Systems Integration

Multistack BACnet Solution: MS20/30/50 Heat Pump Chiller Module

Table 1. MS20/30/50 Heat Pump Chiller Module Point Map.

Point	Type	Description	Range/Units[a,b,c]
1	LAO	Address	–
2	LAO	Application	4152
3	LDO	On/Off Control	Off/On
4	LDI	On/Off Status	Off/On
5	LDI	EX1 Fault Display	No/Yes
6	LDI	EX2 Remote Off	No/Yes
7	LDI	EX3 Fault Display	No/Yes
8	LDI	EX4 Fault Display	No/Yes
9	LDI	No Load Water Flow	No/Yes
10	LDI	No Source Water Flow	No/Yes
11	LDI	Low Leaving Load Water Temperature System	No/Yes
12	LDI	High Entering Source Water Temperature System	No/Yes
13	LDI	Compressor 1 Fault Status	Off/On
14	LDI	Compressor 2 Fault Status	Off/On
15	LDI	Compressor 3 Fault Status	Off/On
16	LDI	Compressor 4 Fault Status	Off/On
17	LDI	Compressor 5 Fault Status	Off/On
18	LDI	Compressor 6 Fault Status	Off/On
19	LDI	Compressor 7 Fault Status	Off/On
20	LDI	Compressor 8 Fault Status	Off/On
21	LDI	Compressor 9 Fault Status	Off/On
22	LDI	Compressor 10 Fault Status	Off/On
23	LDI	Compressor 11 Fault Status	Off/On
24	LDI	Compressor 12 Fault Status	Off/On
25	LDI	Compressor 13 Fault Status	Off/On
26	LDI	Compressor 14 Fault Status	Off/On

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Table 1. MS20/30/50 Heat Pump Chiller Module Point Map. ***(continued)***

Point	Type	Description	Range/Units[a,b,c]
27	LDI	Compressor 15 Fault Status	Off/On
28	LDI	Compressor 16 Fault Status	Off/On
29	LDI	Compressor 17 Fault Status	Off/On
30	LDI	Compressor 18 Fault Status	Off/On
31	LDI	Compressor 19 Fault Status	Off/On
32	LDI	Compressor 20 Fault Status	Off/On
33	LDI	Compressor 21 Fault Status	Off/On
34	LDI	Compressor 22 Fault Status	Off/On
35	LDI	Compressor 23 Fault Status	Off/On
36	LDI	Compressor 24 Fault Status	Off/On
37	LAI	Total Number of Compressors	–
38	LAI	Capacity	%
39	LAI	Demand	%
40	LAI	Active Operation Mode	–
41	LAO	Operation Mode	–
42	LAI	Active Lead Compressor	–
43	LAO	Lead Compressor Setpoint	–
44	LAI	Active Load Limit	%
45	LAO	Load Limit Setpoint	%
46	LAI	Active Cooling Upper Setpoint	°F
47	LAO	Cooling Upper Setpoint	°F
48	LAI	Active Cooling Lower Setpoint	°F
49	LAO	Cooling Lower Setpoint	°F
50	LAI	Active Cooling Variable Setpoint	°F
51	LAO	Cooling Variable Setpoint	°F
52	LAI	Active Cooling Delay Time	sec
53	LAO	Cooling Delay Time	sec
54	LAI	Active Heating Upper Setpoint	°F
55	LAO	Heating Upper Setpoint	°F
56	LAI	Active Heating Lower Setpoint	°F
57	LAO	Heating Lower Setpoint	°F
58	LAI	Active Heating Variable Setpoint	°F
59	LAO	Heating Variable Setpoint	°F
60	LAI	Active Heating Delay Time	sec
61	LAO	Heating Delay Time	sec

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Table 1. MS20/30/50 Heat Pump Chiller Module Point Map. ***(continued)***

