

15. BMS Communication Protocols

Magnum supports BACnet IP, Modbus RTU, Modbus TCP/IP, and Johnson N2. Supported baud rates for Modbus RTU and Johnson N2 are 4800bps, 9600bps, 19200bps, 38400bps, and 57600bps.

15.1. Sensor Input Points

Sensor numbering is based upon SI16-AO4 hardware type board

Notable BACnet properties available: Units

Magnum	BACnet ID	BACnet Name	Modbus Register	N2
Sensor M-1	AI: 1	Refer to Config	*30001	*AI: 1
Sensor M-2	AI: 2	Refer to Config	*30002	*AI: 2
Sensor M-3	AI: 3	Refer to Config	*30003	*AI: 3
Sensor M-4	AI: 4	Refer to Config	*30004	*AI: 4
Sensor M-5	AI: 5	Refer to Config	*30005	*AI: 5
Sensor M-6	AI: 6	Refer to Config	*30006	*AI: 6
Sensor M-7	AI: 7	Refer to Config	*30007	*AI: 7
Sensor M-8	AI: 8	Refer to Config	*30008	*AI: 8
Sensor M-9	AI: 9	Refer to Config	*30009	*AI: 9
Sensor M-10	AI:10	Refer to Config	*30010	*AI: 10
Sensor M-11	AI:11	Refer to Config	*30011	*AI: 11
Sensor M-12	AI:12	Refer to Config	*30012	*AI: 12
Sensor M-13	AI:13	Refer to Config	*30013	*AI: 13
Sensor M-14	AI:14	Refer to Config	*30014	*AI: 14
Sensor M-15	AI:15	Refer to Config	*30015	*AI: 15
Sensor M-16	AI:16	Refer to Config	*30016	*AI: 16
Sensor 1-1	AI:17	Refer to Config	*30017	*AI: 17
Sensor 1-2	AI:18	Refer to Config	*30018	*AI: 18
Sensor 1-3	AI:19	Refer to Config	*30019	*AI: 19
Sensor 1-4	AI:20	Refer to Config	*30020	*AI: 20
Sensor 1-5	AI:21	Refer to Config	*30021	*AI: 21
Sensor 1-6	AI:22	Refer to Config	*30022	*AI: 22
Sensor 1-7	AI:23	Refer to Config	*30023	*AI: 23
Sensor 1-8	AI:24	Refer to Config	*30024	*AI: 24
Sensor 1-9	AI:25	Refer to Config	*30025	*AI: 25
Sensor 1-10	AI:26	Refer to Config	*30026	*AI: 26
Sensor 1-11	AI:27	Refer to Config	*30027	*AI: 27
Sensor 1-12	AI:28	Refer to Config	*30028	*AI: 28
Sensor 1-13	AI:29	Refer to Config	*30029	*AI: 29
Sensor 1-14	AI:30	Refer to Config	*30030	*AI: 30
Sensor 1-15	AI:31	Refer to Config	*30031	*AI: 31
Sensor 1-16	AI:32	Refer to Config	*30032	*AI: 32
Sensor 2-1	AI:33	Refer to Config	*30033	*AI: 33
Sensor 2-2	AI:34	Refer to Config	*30034	*AI: 34
Sensor 2-3	AI:35	Refer to Config	*30035	*AI: 35
Sensor 2-4	AI:36	Refer to Config	*30036	*AI: 36
Sensor 2-5	AI:37	Refer to Config	*30037	*AI: 37
Sensor 2-6	AI:38	Refer to Config	*30038	*AI: 38
Sensor 2-7	AI:39	Refer to Config	*30039	*AI: 39
Sensor 2-8	AI:40	Refer to Config	*30040	*AI: 40

Magnum	BACnet ID	BACnet Name	Modbus Register	N2
Sensor 2-9	AI:41	Refer to Config	*30041	*AI: 41
Sensor 2-10	AI:42	Refer to Config	*30042	*AI: 42
Sensor 2-11	AI:43	Refer to Config	*30043	*AI: 43
Sensor 2-12	AI:44	Refer to Config	*30044	*AI: 44
Sensor 2-13	AI:45	Refer to Config	*30045	*AI: 45
Sensor 2-14	AI:46	Refer to Config	*30046	*AI: 46
Sensor 2-15	AI:47	Refer to Config	*30047	*AI: 47
Sensor 2-16	AI:48	Refer to Config	*30048	*AI: 48
Sensor 3-1	AI:49	Refer to Config	*30049	*AI:49
Sensor 3-2	AI:50	Refer to Config	*30050	*AI: 50
Sensor 3-3	AI:51	Refer to Config	*30051	*AI: 51
Sensor 3-4	AI:52	Refer to Config	*30052	*AI: 52
Sensor 3-5	AI:53	Refer to Config	*30053	*AI: 53
Sensor 3-6	AI:54	Refer to Config	*30054	*AI: 54
Sensor 3-7	AI:55	Refer to Config	*30055	*AI: 55
Sensor 3-8	AI:56	Refer to Config	*30056	*AI: 56
Sensor 3-9	AI:57	Refer to Config	*30057	*AI: 57
Sensor 3-10	AI:58	Refer to Config	*30058	*AI: 58
Sensor 3-11	AI:59	Refer to Config	*30059	*AI: 59
Sensor 3-12	AI:60	Refer to Config	*30060	*AI: 60
Sensor 3-13	AI:61	Refer to Config	*30061	*AI: 61
Sensor 3-14	AI:62	Refer to Config	*30062	*AI: 62
Sensor 3-15	AI:63	Refer to Config	*30063	*AI: 63
Sensor 3-16	AI:64	Refer to Config	*30064	*AI: 64
Sensor 4-1	AI:65	Refer to Config	*30065	*AI: 65
Sensor 4-2	AI:66	Refer to Config	*30066	*AI: 66
Sensor 4-3	AI:67	Refer to Config	*30067	*AI: 67
Sensor 4-4	AI:68	Refer to Config	*30068	*AI: 68
Sensor 4-5	AI:69	Refer to Config	*30069	*AI: 69
Sensor 4-6	AI:70	Refer to Config	*30070	*AI: 70
Sensor 4-7	AI:71	Refer to Config	*30071	*AI: 71
Sensor 4-8	AI:72	Refer to Config	*30072	*AI: 72
Sensor 4-9	AI:73	Refer to Config	*30073	*AI: 73
Sensor 4-10	AI:74	Refer to Config	*30074	*AI: 74
Sensor 4-11	AI:75	Refer to Config	*30075	*AI: 75
Sensor 4-12	AI:76	Refer to Config	*30076	*AI: 76
Sensor 4-13	AI:77	Refer to Config	*30077	*AI: 77
Sensor 4-14	AI:78	Refer to Config	*30078	*AI: 78
Sensor 4-15	AI:79	Refer to Config	*30079	*AI: 79
Sensor 4-16	AI:80	Refer to Config	*30080	*AI: 80

