

## Systems Integration

# APOGEE™ Open Processor with McQuay Microtech Driver: Chiller System Controller

Table 1. Chiller System Controller.

Point	Type	Description	Range/Units
01	LAO	Device Address	—
02	LAO	Application Number	5059
03	LAI	Average Chiller Load	0 – 125%
04	LAI	Chilled Water Loop Pressure Difference	0 – 150 psig
05	LAI	Chilled Water Return Temperature	-40 – 263°F
06	LAI	Chilled Water Supply Temperature	-40 – 263°F
07	LAI	Chiller Load Limit – Unit 1	0 – 100%
08	LAI	Chiller Load Limit – Unit 2	0 – 100%
09	LAI	Chiller Load Limit – Unit 3	0 – 100%
10	LAI	Chiller Load Limit – Unit 4	0 – 100%
11	LAI	Chiller Load Limit – Unit 5	0 – 100%
12	LAI	Chiller Load Limit – Unit 6	0 – 100%
13	LAI	Chiller Load Limit – Unit 7	0 – 100%
14	LAI	Chiller Load Limit – Unit 8	0 – 100%
15	LAI	Chiller Load Limit – Unit 9	0 – 100%
16	LAI	Chiller Load Limit – Unit 10	0 – 100%
17	LAI	Chiller Load Limit – Unit 11	0 – 100%
18	LAI	Chiller Load Limit – Unit 12	0 – 100%
19	LAI	Chiller Operating Hours – Unit 1	Hours
20	LAI	Chiller Operating Hours – Unit 2	Hours
21	LAI	Chiller Operating Hours – Unit 3	Hours
22	LAI	Chiller Operating Hours – Unit 4	Hours
23	LAI	Chiller Operating Hours – Unit 5	Hours
24	LAI	Chiller Operating Hours – Unit 6	Hours
25	LAI	Chiller Operating Hours – Unit 7	Hours

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**Table 1. Chiller System Controller.**

<b>Point</b>	<b>Type</b>	<b>Description</b>	<b>Range/Units</b>
26	LAI	Chiller Operating Hours – Unit 8	Hours
27	LAI	Chiller Operating Hours – Unit 9	Hours
28	LAI	Chiller Operating Hours – Unit 10	Hours
29	LAI	Chiller Operating Hours – Unit 11	Hours
30	LAI	Chiller Operating Hours – Unit 12	Hours
31	LAI	Chiller Set Point	0 – 80°F
32	LAI	Chiller Status – Unit 1	See Table 2
33	LAI	Chiller Status – Unit 2	See Table 2
34	LAI	Chiller Status – Unit 3	See Table 2
35	LAI	Chiller Status – Unit 4	See Table 2
36	LAI	Chiller Status – Unit 5	See Table 2
37	LAI	Chiller Status – Unit 6	See Table 2
38	LAI	Chiller Status – Unit 7	See Table 2
39	LAI	Chiller Status – Unit 8	See Table 2
40	LAI	Chiller Status – Unit 9	See Table 2
41	LAI	Chiller Status – Unit 10	See Table 2
42	LAI	Chiller Status – Unit 11	See Table 2
43	LAI	Chiller Status – Unit 12	See Table 2
44	LAI	Common Entering Condenser Water Temperature	-40 – 263°F
45	LAI	Common Leaving Condenser Water Temperature	-40 – 263°F
46	LAI	Cooling Tower Bypass Valve Position	0 – 100%
47	LAI	CSC Operating State	See Table 3
48	LAI	Current Chiller Stage	0 – 9 Stage
49	LAI	Current Cooling Tower Stage	0 – 12 Stage
50	LAI	Current CSC Alarm	See Table 4
51	LAI	Current Sequenced Pump Stage	0 – 6 Stage
52	LAI	Decoupler Flow Rate	0 – 5000 GPM
53	LAI	Decoupler Temperature	-40 – 263°F
54	LAI	Differential Pressure Bypass Valve Position/Secondary VFD Pump Speed	0 – 100%
55	LAI	Outdoor Air Temperature – CSC	0 – 150°F
56	LDI	Secondary Pump Status – Pump 1	Off/On
57	LDI	Secondary Pump Status – Pump 2	Off/On
58	LDI	Secondary Pump Status – Pump 3	Off/On
59	LDI	Secondary Pump Status – Pump 4	Off/On

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**Table 1. Chiller System Controller.**