Point	Type	Description	Range/Units[a,b,c]
62	LAI	Active Failure Indicator	%
63	LAO	Failure Indicator	%
64	LAI	Active Flush Time	hr
65	LAO	Flush Time Setpoint	hr
66	LAI	Active Flush Duration	sec
67	LAO	Flush Duration Setpoint	sec
68	LAI	Entering Load Water System Temperature	°F
69	LAI	Leaving Load Water System Temperature	°F
70	LAI	Entering Source Water System Temperature	°F
71	LAI	Leaving Source Water System Temperature	°F
72	LAI	Time at 0 to 9% Cooling Load	hr
73	LAI	Time at 10 to 19% Cooling Load	hr
74	LAI	Time at 20 to 29% Cooling Load	hr
75	LAI	Time at 30 to 39% Cooling Load	hr
76	LAI	Time at 40 to 49% Cooling Load	hr
77	LAI	Time at 50 to 59% Cooling Load	hr
78	LAI	Time at 60 to 69% Cooling Load	hr
79	LAI	Time at 70 to 79% Cooling Load	hr
80	LAI	Time at 80 to 89% Cooling Load	hr
81	LAI	Time at 90 to 100% Cooling Load	hr
82	LAI	Time at 0 to 9% Heating Load	hr
83	LAI	Time at 10 to 19% Heating Load	hr
84	LAI	Time at 20 to 29% Heating Load	hr
85	LAI	Time at 30 to 39% Heating Load	hr
86	LAI	Time at 40 to 49% Heating Load	hr
87	LAI	Time at 50 to 59% Heating Load	hr
88	LAI	Time at 60 to 69% Heating Load	hr
89	LAI	Time at 70 to 79% Heating Load	hr
90	LAI	Time at 80 to 89% Heating Load	hr
91	LAI	Time at 90 to 100% Heating Load	hr
92	LAI	Compressor 1 Suction Temperature	°F
93	LAI	Compressor 1 Leaving Load Water Temperature	°F
94	LAI	Compressor 1 Leaving Source Water Temperature	°F
95	LAI	Compressor 2 Suction Temperature	°F
96	LAI	Compressor 2 Leaving Load Water Temperature	°F

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Table 1. MS20/30/50 Heat Pump Chiller Module Point Map. ***(continued)***

Point	Type	Description	Range/Units[a,b,c]
97	LAI	Compressor 2 Leaving Source Water Temperature	°F
98	LAI	Compressor 3 Suction Temperature	°F
99	LAI	Compressor 3 Leaving Load Water Temperature	°F
100	LAI	Compressor 3 Leaving Source Water Temperature	°F
101	LAI	Compressor 4 Suction Temperature	°F
102	LAI	Compressor 4 Leaving Load Water Temperature	°F
103	LAI	Compressor 4 Leaving Source Water Temperature	°F
104	LAI	Compressor 5 Suction Temperature	°F
105	LAI	Compressor 5 Leaving Load Water Temperature	°F
106	LAI	Compressor 5 Leaving Source Water Temperature	°F
107	LAI	Compressor 6 Suction Temperature	°F
108	LAI	Compressor 6 Leaving Load Water Temperature	°F
109	LAI	Compressor 6 Leaving Source Water Temperature	°F
110	LAI	Compressor 7 Suction Temperature	°F
111	LAI	Compressor 7 Leaving Load Water Temperature	°F
112	LAI	Compressor 7 Leaving Source Water Temperature	°F
113	LAI	Compressor 8 Suction Temperature	°F
114	LAI	Compressor 8 Leaving Load Water Temperature	°F
115	LAI	Compressor 8 Leaving Source Water Temperature	°F
116	LAI	Compressor 9 Suction Temperature	°F
117	LAI	Compressor 9 Leaving Load Water Temperature	°F
118	LAI	Compressor 9 Leaving Source Water Temperature	°F
119	LAI	Compressor 10 Suction Temperature	°F
120	LAI	Compressor 10 Leaving Load Water Temperature	°F
121	LAI	Compressor 10 Leaving Source Water Temperature	°F
122	LAI	Compressor 11 Suction Temperature	°F
123	LAI	Compressor 11 Leaving Load Water Temperature	°F
124	LAI	Compressor 11 Leaving Source Water Temperature	°F
125	LAI	Compressor 12 Suction Temperature	°F
126	LAI	Compressor 12 Leaving Load Water Temperature	°F
127	LAI	Compressor 12 Leaving Source Water Temperature	°F
128	LAI	Compressor 13 Suction Temperature	°F
129	LAI	Compressor 13 Leaving Load Water Temperature	°F
130	LAI	Compressor 13 Leaving Source Water Temperature	°F
131	LAI	Compressor 14 Suction Temperature	°F

