current CTs setup. They can be used for either Main or sub feeds, but not both. A set bit indicated active option.

Option 0: no main or panelboard CTs. (357-359 summation of branch)
(367-376 not used)

Option 1: no main or panelboard CTs. (357-359 summation of branch)
(367-376 summation of panelboards)

Option 2: CTs on main input feeding both panelboards.
(357-359 summation of branch)

Option 3: CTs on each panel board. (367-376 summation of panelboard 1 and 2)

Note: Neutral and Ground current monitoring is optional.

356	R	NV	Current Option Setting
			bit 0: option 0
			bit 1: option 1
			bit 2: option 2
			bit 3: option 3
			bit 4: Neutral CTs
			bit 5: Ground CTs

bits 6 – 14: Not Used
bit 15: Current Loss

Note: Current Loss is when the current goes above 1.5 Amps and then goes to zero an alarm is set for that branch breaker. If bit 15 is set the alarm will be active on the loss of current.

Current for each phase of individual panelboard

357	R		Current, phase A panelboard
358	R		Current, phase B panelboard
359	R		Current, phase C panelboard
360	R		Current, Neutral (optional)

An Over Current Alarm occurs if any phase current is greater than this threshold at any time.

361	R/W	NV	Over Current Alarm Threshold
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An Under Current Alarm occurs if any phase current is greater than this threshold at any time.

362	R/W	NV	Under Current Alarm Threshold
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Registers 363-366 are Set and Reset Counters for alarms. A Set Counter is incremented each time the Non-Latching Alarm transitions from a no-alarm to an alarm state. A Reset Counter is incremented each time the Non-Latching Alarm transitions from an alarm to a no alarm state. These registers cannot be cleared. They will overflow from 65535 to 0 and continue counting.

363	R	NV	Over Current Set Counter panelboard
364	R	NV	Over Current Reset Counter panelboard
365	R	NV	Under Current Set Counter panelboard
366	R	NV	Under Current Reset Counter panelboard

Current for each phase of both panelboards

367	R		Current, phase A of both panelboards
368	R		Current, phase B of both panelboards
369	R		Current, phase C of both panelboards
370	R		Current, Neutral (optional)

An Over Current Alarm occurs if any phase current is greater than this threshold at any time.

371	R/W	NV	Over Current Alarm Threshold
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An Under Current Alarm occurs if any phase current is greater than this threshold at any time.

372	R/W	NV	Under Current Alarm Threshold
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Registers 373-376 are Set and Reset Counters for alarms. A Set Counter is incremented each time the Non-Latching Alarm transitions from a no-alarm to an alarm state. A Reset Counter is incremented each time the Non-Latching Alarm transitions from an alarm to a no alarm state. These registers cannot be cleared. They will overflow from 65535 to 0 and continue counting.

373	R	NV	Over Current Set Counter both panelboard
374	R	NV	Over Current Reset Counter both panelboard
375	R	NV	Under Current Set Counter both panelboard
376	R	NV	Under Current Reset Counter bothpanelboard

This register shows the setting for the Voltage monitoring setup. A set bit indicated active option.

Option 0: no voltage monitoring. (378-414 not used)

Option 1: One voltage feeding 1 or 2 panel boards. (390-401 not used)

Option 2: One voltage feeding panelboard 1 and another feeding panelboard 2. (390-401 not used)

Option 3: Two voltages tied together through interlocked circuit breakers feeding both panelboards. Digital input 1 and 2 are used to determine which is feeding the panelboard. A set bit indicated closed. If both are closed, main voltage is used.

377	R	NV	Voltage Option Setting
			bit 0: option 0
			bit 1: option 1
			bit 2: option 2
			bit 3: option 3
			bit 4: Voltage THD
			bits 5 – 15: Not Used

Main voltage registers.

378	R		Main Voltage, phase A-B
379	R		Main Voltage, phase B-C
380	R		Main Voltage, phase C-A
381	R		Main Voltage, phase A-N
382	R		Main Voltage, phase B-N
383	R		Main Voltage, phase C-N

An Over Voltage Alarm occurs if the Any L-L voltage is greater than this threshold for at least 10 seconds.

384	R/W	NV	Over Voltage Alarm Threshold Main
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An Under Voltage Alarm occurs if the Any L-L voltage is less than this threshold at any time.

385	R/W	NV	Under Voltage Alarm Threshold Main
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Registers 386-389 are Set and Reset Counters for alarms. A Set Counter is incremented each time the Non-Latching Alarm transitions from a no-alarm to an alarm state. A Reset Counter is incremented each time the Non-Latching Alarm transitions from an alarm to a no alarm state. These registers cannot be cleared. They will overflow from 65535 to 0 and continue counting.

386	R	NV	Over Voltage Set Counter main
387	R	NV	Over Voltage Reset Counter main
388	R	NV	Under Voltage Set Counter main
389	R	NV	Under Voltage Reset Counter main

Frequency is measured from the phase A voltage input. Range is 40-70Hz: **This register will read as 0xFFFF if frequencies outside of this range or if sufficient voltage is not present on phase A for an accurate determination.**

390	R		Frequency
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Alternate voltages registers. Note: only used in voltage option 3.