<b>Point</b>	<b>Type</b>	<b>Description</b>	<b>Range/Units</b>
60	LDI	Secondary Pump Status – Pump 5	Off/On
61	LDI	Secondary Pump Status – Pump 6	Off/On
62	LAI	Start-up Unloading Group Load Limits - Group 1	30 – 100%
63	LAI	Start-up Unloading Group Load Limits – Group 2	30 – 100%
64	LAI	Start-up Unloading Group Load Limits – Group 3	30 – 100%
65	LAI	Start-up Unloading Group Load Limits – Group 4	30 – 100%
66	LAI	System Demand Limiting Load Limit	40 – 100%
67	LAO	Chilled Water Pump Resequenece – Day	See Table 5
68	LAO	Chilled Water Pump Resequenece – Hour	0 – 23 Hours
69	LAO	Chilled Water Pump Resequenece – Minute	0 – 59 Minutes
70	LAO	Chiller Resequenece – Day	See Table 5
71	LAO	Chiller Resequenece – Hour	0 – 23 Hours
72	LAO	Chiller Resequenece – Minute	0 – 59 Minutes
73	LDO	Chiller Sequence Order Option	Fixed/Automatic
74	LAO	Chiller Stage-up Inhibit Hour	0 – 23 Hours
75	LAO	Chiller Stage-up Inhibit Minute	0 – 59 Minutes
76	LAO	Chiller Stage-up Inhibit Level	0 = No inhibit 1 – 7 = Inhibit level
77	LAO	Chiller Stage-up Inhibit Set Point	0 = No inhibit 1 – 7 = Inhibit level
78	LAO	Communications Confirmation	0 = No communication Non-zero = Communication
79	LAO	Constant Return Set Point	20 – 80°F
80	LAO	Demand Limit Set Point – BAS	40 – 100%
81	LAO	Loop Differential Pressure Set Point	1 – 99 PSI
82	LAO	Network Command	See Table 6
83	LAO	Outdoor Air Temperature – BAS	0 – 150°F
84	LAO	Secondary Pump Control Option	See Table 7
85	LAO	System Set Point	0 – 80°F
86	LAO	Tower Stage Set Point – Stage 1	40 – 100°F
87	LAO	Tower Stage Set Point – Stage 2	40 – 100°F
88	LAO	Tower Stage Set Point – Stage 3	40 – 100°F
89	LAO	Tower Stage Set Point – Stage 4	40 – 100°F
90	LAO	Tower Stage Set Point – Stage 5	40 – 100°F
91	LAO	Tower Stage Set Point – Stage 6	40 – 100°F

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**Table 1. Chiller System Controller.**

<b>Point</b>	<b>Type</b>	<b>Description</b>	<b>Range/Units</b>
92	LAO	Tower Stage Set Point – Stage 7	40 – 100°F
93	LAO	Tower Stage Set Point – Stage 8	40 – 100°F
94	LAO	Tower Stage Set Point – Stage 11	40 – 100°F
95	LAO	Tower Stage Set Point – Stage 10	40 – 100°F
96	LAO	Tower Stage Set Point – Stage 11	40 – 100°F
97	LAO	Tower Stage Set Point – Stage 12	40 – 100°F
98	LAO	Tower Valve Set Point	40 – 100°F
99	LDI	Device Communication Failure	Normal/Failed

**Table 2. Chiller Status of Units 1 – 12 (Points 32–43).**

<b>Value</b>	<b>Description</b>
0	N/A
1	Off – Local
2	Off – Chiller System Controller
3	Starting
4	Running
5	Stopping
6	Communication Loss

**Table 3. Operating State (Point 47).**

<b>Value</b>	<b>Description</b>
0	Off – Unoccupied
1	Off – Network
2	Off – Ambient
3	Off – Manual
4	Off – Alarm
5	Recirculate
6	Free Cooling
7	On – Schedule
8	On – Input
9	On – Network
10	On – Manual

**Table 4. Current Alarm (Point 50).**

<b>Value</b>	<b>Description</b>
0	No Alarms
1 – 12	No. 1 – No. 12 Chiller Communications Error
13	Chiller Off – Line Warning
14	Entering Condenser Temperature Sensor Warning
15	Leaving Condenser Temperature Sensor Warning
16	Cooling Tower Failure Warning
17	Chilled Water Pressure Sensor Problem
18	Supply Chilled Water Temperature Sensor Problem
19	Return Chilled Water Temperature Sensor Problem
20	Decoupler Temperature Sensor Problem
21	Outside Air Temperature Sensor Problem
22	Secondary Pump No. 1 Failure Problem
23	Secondary Pump No. 2 Failure Problem
24	Secondary Pump No. 3 Failure Problem
25	Secondary Pump No. 4 Failure Problem
26	Secondary Pump No. 5 Failure Problem
27	Secondary Pump No. 6 Failure Problem
28	Decoupler Flow Sensor Problem
29	No Secondary Chilled Water Flow Fault
30	Entering Condenser Temperature Sensor Fault
31	Leaving Condenser Temperature Sensor Fault

**Table 5. Chilled Water Pump Resequence Day  
(Points 67 and 70).**

<b>Value</b>	<b>Description</b>
0	No Resequencing
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday
8	Daily
9	Holiday
10	Immediately

**Table 6. Network Command (Point 82).**

<b>Value</b>	<b>Description</b>
0	Stop
1	Auto
2	Recirculate
3	Free Cooling
4	Start

**Table 7. Secondary Pump Control Option (Point 84).**

<b>Value</b>	<b>Description</b>
0	No Secondary Pump
1	One Pump
2	Auto Lead (Lead/Standby Logic)
3	Pump No. 1 Lead (Lead/Standby Logic)
4	Pump No. 2 Lead (Lead/Standby Logic)
5	Sequencing

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