*- Indicates value multiplied by 10 to include one decimal place. (I.e. BMS value of 500 indicates actual value 50.0)

15.2. Relay Output Points

Relay Output points are read-only. Sensor numbering is based upon RO-10 hardware type board

Magnum	BACnet ID	BACnet Name	Modbus	N2
Relay M - 1	BO: 1	Refer to Config	00001	BO: 1
Relay M - 2	BO: 2	Refer to Config	00002	BO: 2
Relay M - 3	BO: 3	Refer to Config	00003	BO: 3
Relay M - 4	BO: 4	Refer to Config	00004	BO: 4
Relay M - 5	BO: 5	Refer to Config	00005	BO: 5
Relay M - 6	BO: 6	Refer to Config	00006	BO: 6
Relay M - 7	BO: 7	Refer to Config	00007	BO: 7
Relay M - 8	BO: 8	Refer to Config	00008	BO: 8
Relay M - 9	BO: 9	Refer to Config	00009	BO: 9
Relay M-10	BO:10	Refer to Config	00010	BO: 10
Relay 1 - 1	BO:11	Refer to Config	00011	BO: 11
Relay 1 - 2	BO:12	Refer to Config	00012	BO: 12
Relay 1 - 3	BO:13	Refer to Config	00013	BO: 13
Relay 1 - 4	BO:14	Refer to Config	00014	BO: 14
Relay 1 - 5	BO:15	Refer to Config	00015	BO: 15
Relay 1 - 6	BO:16	Refer to Config	00016	BO: 16
Relay 1 - 7	BO:17	Refer to Config	00017	BO: 17
Relay 1 - 8	BO:18	Refer to Config	00018	BO: 18
Relay 1 - 9	BO:19	Refer to Config	00019	BO: 19
Relay 1-10	BO:20	Refer to Config	00020	BO: 20
Relay 2 - 1	BO:21	Refer to Config	00021	BO: 21
Relay 2 - 2	BO:22	Refer to Config	00022	BO: 22
Relay 2 - 3	BO:23	Refer to Config	00023	BO: 23
Relay 2 - 4	BO:24	Refer to Config	00024	BO: 24
Relay 2 - 5	BO:25	Refer to Config	00025	BO: 25
Relay 2 - 6	BO:26	Refer to Config	00026	BO: 26
Relay 2 - 7	BO:27	Refer to Config	00027	BO: 27
Relay 2 - 8	BO:28	Refer to Config	00028	BO: 28
Relay 2 - 9	BO:29	Refer to Config	00029	BO: 29
Relay 2-10	BO:30	Refer to Config	00030	BO: 30
Relay 3 - 1	BO:31	Refer to Config	00031	BO: 31
Relay 3 - 2	BO:32	Refer to Config	00032	BO: 32
Relay 3 - 3	BO:33	Refer to Config	00033	BO: 33
Relay 3 - 4	BO:34	Refer to Config	00034	BO: 34
Relay 3 - 5	BO:35	Refer to Config	00035	BO: 35
Relay 3-6	BO:36	Refer to Config	00036	BO: 36
Relay 3 - 7	BO:37	Refer to Config	00037	BO: 37
Relay 3 - 8	BO:38	Refer to Config	00038	BO: 38
Relay 3 - 9	BO:39	Refer to Config	00039	BO: 39
Relay 3 - 10	BO:40	Refer to Config	00040	BO: 40

Magnum	BACnet ID	BACnet Name	Modbus	N2
Relay 4 - 1	BO:41	Refer to Config	00041	BO: 41
Relay 4 - 2	BO:42	Refer to Config	00042	BO: 42
Relay 4 - 3	BO:43	Refer to Config	00043	BO: 43
Relay 4 - 4	BO:44	Refer to Config	00044	BO: 44
Relay 4 - 5	BO:45	Refer to Config	00045	BO: 45
Relay 4 - 6	BO:46	Refer to Config	00046	BO: 46
Relay 4 - 7	BO:47	Refer to Config	00047	BO: 47
Relay 4 - 8	BO:48	Refer to Config	00048	BO: 48
Relay 4 - 9	BO:49	Refer to Config	00049	BO: 49
Relay 4-10	BO:50	Refer to Config	00050	BO: 50
Relay 5 - 1	BO:51	Refer to Config	00051	BO: 51
Relay 5 - 2	BO:52	Refer to Config	00052	BO: 52
Relay 5 - 3	BO:53	Refer to Config	00053	BO: 53
Relay 5 - 4	BO:54	Refer to Config	00054	BO: 54
Relay 5 - 5	BO:55	Refer to Config	00055	BO: 55
Relay 5 - 6	BO:56	Refer to Config	00056	BO: 56
Relay 5 - 7	BO:57	Refer to Config	00057	BO: 57
Relay 5 - 8	BO:58	Refer to Config	00058	BO: 58
Relay 5 - 9	BO:59	Refer to Config	00059	BO: 59
Relay 5-10	BO:60	Refer to Config	00060	BO: 60
Relay 6 - 1	BO:61	Refer to Config	00061	BO: 61
Relay 6 - 2	BO:62	Refer to Config	00062	BO: 62
Relay 6 - 3	BO:63	Refer to Config	00063	BO: 63
Relay 6 - 4	BO:64	Refer to Config	00064	BO: 64
Relay 6 - 5	BO:65	Refer to Config	00065	BO: 65
Relay 6-6	BO:66	Refer to Config	00066	BO: 66
Relay 6 - 7	BO:67	Refer to Config	00067	BO: 67
Relay 6 - 8	BO:68	Refer to Config	00068	BO: 68
Relay 6 - 9	BO:69	Refer to Config	00069	BO: 69
Relay 6 - 10	BO:70	Refer to Config	00760	BO: 70
Relay 7 - 1	BO:71	Refer to Config	00071	BO: 71
Relay 7 - 2	BO:72	Refer to Config	00072	BO: 72
Relay 7 - 3	BO:73	Refer to Config	00073	BO: 73
Relay 7 - 4	BO:74	Refer to Config	00074	BO: 74
Relay 7 - 5	BO:75	Refer to Config	00075	BO: 75
Relay 7 - 6	BO:76	Refer to Config	00076	BO: 76
Relay 7 - 7	BO:77	Refer to Config	00077	BO: 77
Relay 7 - 8	BO:78	Refer to Config	00078	BO: 78
Relay 7 - 9	BO:79	Refer to Config	00079	BO: 79
Relay 7 - 10	BO:80	Refer to Config	00070	BO: 80