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Table 1. MS20/30/50 Heat Pump Chiller Module Point Map. ***(continued)***

Point	Type	Description	Range/Units[a,b,c]
132	LAI	Compressor 14 Leaving Load Water Temperature	°F
133	LAI	Compressor 14 Leaving Source Water Temperature	°F
134	LAI	Compressor 15 Suction Temperature	°F
135	LAI	Compressor 15 Leaving Load Water Temperature	°F
136	LAI	Compressor 15 Leaving Source Water Temperature	°F
137	LAI	Compressor 16 Suction Temperature	°F
138	LAI	Compressor 16 Leaving Load Water Temperature	°F
139	LAI	Compressor 16 Leaving Source Water Temperature	°F
140	LAI	Compressor 17 Suction Temperature	°F
141	LAI	Compressor 17 Leaving Load Water Temperature	°F
142	LAI	Compressor 17 Leaving Source Water Temperature	°F
143	LAI	Compressor 18 Suction Temperature	°F
144	LAI	Compressor 18 Leaving Load Water Temperature	°F
145	LAI	Compressor 18 Leaving Source Water Temperature	°F
146	LAI	Compressor 19 Suction Temperature	°F
147	LAI	Compressor 19 Leaving Load Water Temperature	°F
148	LAI	Compressor 19 Leaving Source Water Temperature	°F
149	LAI	Compressor 20 Suction Temperature	°F
150	LAI	Compressor 20 Leaving Load Water Temperature	°F
151	LAI	Compressor 20 Leaving Source Water Temperature	°F
152	LAI	Compressor 21 Suction Temperature	°F
153	LAI	Compressor 21 Leaving Load Water Temperature	°F
154	LAI	Compressor 21 Leaving Source Water Temperature	°F
155	LAI	Compressor 22 Suction Temperature	°F
156	LAI	Compressor 22 Leaving Load Water Temperature	°F
157	LAI	Compressor 22 Leaving Source Water Temperature	°F
158	LAI	Compressor 23 Suction Temperature	°F
159	LAI	Compressor 23 Leaving Load Water Temperature	°F
160	LAI	Compressor 23 Leaving Source Water Temperature	°F
161	LAI	Compressor 24 Suction Temperature	°F
162	LAI	Compressor 24 Leaving Load Water Temperature	°F
163	LAI	Compressor 24 Leaving Source Water Temperature	°F
164	LAI	Total Compressors In Fault	–
165	LAI	Module Fault Compressor 1	–
166	LAI	Module Fault Compressor 2	–

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Table 1. MS20/30/50 Heat Pump Chiller Module Point Map. ***(continued)***

Point	Type	Description	Range/Units[a,b,c]
167	LAI	Module Fault Compressor 3	–
168	LAI	Module Fault Compressor 4	–
169	LAI	Module Fault Compressor 5	–
170	LAI	Module Fault Compressor 6	–
171	LAI	Module Fault Compressor 7	–
172	LAI	Module Fault Compressor 8	–
173	LAI	Module Fault Compressor 9	–
174	LAI	Module Fault Compressor 10	–
175	LAI	Module Fault Compressor 11	–
176	LAI	Module Fault Compressor 12	–
177	LAI	Module Fault Compressor 13	–
178	LAI	Module Fault Compressor 14	–
179	LAI	Module Fault Compressor 15	–
180	LAI	Module Fault Compressor 16	–
181	LAI	Module Fault Compressor 17	–
182	LAI	Module Fault Compressor 18	–
183	LAI	Module Fault Compressor 19	–
184	LAI	Module Fault Compressor 20	–
185	LAI	Module Fault Compressor 21	–
186	LAI	Module Fault Compressor 22	–
187	LAI	Module Fault Compressor 23	–
188	LAI	Module Fault Compressor 24	–
189	LAI	Fault History 1 Type	See Table 2 and Table 3
190	LAI	Fault History 2 Type	See Table 2 and Table 3
191	LAI	Fault History 3 Type	See Table 2 and Table 3
192	LAI	Fault History 4 Type	See Table 2 and Table 3
193	LAI	Fault History 5 Type	See Table 2 and Table 3
194	LAI	Fault History 6 Type	See Table 2 and Table 3
195	LAI	Fault History 7 Type	See Table 2 and Table 3
196	LAI	Fault History 8 Type	See Table 2 and Table 3
197	LAI	Fault History 9 Type	See Table 2 and Table 3
198	LAI	Fault History 10 Type	See Table 2 and Table 3
199	LAI	Fault History 11 Type	See Table 2 and Table 3
200	LAI	Fault History 12 Type	See Table 2 and Table 3
201	LAI	Fault History 13 Type	See Table 2 and Table 3

