
INSTALLATION INSTRUCTIONS

Modbus Supplemental Manual for LC6000 Controller

The LC6000 is capable of being remotely monitored through the integrated Ethernet port. Through this port the controller will respond to Modbus commands allowing access to setpoints, alarms, temperature measurements and humidity measurements for each zone.

The controller has the following connection settings:

Protocol: Modbus TCP/IP

Address: 1

Timeout: 3000 ms

IP Address: 192.168.0.14

Subnet: 255.255.255.0

The IP settings are defaulted to the values listed above; however, in general for remote monitoring of these values the IP settings will have to be adjusted to match the shelter network settings.

To change the IP settings of the LC6000:

1. Press and hold the ALARM and ENTER keys for 10 seconds.
2. Press the UP and DOWN keys to scroll to Settings (see Figure 1); press ENTER key.

Figure 1



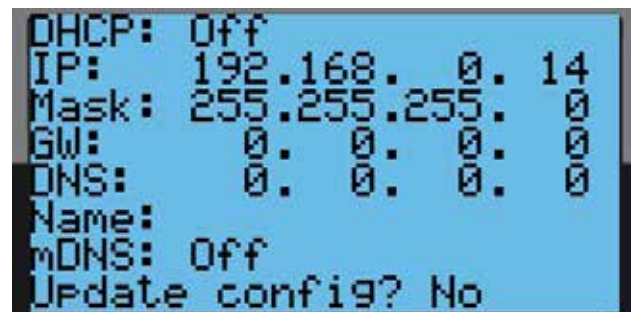
3. Press the UP and DOWN keys to scroll to TCP/IP Settings (see Figure 2); press ENTER key.

Figure 2



4. Press ENTER key to scroll down the screen (see Figure 3). Press the UP and DOWN keys to change the value of each parameter to match the setting required for the network the LC will be added to.

Figure 3



5. Once settings have been entered, change Update Config? from No to Yes to save the settings.

The units of the values retrieved during communication are determined by the controller unit of measure setting. This is configured on site and cannot be changed remotely.

For more information about how to use each of these values, please refer to the LC6000 manual.



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Modbus Register List – MULTI-TEC®

Standard List

Advanced List

Number	Name	Description	Format	Range	Register Type	Register	Comments
1	System On/Off	Used to disable the system (1 = Disable)	Off/On = 0/1	0-1	Coil	0	Current Status
2	Smoke	Smoke Input Value	Off/On = 0/1	0-1	Discrete Input	0	Current Smoke Alarm Status
3	Hydrogen	Hydrogen Input Value	Off/On = 0/1	0-1	Discrete Input	1	Current Hydrogen Alarm Status
4	Generator	Generator Input Value	Off/On = 0/1	0-1	Discrete Input	2	Current Generator Alarm Status
5	Z1 Humidity	Zone 1 Humidity	##### = #####.#	0-100%	Input Register	0	Current Zone 1 Humidity Sensor Value
6	Z2 Humidity	Zone 2 Humidity	##### = #####.#	0-100%	Input Register	2	Current Zone 2 Humidity Sensor Value
7	Z3 Humidity	Zone 3 Humidity	##### = #####.#	0-100%	Input Register	4	Current Zone 3 Humidity Sensor Value
8	Z1 Temperature	Zone 1 Temperature	##### = #####.#	-40 - 150	Input Register	6	Current Zone 1 Temperature Value
9	Z1 Remote Temperature	Zone 1 Remote Sensor	##### = #####.#	-40 - 150	Input Register	8	Current Remote Zone 1 Temperature Sensor Value
10	Z2 Remote Temperature	Zone 2 Remote Sensor	##### = #####.#	-40 - 150	Input Register	10	Current Remote Zone 2 Temperature Sensor Value
11	Z3 Remote Temperature	Zone 3 Remote Sensor	##### = #####.#	-40 - 150	Input Register	12	Current Remote Zone 3 Temperature Sensor Value
12	Total Units	Number of units connected to LC	##### = #####.#	1-14	Input Register	14	Total number on units connected to the LC6000
13	Humidifiers	Number and location of humidifiers	##### = #####.#	1-5	Input Register	15	This assigns Humidity Zone.1:=Zone 1, 2:=Zone2, 3:=Zone3, 4:=Zone 1 & 2, 5:= All Zones
14	Humidification Control Type	Type of humidifier control	##### = #####.#	0-1	Input Register	16	on/off- modulating 0:=ON/Off, 1:= Modulating
15	Staging Method	Type of staging for wall units	##### = #####.#	0-1	Input Register	17	This changes the staging type from unit rotation to temperature priority
16	Unit of Measure	Unit of measure for system	##### = #####.#	1-5	Input Register	18	This sets the measured values to either Metric or US units. 1:=SI, 2:=USA, 3:=UK, 4:=Can., 5:= LON
17	Zone 1 Cool Setpoint	Cooling setpoint for Zone 1	##### = #####.#	67-90	Holding Register	0	This is the cooling setpoint for Zone 1
18	Zone 1 Heat Setpoint	Heating Setpoint for Zone 1	##### = #####.#	28-66	Holding Register	2	This is the heating setpoint for Zone 1
19	Zone 2 Cool Setpoint	Cooling Setpoint for Zone 2	##### = #####.#	67-90	Holding Register	4	This is the cooling setpoint for Zone 2
20	Zone 2 Heat Setpoint	Heating Setpoint for Zone 2	##### = #####.#	28-66	Holding Register	6	This is the heating setpoint for Zone 2
21	Zone 3 Cool Setpoint	Cooling Setpoint for Zone 3	##### = #####.#	67-90	Holding Register	8	This is the cooling setpoint for Zone 3
22	Zone 3 Heat Setpoint	Heating Setpoint for Zone 3	##### = #####.#	28-66	Holding Register	10	This is the heating setpoint for Zone 3