Analog Output Points Analog Output points are read-only. Sensor numbering is based upon SI16-AO4 hardware type board.

Notable BACnet properties available: Units

Magnum	BACnet ID	BACnet Name	Modbus Register	N2
Analog Out M-1	AO:1	Refer to Config	*30201	*AO: 1
Analog Out M-2	AO:2	Refer to Config	*30202	*AO: 2
Analog Out M-3	AO:3	Refer to Config	*30203	*AO: 3
Analog Out M-4	AO:4	Refer to Config	*30204	*AO: 4
Analog Out 1-1	AO:5	Refer to Config	*30205	*AO: 5
Analog Out 1-2	AO:6	Refer to Config	*30206	*AO: 6
Analog Out 1-3	AO:7	Refer to Config	*30207	*AO: 7
Analog Out 1-4	AO:7	Refer to Config	*30208	*AO: 8
Analog Out 2-1	AO:8	Refer to Config	*30209	*AO: 9
Analog Out 2-2	AO:10	Refer to Config	*30210	*AO: 10
Analog Out 2-3	AO:11	Refer to Config	*30211	*AO: 11
Analog Out 2-4	AO:12	Refer to Config	*30212	*AO: 12
Analog Out 3-1	AO:13	Refer to Config	*30213	*AO: 13
Analog Out 3-2	AO:14	Refer to Config	*30214	*AO: 14
Analog Out 3-3	AO:15	Refer to Config	*30215	*AO: 15
Analog Out 3-4	AO:16	Refer to Config	*30216	*AO: 16
Analog Out 4-1	AO:17	Refer to Config	*30217	*AO: 17
Analog Out 4-2	AO:18	Refer to Config	*30218	*AO: 18
Analog Out 4-3	AO:19	Refer to Config	*30219	*AO: 19
Analog Out 4-4	AO:20	Refer to Config	*30220	*AO: 20

*- Indicates value multiplied by 10 to include one decimal place. (I.e. BMS value of 500 indicates actual value 50.0)

15.3. Setpoints

Setpoints are read-only. Notable BACnet properties available: Units

Magnum	BAC-net ID	BACnet Name	Modbus	N2
Setpoint #1	AV:0	STP# 1-<Setpoint name>	40301	ADF:1
Setpoint #21	AV:88	STP# 21-<Setpoint name>	40321	ADF:89
Setpoint #163	AV:230	STP# 163-<Setpoint name>	40463	ADF:231

*- Indicates value multiplied by 10 to include one decimal place. (I.e. BMS value of 500 indicates actual value 50.0)

15.4. Chiller/Compressor States

State values are read-only. Notable BACnet properties available: Number of States, State-Text (Contains character text of current state)

Magnum	BAC-net ID	BACnet Name	Modbus Register	N2
Chiller Unit State	MV:0	CHILLER STATE	30306	BYT:1
Compressor #1 State	MV:1	COMPRESSOR #1 STATE	30307	BYT:2
Compressor #2 State	MV:2	COMPRESSOR #2 STATE	30308	BYT:3
Compressor #3 State	MV:3	COMPRESSOR #3 STATE	30309	BYT:4
Compressor #4 State	MV:4	COMPRESSOR #4 STATE	30310	BYT:5
Compressor #5 State	MV:5	COMPRESSOR #5 STATE	30311	BYT:6
Compressor #6 State	MV:6	COMPRESSOR #6 STATE	30312	BYT:7
Compressor #7 State	MV:7	COMPRESSOR #7 STATE	30313	BYT:8
Compressor #8 State	MV:8	COMPRESSOR #8 STATE	30314	BYT:9
Compressor #9 State	MV:130	COMPRESSOR #9 STATE	30560	BYT:131
Compressor #10 State	MV:131	COMPRESSOR #10 STATE	30561	BYT:132
Compressor #11 State	MV:132	COMPRESSOR #11 STATE	30562	BYT:133
Compressor #12 State	MV:133	COMPRESSOR #12 STATE	30563	BYT:134
Compressor #13 State	MV:134	COMPRESSOR #13 STATE	30564	BYT:135
Compressor #14 State	MV:135	COMPRESSOR #14 STATE	30565	BYT:136
Compressor #15 State	MV:136	COMPRESSOR #15 STATE	30566	BYT:137
Compressor #16 State	MV:137	COMPRESSOR #16 STATE	30567	BYT:138
Compressor #17 State	MV:138	COMPRESSOR #17 STATE	30568	BYT:139
Compressor #18 State	MV:139	COMPRESSOR #18 STATE	30569	BYT:140
Compressor #19 State	MV:140	COMPRESSOR #19 STATE	30570	BYT:141
Compressor #20 State	MV:141	COMPRESSOR #20 STATE	30571	BYT:142

15.5. Other Points

These points are read-only.