391	R		Alternate Voltage, phase A-B
392	R		Alternate Voltage, phase B-C
393	R		Alternate Voltage, phase C-A
394	R		Alternate Voltage, phase A-N
395	R		Alternate Voltage, phase B-N
396	R		Alternate Voltage, phase C-N

An Over Voltage Alarm occurs if the Any L-L voltage is greater than this threshold for at least 10 seconds.

397	R/W	NV	Over Voltage Alarm Threshold Alternate
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An Under Voltage Alarm occurs if the Any L-L voltage is less than this threshold at any time.

398	R/W	NV	Under Voltage Alarm Threshold Alternate
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Registers 398-401 are Set and Reset Counters for alarms. A Set Counter is incremented each time the Non-Latching Alarm transitions from a no-alarm to an alarm state. A Reset Counter is incremented each time the Non-Latching Alarm transitions from an alarm to a no alarm state. These registers cannot be cleared. They will overflow from 65535 to 0 and continue counting.

399	R	NV	Over Voltage Set Counter alternate
400	R	NV	Over Voltage Reset Counter alternate
401	R	NV	Under Voltage Set Counter alternate
402	R	NV	Under Voltage Reset Counter alternate

Note: Power calculations are based on voltage and current option settings above. If voltage setting is set to 0 then 402-414 are not used. If the voltage option is set to 1, 2, or 3 then the

following readings correspond to main input for current option 2 and panelboard input for current option 0, 1 and 3.

403	R		Real Power, kW
404	R		Real Power, phase A
405	R		Real Power, phase B
406	R		Real Power, phase C
407	R		Reactive Power, kVAR
408	R		Apparent Power, kVA
409	R		Total Power Factor
410	R		Power Factor, phase A
411	R		Power Factor, phase B
412	R		Power Factor, phase C
413	R/W	NV	Energy Consumption, kWh,Low-word integer
414	R/W	NV	Energy Consumption, kWh,High-word integer

Note: Total Harmonic Distortion (THD) calculations are based on voltage option settings above. If voltage setting 4 is not set then registers 415 – 420 are not used.

415	R		Main Voltage, phase A THD
416	R		Main Voltage, phase B THD
417	R		Main Voltage, phase C THD
418	R		Alternate Voltage, phase A THD
419	R		Alternate Voltage, phase B THD
420	R		Alternate Voltage, phase C THD
421	R		Current, Ground (optional)

Points list for two Sub Distribution Breakers. (Option)

<u>#</u>	<u>R/W</u>	<u>NV</u>	<u>Description</u>
1	R		Current, Distribution 1 A Phase
2	R		Current, Distribution 1 B Phase
3	R		Current, Distribution 1 C Phase
4	R		Current, Distribution 1 Neutral
5	R		Current, Distribution 1 Ground
6	R		Current, Distribution 2 A Phase
7	R		Current, Distribution 2 B Phase
8	R		Current, Distribution 2 C Phase
9	R		Current, Distribution 2 Neutral
10	R		Current, Distribution 2 Ground
11	R		Maximum Current, Distribution 1 A Phase
12	R		Maximum Current, Distribution 1 B Phase
13	R		Maximum Current, Distribution 1 C Phase
14	R		Maximum Current, Distribution 2 A Phase
15	R		Maximum Current, Distribution 2 B Phase
16	R		Maximum Current, Distribution 2 C Phase

This register shows the setting for the sub distribution current CTs setup. They can be used for either Main or Sub feeds, but not both. A set bit indicated active option.

Option 0: No Sub CTs.

Option 1: Sub CTs for the three Phase current for Sub Distribution One

Option 2: Sub CTs for the three Phase current for Sub Distribution Two

Option 3: Sub CTs for Neutral current

Option 4: Sub CTs for Ground current

17	R	NV	Current Option Setting
			bit 0: Sub Distribution One
			bit 1: Sub Distribution Two
			bit 2: Neutral current
			bit 3: Ground current
			bits 4 – 15: Not Used

A Sub Distribution Over Current Alarm occurs if any phase current is greater than this threshold at any time.

18	R/W	NV	Over Current Alarm Threshold
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This register alarms are set when the current of that phase goes above the Sub Distribution Over Current Alarm Threshold. You must write a zero to this Register to reset this alarm.

19	R/W		Sub Alarms
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bit 0:	Distribution 1 A Phase
bit 1:	Distribution 1 B Phase
bit 2:	Distribution 1 C Phase
bit 3:	Distribution 2 A Phase
bit 4:	Distribution 2 B Phase
bit 5:	Distribution 2 C Phase
bits 6 – 15:	Not Used

Writing this register will reset all Max registers to the current value. It also resets the Over Current Alarms.

20	W		Max Reset
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LEGEND

R: = Read Only
W: = Write Only
R/W = Read and Write
NV: = Value is stored in non-volatile memory