Number	Name	Description	Format	Range	Register Type	Register	Comments
23	Zone 1 Hum Setpoint	Humidification setpoint for Zone 1	##### = #####.#	0-45	Holding Register	12	This is the Humidification setpoint for zone 1
24	Zone 1 Dehum Setpoint	Dehumidification setpoint for Zone 1	##### = #####.#	46-99	Holding Register	14	This is the Dehumidification setpoint for zone 1
25	Zone 2 Hum Setpoint	Humidification setpoint for Zone 2	##### = #####.#	0-45	Holding Register	16	This is the Humidification setpoint for zone 2
26	Zone 2 Dehum Setpoint	Dehumidification setpoint for Zone 2	##### = #####.#	46-99	Holding Register	18	This is the Dehumidification setpoint for zone 2
27	Zone 3 Hum Setpoint	Humidification setpoint for Zone 3	##### = #####.#	0-45	Holding Register	20	This is the Humidification setpoint for zone 3
28	Zone 3 Dehum Setpoint	Dehumidification setpoint for Zone 3	##### = #####.#	46-99	Holding Register	22	This is the Dehumidification setpoint for zone 3
29	Low Temperature Alarm Setpoint	Low Temperature Setpoint for Zones	##### = #####.#	28-65	Holding Register	24	This is the low temperature alarm setpoint for all zones
30	High Temperature Alarm Setpoint	High Temperature Setpoint for Zones	##### = #####.#	70-120	Holding Register	26	This is the high temperature alarm setpoint for all zones
31	High Temperature 2 Alarm Setpoint	High Temperature Setpoint for Zones	##### = #####.#	70-120	Holding Register	28	This is the second high temperature alarm setpoint for all zones
32	Alarm Delay	Alarm Delay for temperature alarms	##### = #####.#	0-999	Holding Register	30	This is the alarm delay in seconds for all alarms.
33	Low Humidity Setpoint	Low Humidity Setpoint for Zones	##### = #####.#	0-45	Holding Register	32	This is the low humidity alarm setpoint for all zones
34	High Humidity Setpoint	High Humidity Setpoint for Zones	##### = #####.#	46-99	Holding Register	34	This is the high humidity alarm setpoint for all zones
35	Z1 Continuous Fan	Continuous Fan Operation for Zone 1	##### = #####.#	0-2	Holding Register	36	Sets unit continuous blower mode in Zone1 (0 = none, 1 = Active, 2 = All)
36	Z2 Continuous Fan	Continuous Fan Operation for Zone 2	##### = #####.#	0-2	Holding Register	38	Sets unit continuous blower mode in Zone2 (0 = none, 1 = Active, 2 = All)
37	Z3 Continuous Fan	Continuous Fan Operation for Zone 3	##### = #####.#	0-2	Holding Register	40	Sets unit continuous blower mode in Zone3 (0 = none, 1 = Active, 2 = All)
38	Z1 Cool Diff Up	Cooling Differential Up for Zone 1	##### = #####.#	0-5	Holding Register	42	The temperature differential above the setpoint required before turn on for Zone 1.
39	Z1 Cool Diff Dn	Cooling Differential Dn for Zone 1	##### = #####.#	0-5	Holding Register	44	The temperature differential below the setpoint required before turn off for Zone 1.
40	Z1 Cool Delay Up	Cooling Delay Up for Zone 1	##### = #####.#	30-300	Holding Register	46	The minimum time required above the up differential before the stage will energize for Zone 1.