Magnum	BACnet ID	BACnet Name	Modbus	N2
Wanted FLA%	AV:3	Wanted FLA%	30318	ADF:4
Steps Wanted	AV:4	Steps Wanted On	30315	ADF:5
Steps On	AV:5	Steps On	30316	ADF:6
Step Delay	AV:6	Step Delay	30317	ADF:7
Compressor #1 FLA%	AV:7	C1_FLA%	*30319	*ADF:8
Compressor #1 Sat Suction	AV:10	C1_Sat Suct	*30327	*ADF:11
Compressor #1 Sat Disch	AV:11	C1_Sat Disch	*30329	*ADF:12
Compressor #1 Disch SH	AV:12	C1_Disch SH	*30330	*ADF:13
Compressor #1 Suct SH	AV:13	C1_Suct SH	*30328	*ADF:14
Compressor #1 Oil Pres Diff	AV:63	C1_Oil Pres Diff	*30375	*ADF:64
Compressor #2 FLA%	AV:14	C2_FLA%	*30320	*ADF:15
Compressor #2 Sat Suction	AV:17	C2_Sat Suct	*30331	*ADF:18
Compressor #2 Sat Disch	AV:18	C2_Sat Disch	*30333	*ADF:19
Compressor #2 Disch SH	AV:19	C2_Disch SH	*30334	*ADF:20
Compressor #2 Suct SH	AV:20	C2_Suct SH	*30332	*ADF:21
Compressor #2 Oil Pres Diff	AV:64	C2_Oil Pres Diff	*30376	*ADF:65
Compressor #3 FLA%	AV:21	C3_FLA%	*30321	*ADF:22
Compressor #3 Sat Suction	AV:24	C3_Sat Suct	*30335	*ADF:25
Compressor #3 Sat Disch	AV:25	C3_Sat Disch	*30337	*ADF:26
Compressor #3 Disch SH	AV:26	C3_Disch SH	*30338	*ADF:27
Compressor #3 Suct SH	AV:27	C3_Suct SH	*30336	*ADF:28
Compressor #3 Oil Pres Diff	AV:65	C3_Oil Pres Diff	*30377	*ADF:66
Compressor #4 FLA%	AV:28	C4_FLA%	*30322	*ADF:29
Compressor #4 Sat Suction	AV:31	C4_Sat Suct	*30339	*ADF:32
Compressor #4 Sat Disch	AV:32	C4_Sat Disch	*30341	*ADF:33
Compressor #4 Disch SH	AV:33	C4_Disch SH	*30342	*ADF:34
Compressor #4 Suct SH	AV:34	C4_Suct SH	*30340	*ADF:35
Compressor #4 Oil Pres Diff	AV:66	C4_Oil Pres Diff	*30378	*ADF:67
Compressor #5 FLA%	AV:35	C5_FLA%	*30323	*ADF:36
Compressor #5 Sat Suction	AV:38	C5_Sat Suct	*30343	*ADF:39
Compressor #5 Sat Disch	AV:39	C5_Sat Disch	*30345	*ADF:40
Compressor #5 Disch SH	AV:40	C5_Disch SH	*30346	*ADF:41
Compressor #5 Suct SH	AV:41	C5_Suct SH	*30344	*ADF:42
Compressor #5 Oil Pres Diff	AV:67	C5_Oil Pres Diff	*30379	*ADF:68
Compressor #6 FLA%	AV:42	C6_FLA%	*30324	*ADF:43
Compressor #6 Sat Suction	AV:45	C6_Sat Suct	*30347	*ADF:46
Compressor #6 Sat Disch	AV:46	C6_Sat Disch	*30349	*ADF:47