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Table 1. MS20/30/50 Heat Pump Chiller Module Point Map. ***(continued)***

Point	Type	Description	Range/Units[a,b,c]
202	LAI	Fault History 14 Type	See Table 2 and Table 3
203	LAI	Fault History 15 Type	See Table 2 and Table 3
204	LAI	Fault History 16 Type	See Table 2 and Table 3
205	LAI	Fault History 17 Type	See Table 2 and Table 3
206	LAI	Fault History 18 Type	See Table 2 and Table 3
207	LAI	Fault History 19 Type	See Table 2 and Table 3
208	LAI	Fault History 20 Type	See Table 2 and Table 3
209	LAI	Fault History 1 Compressor Number	–
210	LAI	Fault History 2 Compressor Number	–
211	LAI	Fault History 3 Compressor Number	–
212	LAI	Fault History 4 Compressor Number	–
213	LAI	Fault History 5 Compressor Number	–
214	LAI	Fault History 6 Compressor Number	–
215	LAI	Fault History 7 Compressor Number	–
216	LAI	Fault History 8 Compressor Number	–
217	LAI	Fault History 9 Compressor Number	–
218	LAI	Fault History 10 Compressor Number	–
219	LAI	Fault History 11 Compressor Number	–
220	LAI	Fault History 12 Compressor Number	–
221	LAI	Fault History 13 Compressor Number	–
222	LAI	Fault History 14 Compressor Number	–
223	LAI	Fault History 15 Compressor Number	–
224	LAI	Fault History 16 Compressor Number	–
225	LAI	Fault History 17 Compressor Number	–
226	LAI	Fault History 18 Compressor Number	–
227	LAI	Fault History 19 Compressor Number	–
228	LAI	Fault History 20 Compressor Number	–

[a] Values noted for LDIs and LDOs are in the following format: OFF text/ON text.

[b] This column indicates the value/range or engineering units or both if known.

[c] The default English value is not italicized. An italicized entry indicates an SI value.

Table 2. System Fault Type (Points 189 to 208).

Value	Description
1	EX1 FAULT (Record)
2	EX3 FAULT (Record)
4	EX4 FAULT (Record)
8	Low Leaving Chilled Water Temperature (Record)
16	Low Chilled Water Flow (Record)
32	Low Condenser Water Flow (Record)
65	EX1 FAULT (Current)
66	EX3 FAULT (Current)
68	EX4 FAULT (Current)
72	Low Leaving Chilled Water Temperature (Current)
80	Low Chilled Water Flow (Current)
96	Low Condenser Water Flow (Current)
129	EX1 FAULT (Reset)
130	EX3 FAULT (Reset)
136	Low Leaving Chilled Water Temperature (Reset)
144	Low Chilled Water Flow (Reset)
160	Low Condenser Water Flow (Reset)

Table 3. Module Fault Type (Points 189 to 208).

Value	Description
0	Low Suction Temperature (Record)
1	High Pressure Cutout (Record)
2	Low Pressure Cutout (Record)
4	Thermal Fault (Record)
8	Low Leaving Chilled Water Temperature (Record)
16	High Suction Temperature (Record)
32	Communication Error (Record)
64	Low Suction Temperature (Current/Reset)
65	High Pressure Cutout (Current/Reset)
66	Low Pressure Cutout (Current/Reset)
72	Low Leaving Chilled Water Temperature (Current/Reset)
80	High Suction Temperature (Current/Reset)
96	Communication Error (Current/Reset)

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