Magnum	BACnet ID	BACnet Name	Modbus	N2
Compressor #6 Disch SH	AV:47	C6_Disch SH	*30350	*ADF:48
Compressor #6 Suct SH	AV:48	C6_Suct SH	*30348	*ADF:49
Compressor #6 Oil Pres Diff	AV:68	C6_Oil Pres Diff	*30380	*ADF:69
Compressor #7 FLA%	AV:49	C7_FLA%	*30325	*ADF:50
Compressor #7 Sat Suction	AV:52	C7_Sat Suct	*30351	*ADF:53
Compressor #7 Sat Disch	AV:53	C7_Sat Disch	*30353	*ADF:54
Compressor #7 Disch SH	AV:54	C7_Disch SH	*30354	*ADF:55
Compressor #7 Suct SH	AV:55	C7_Suct SH	*30352	*ADF:56
Compressor #7 Oil Pres Diff	AV:69	C7_Oil Pres Diff	*30381	*ADF:70
Compressor #8 FLA%	AV:56	C8_FLA%	*30326	*ADF:57
Compressor #8 Sat Suction	AV:59	C8_Sat Suct	*30352	*ADF:53
Compressor #8 Sat Suction	AV:59	C8_Sat Suct	*30355	*ADF:60
Compressor #8 Sat Disch	AV:60	C8_Sat Disch	*30357	*ADF:61
Compressor #8 Disch SH	AV:61	C8_Disch SH	*30358	*ADF:62
Compressor #8 Suct SH	AV:62	C8_Suct SH	*30356	*ADF:63
Compressor #8 Oil Pres Diff	AV:70	C8_Oil Pres Diff	*30382	*ADF:71
Compressor #9 FLA%	AV:440	C9_FLA%	*30572	*ADF:441
Compressor #9 Sat Suction	AV: 443	C9_Sat Suct	*30584	*ADF: 442
Compressor #9 Sat Disch	AV: 444	C9_Sat Disch	*30586	*ADF: 443
Compressor #9 Disch SH	AV: 445	C9_Disch SH	*30587	*ADF: 444
Compressor #9 Suct SH	AV: 446	C9_Suct SH	*30585	*ADF: 445
Compressor #9 Oil Pres Diff	AV:524	C9_Oil Pres Diff	*30656	*ADF:525
Compressor #10 FLA%	AV:447	C10_FLA%	*30573	*ADF:448
Compressor #10 Sat Suction	AV: 450	C10_Sat Suct	*30588	*ADF: 451
Compressor #10 Sat Disch	AV: 451	C10_Sat Disch	*30590	*ADF: 452
Compressor #10 Disch SH	AV: 452	C10_Disch SH	*30591	*ADF: 453
Compressor #10 Suct SH	AV: 453	C10_Suct SH	*30589	*ADF: 454
Compressor #10 Oil Pres Diff	AV:525	C10_Oil Pres Diff	*30657	*ADF:526
Compressor #11 FLA%	AV:454	C11_FLA%	*30574	*ADF:455
Compressor #11 Sat Suction	AV: 457	C11_Sat Suct	*30592	*ADF: 458
Compressor #11 Sat Disch	AV: 458	C11_Sat Disch	*30594	*ADF: 459
Compressor #11 Disch SH	AV: 459	C11_Disch SH	*30595	*ADF: 460
Compressor #11 Suct SH	AV: 460	C11_Suct SH	*30593	*ADF: 461
Compressor #11 Oil Pres Diff	AV: 526	C11_Oil Pres Diff	*30658	*ADF: 527
Compressor #12 FLA%	AV: 461	C12_FLA%	*30575	*ADF: 462
Compressor #12 Sat Suction	AV: 464	C12_Sat Suct	*30596	*ADF: 465
Compressor #12 Sat Disch	AV: 465	C12_Sat Disch	*30598	*ADF: 466
Compressor #12 Disch SH	AV: 466	C12_Disch SH	*30599	*ADF: 467
Compressor #12 Suct SH	AV: 467	C12_Suct SH	*30597	*ADF: 468
Compressor #12 Oil Pres Diff	AV:527	C12_Oil Pres Diff	*30659	*ADF:528

Magnum	BACnet ID	BACnet Name	Modbus	N2
Compressor #13 FLA%	AV:468	C13_FLA%	*30576	*ADF:469
Compressor #13 Sat Suction	AV: 471	C13_Sat Suct	*30600	*ADF: 470
Compressor #13 Sat Disch	AV: 472	C13_Sat Disch	*30602	*ADF: 473
Compressor #13 Disch SH	AV: 473	C13_Disch SH	*30603	*ADF: 474
Compressor #13 Suct SH	AV: 474	C13_Suct SH	*30600	*ADF: 475
Compressor #13 Oil Pres Diff	AV: 528	C13_Oil Pres Diff	*30661	*ADF: 529
Compressor #14 FLA%	AV: 475	C14_FLA%	*30577	*ADF: 476
Compressor #14 Sat Suction	AV: 478	C14_Sat Suct	*30604	*ADF: 479
Compressor #14 Sat Disch	AV: 479	C14_Sat Disch	*30606	*ADF: 480
Compressor #14 Disch SH	AV: 480	C14_Disch SH	*30607	*ADF: 481
Compressor #14 Suct SH	AV: 481	C14_Suct SH	*30605	*ADF: 482
Compressor #14 Oil Pres Diff	AV: 529	C14_Oil Pres Diff	*30661	*ADF: 530
Compressor #15 FLA%	AV: 482	C15_FLA%	*30578	*ADF: 483
Compressor #15 Sat Suction	AV: 485	C15_Sat Suct	*30608	*ADF: 486
Compressor #15 Sat Disch	AV: 486	C15_Sat Disch	*30610	*ADF: 487
Compressor #15 Disch SH	AV: 487	C15_Disch SH	*30611	*ADF: 488
Compressor #15 Suct SH	AV: 488	C15_Suct SH	*30609	*ADF: 489
Compressor #15 Oil Pres Diff	AV: 530	C15_Oil Pres Diff	*3062	*ADF: 531
Compressor #16 FLA%	AV: 489	C16_FLA%	*30579	*ADF: 490
Compressor #16 Sat Suction	AV: 492	C16_Sat Suct	*30612	*ADF: 493
Compressor #16 Sat Disch	AV: 493	C16_Sat Disch	*30614	*ADF: 494
Compressor #16 Disch SH	AV: 494	C16_Disch SH	*30615	*ADF: 495
Compressor #16 Suct SH	AV: 495	C16_Suct SH	*30613	*ADF: 496
Compressor #16 Oil Pres Diff	AV: 531	C16_Oil Pres Diff	*30663	*ADF: 532
Compressor #17 FLA%	AV: 496	C17_FLA%	*30580	*ADF: 497
Compressor #17 Sat Suction	AV: 499	C17_Sat Suct	*30616	*ADF: 500
Compressor #17 Sat Disch	AV: 500	C17_Sat Disch	*30618	*ADF: 501
Compressor #17 Disch SH	AV: 501	C17_Disch SH	*30619	*ADF: 502
Compressor #17 Suct SH	AV: 502	C17_Suct SH	*30617	*ADF: 503
Compressor #17 Oil Pres Diff	AV: 532	C17_Oil Pres Diff	*30664	*ADF: 533
Compressor #18 FLA%	AV: 503	C18_FLA%	*30581	*ADF: 504
Compressor #18 Sat Suction	AV: 506	C18_Sat Suct	*30620	*ADF: 507
Compressor #18 Sat Disch	AV: 507	C18_Sat Disch	*30622	*ADF: 508
Compressor #18 Disch SH	AV: 508	C18_Disch SH	*30623	*ADF: 509
Compressor #18 Suct SH	AV: 509	C18_Suct SH	*30621	*ADF: 510
Compressor #18 Oil Pres Diff	AV: 533	C18_Oil Pres Diff	*30665	*ADF: 534
Compressor #19 FLA%	AV: 510	C19_FLA%	*30582	*ADF: 511
Compressor #19 Sat Suction	AV: 513	C19_Sat Suct	*30624	*ADF: 514
Compressor #19 Sat Disch	AV: 514	C19_Sat Disch	*30626	*ADF: 515
Compressor #19 Disch SH	AV: 515	C19_Disch SH	*30627	*ADF: 516

Magnum	BACnet ID	BACnet Name	Modbus	N2
Compressor #19 Suct SH	AV: 516	C19_Suct SH	*30625	*ADF: 517
Compressor #19 Oil Pres Diff	AV: 534	C19_Oil Pres Diff	*30666	*ADF: 535
Compressor #20 FLA%	AV: 517	C20_FLA%	*30583	*ADF: 518
Compressor #20 Sat Suction	AV: 520	C20_Sat Suct	*30628	*ADF: 521
Compressor #20 Sat Disch	AV: 521	C20_Sat Disch	*30630	*ADF: 522
Compressor #20 Disch SH	AV: 522	C20_Disch SH	*30631	*ADF: 523
Compressor #20 Suct SH	AV: 523	C20_Suct SH	*30629	*ADF: 524
Compressor #20 Oil Pres Diff	AV: 535	C20_Oil Pres Diff	*30667	*ADF: 536

*- Indicates value multiplied by 10 to include one decimal place. (I.e. BMS value of 500 indicates actual value 50.0)

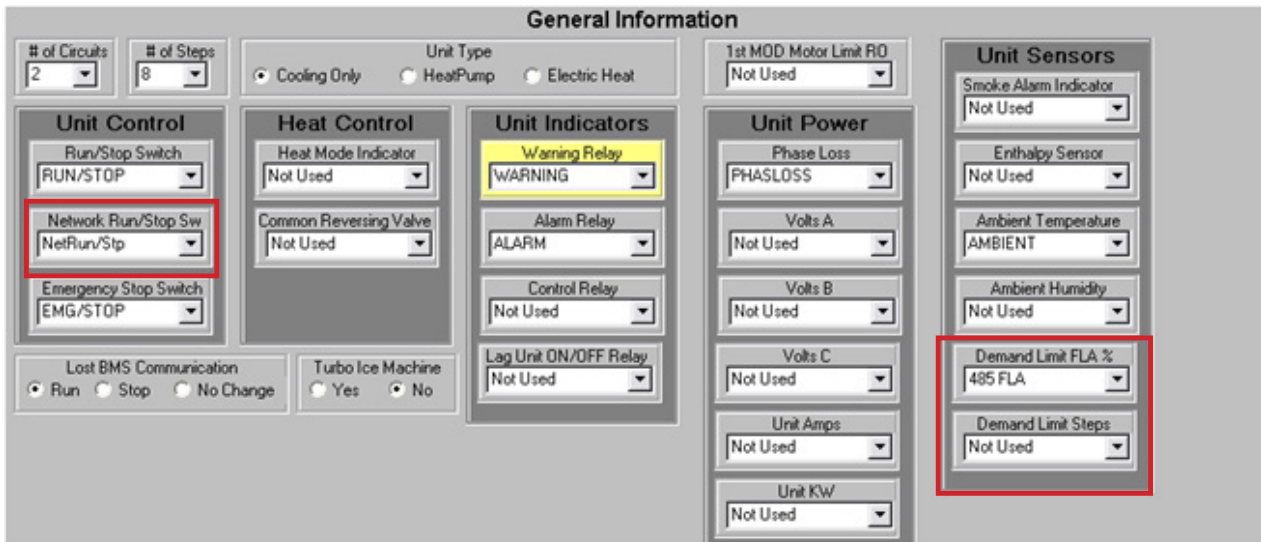
15.6. Network inputs to MCS-Magnum

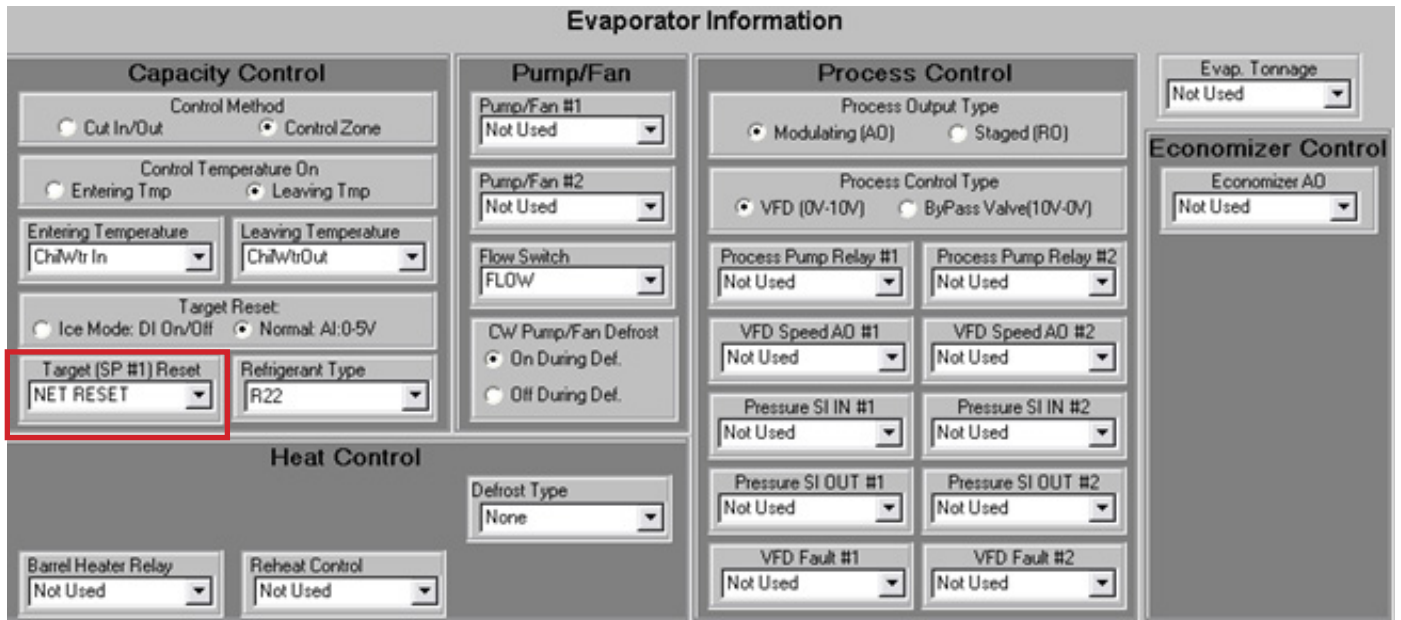
The MCS-Magnum can receive changes from the network to enable or disable the Network Run/Stop, Network Target Reset (adjustments to the Cooling Target, Setpoint #1, based on Setpoint #21), Network Demand FLA, and Network Demand Steps.

The MCS-Magnum must be setup to accept these inputs. The configuration file must contain a Network Run/Stop, Network Target, Network Demand FLA, and Network Demand Steps sensors.

Magnum	BACnet ID	BACnet Name	Modbus	N2
Network Run/Stop	AV:246	Net_R/S	40201	BO:247
Network Target/Reset	AV:247	Net_Tar/Res	40202	AO:248
Network Demand/FLA	AV:248	Net_Demad_FLA	40204	AO:249
Network Demand/Steps	AV:249	Net_Demad_Steps	40205	AO:250

The MCS-Magnum must be setup to accept these inputs. The configuration file in the MCS-Magnum must contain a Network Run/Stop, and /or Network Target Reset, and/or Network Demand FLA, and/or Network Demand Steps sensors. Note the following Information panel has a Network Run/ Stop, and /or Network Target Reset sensors inputs indicated. This is an example of how MCS-Config must be setup in the General Information and Evaporator Information panels.





The sensors must be set up as follows (This is only an example)

1-1	NET R/S	485 RUN	0	0	Not Used	Not Used	Not Used	Auto
1-2	NETTRS	485 CW RSET	0	0	Not Used	Not Used	Not Used	Auto
1-3	485FLA	485 Dmd FLA%	0	0	Not Used	Not Used	Not Used	Auto
1-4	485Steps	485 Dmd Step	0	0	Not Used	Not Used	Not Used	Auto

15.7. MCS Capacity Control State Chart

The values exposed in the capacity state relate to the descriptions in this table.

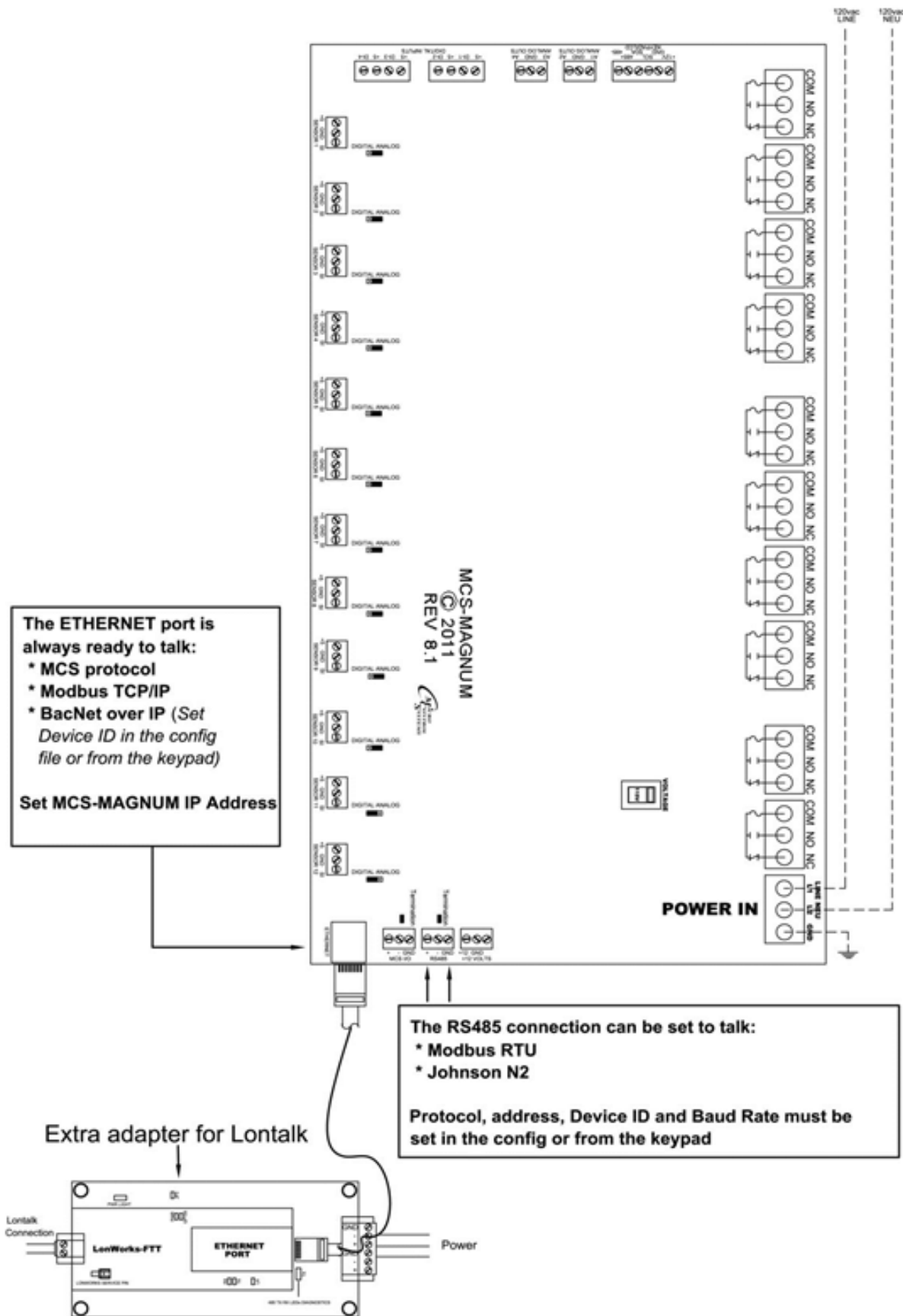
State Number	Description
0	“UNIT IN POWER UP”
1	RESERVED
2	“NO RUN- I/O LOST”
3	“UNIT IN LOCKOUT “
4	“UNIT IS OFF “
5	“UNIT IS HOLDING “
6	“UNIT UNLOADING “
7	“UNIT IS LOADING “
8	“NO RUN - SAFETY “
9	“RUN/STOP SW OFF “
10	“SCHEDULED OFF “
11	“OFF-NO FLOW(s)”
12	RESERVED
13	“AMBIENT OFF “
14	“PROCESS HEAT OFF”
15	“UNIT IS UNLOADED”
16	“UNIT IS LOADED “
17	“OFF TMP-ICE MADE “
18	“ECONOMIZER ONLY “
19	“SWITCHING MODES “
20	“UNIT SMOKE UNLDG”
21	“UNIT OFF UNLDING”
22	“UNIT DMD UNLDING”
23	“UNIT HEAT UNLDNG”

15.8. MCS Compressor Control State Chart

The values expressed in the compressor state relate to the descriptions in this table.

State Number	Description
0	"LOST IO LOCKED"
1	"CMP LOCKED OUT"
2	"SWITCHED OFF "
3	"CMP PUMP DOWN "
4	"CMP ANTICYCLE "
5	"CMP OFF/READY "
6	"OIL PMP LUBING"
7	"CMP IS RUNNING"
8	"CMP UNLOADED "
9	"UNLD1/HGBP OFF"
10	"PART LOADED "
11	"CMP IS HOLDING"
12	"CMP IS LOADING"
13	"CMP IS UNLDING"
14	"CMP IS AT 100%"
15	"FAST UNLOADING"
16	"LO SUCT UNLOAD"
17	"LO SUCT HOLD "
18	"HI DISC UNLOAD"
19	"HI DISC HOLD "
20	"SAFETY TRIPPED"
21	"LO TEMP UNLOAD"
22	"LO TEMP HOLD "
23	"HI AMP HOLD "
24	"HI DIS TMP HLD"
25	"CMP IS AT 40% "
26	"CMP IS AT 70% "
27	"HI WATER HOLD "
28	"EXTRA 70% STEP "
29	"OFF-LO OIL TMP "
30	"HI AMP UNLDING "
31	"DEF PREPMP OUT "
32	"DEFROSTING "
33	"DEF PUMP DOWN "
34	"HI TEMP UNLOAD "
35	"HI TEMP HOLD "
36	"SCROLL STEP1 "
37	"SCROLL STEP2 "
38	"SCROLL STEP3 "
39	"SCROLL STEP4 "

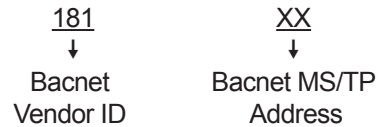
15.9. MCS-Magnum to BMS Connections



15.10. MCS-Magnum BMS protocols settings

15.10.1 Bacnet Over IP

The BACNET DEVICE ID is a five-digit number. The first three digits are based on our Bacnet vendor ID 181, and the last two are set by the Bacnet/MSTP address.



The Bacnet address can be verified and changed (with the proper authorization code) from the Keypad/LCD. The following steps will display the Bacnet MSTP Network address, and the Baud Rate:

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select RS485 Network then press Enter.
- Select Protocol then press Enter. Change the protocol to BACnet MSTP
- Select address then press Enter. Change the address so it matches the last two digits of the device ID then press Enter.
- Select Protocol then press Enter. Set the protocol back to MCS.

The following steps will display the Ethernet Network settings:

If you are going to manually assign the IP Address, Subnet Mask, and Default Gateway.

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select Ethernet Network then press Enter.
- Set "DHCP Enabled" to NO.
- Set the "IP Address".
- Set the "Subnet Mask".
- Set "Default Gateway".

If you are going to let your network assign the IP Address, Subnet Mask, and Default Gateway:

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select Ethernet Network then press Enter.
- Set "DHCP Enabled" to YES.
- Connect the MCS-Magnum to the network and power up the board.

15.10.2 Modbus RTU

The Modbus RTU address can be verified and changed (with the proper authorization code) from the keypad/LCD. The following steps will display the Modbus RTU Network address, and the Baud Rate:

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select RS485 Network then press Enter.
- Select Protocol then press Enter. Change the protocol to Modbus.
- Select address then press Enter. Change the address then press Enter.
- Select Baud then press Enter. Set the baud rate then press Enter.
- Connect the communication wires to the TX RS485 three-position terminal located above the Ethernet connector.

15.10.3 Modbus TCP/IP

This protocol is always active.

Make sure the MCS-Magnum network settings are set correctly.

If you are going to manually assign the IP Address, Subnet Mask, and Default Gateway.

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select Ethernet Network then press Enter.
- Set "DHCP Enabled" to NO.
- Set the "IP Address".
- Set the "Subnet Mask".
- Set "Default Gateway".

If you are going to let your network assign the IP Address, Subnet Mask, and Default Gateway.

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select Ethernet Network then press Enter.
- Set "DHCP Enabled" to YES.
- Connect the MCS-Magnum to the network and power up the board.

15.10.4 Johnson N2

The N2 address can be verified and changed (with the proper authorization code) from the keypad/LCD.

- Press the Menu key, select Serv Tools, and then press the Enter key.
- Select RS485 Network then press Enter.
- Select Protocol then press Enter. Change the protocol to N2.
- Select address then press Enter. Change the address then press Enter.
- Select Baud then press Enter. Set the baud rate then press Enter.
- Connect the communication wires to the TX RS485 three-position terminal located above the Ethernet connector.