Number	Name	Description	Format	Range	Register Type	Register	Comments
41	Z1 Cool Delay Dn	Cooling Delay Dn for Zone 1	##### = #####. #	30-300	Holding Register	48	The minimum time required below the down differential before the stage will deenergize for Zone 1.
42	Z2 Cool Diff Up	Cooling Differential Up for Zone 2	##### = #####. #	0-5	Holding Register	50	The temperature differential above the setpoint required before turn on for Zone 2.
43	Z2 Cool Diff Dn	Cooling Differential Dn for Zone 2	##### = #####. #	0-5	Holding Register	52	The temperature differential below the setpoint required before turn off for Zone 2.
44	Z2 Cool Delay Up	Cooling Delay Up for Zone 2	##### = #####. #	30-300	Holding Register	54	The minimum time required above the up differential before the stage will energize for Zone 2.
45	Z2 Cool Delay Dn	Cooling Delay Dn for Zone 2	##### = #####. #	30-300	Holding Register	56	The minimum time required below the down differential before the stage will deenergize for Zone 2.
46	Z3 Cool Diff Up	Cooling Differential Up for Zone 3	##### = #####. #	0-5	Holding Register	58	The temperature differential above the setpoint required before turn on for Zone 3.
47	Z3 Cool Diff Dn	Cooling Differential Dn for Zone 3	##### = #####. #	0-5	Holding Register	60	The temperature differential below the setpoint required before turn off for Zone 3.
48	Z3 Cool Delay Up	Cooling Delay Up for Zone 3	##### = #####. #	30-300	Holding Register	62	The minimum time required above the up differential before the stage will energize for Zone 3.
49	Z3 Cool Delay Dn	Cooling Delay Dn for Zone 3	##### = #####. #	30-300	Holding Register	64	The minimum time required below the down differential before the stage will deenergize for Zone 3.
50	Z1 Heat Diff Up	Heating Differential Up for Zone 1	##### = #####. #	0-5	Holding Register	66	The temperature differential above the setpoint required before heat turn on for Zone 1.
51	Z1 Heat Diff Dn	Heating Differential Dn for Zone 1	##### = #####. #	0-5	Holding Register	68	The temperature differential below the setpoint required before heat turn off for Zone 1.
52	Z1 Heat Delay Up	Heating Delay Up for Zone 1	##### = #####. #	30-300	Holding Register	70	The minimum time required above the up differential before the stage will energize for Zone 1.
53	Z1 Heat Delay Dn	Heating Delay Dn for Zone 1	##### = #####. #	30-300	Holding Register	72	The minimum time required below the down differential before the stage will deenergize for Zone 1.
54	Z2 Heat Diff Up	Heating Differential Up for Zone 2	##### = #####. #	0-5	Holding Register	74	The temperature differential above the setpoint required before heat turn on for Zone 2.

Number	Name	Description	Format	Range	Register Type	Register	Comments
55	Z2 Heat Diff Dn	Heating Differential Dn for Zone 2	##### = #####. #	0-5	Holding Register	76	The temperature differential below the setpoint required before heat turn off for Zone 2.
56	Z2 Heat Delay Up	Heating Delay Up for Zone 2	##### = #####. #	30-300	Holding Register	78	The minimum time required above the up differential before the stage will energize for Zone 2.
57	Z2 Heat Delay Dn	Heating Delay Dn for Zone 2	##### = #####. #	30-300	Holding Register	80	The minimum time required below the down differential before the stage will deenergize for Zone 2.
58	Z3 Heat Diff Up	Heating Differential Up for Zone 3	##### = #####. #	0-5	Holding Register	82	The temperature differential above the setpoint required before heat turn on for Zone 3.
59	Z3 Heat Diff Dn	Heating Differential Dn for Zone 3	##### = #####. #	0-5	Holding Register	84	The temperature differential below the setpoint required before heat turn off for Zone 3.
60	Z3 Heat Delay Up	Heating Delay Up for Zone 3	##### = #####. #	30-300	Holding Register	86	The minimum time required above the up differential before the stage will energize for Zone 3.
61	Z3 Heat Delay Dn	Heating Delay Dn for Zone 3	##### = #####. #	30-300	Holding Register	88	The minimum time required below the down differential before the stage will deenergize for Zone 3.
62	Cool Stage 1 On	Cooling Stage 1 Differential Up	##### = #####. #	-5 to 5	Holding Register	90	The temperature differential above the setpoint required before stage 1 cooling turn on for LC.
63	Cool Stage 1 Off	Cooling Stage 1 Differential Down	##### = #####. #	-5 to 5	Holding Register	92	The temperature differential below the setpoint required before stage 1 cooling turn off for LC.
64	Cool Stage 2 On	Cooling Stage 2 Differential Up	##### = #####. #	-5 to 5	Holding Register	94	The temperature differential above the setpoint required before stage 2 cooling turn on for LC.
65	Cool Stage 2 Off	Cooling Stage 2 Differential Down	##### = #####. #	-5 to 5	Holding Register	96	The temperature differential below the setpoint required before stage 2 cooling turn off for LC.
66	Cool Stage 3 On	Cooling Stage 3 Differential Up	##### = #####. #	-5 to 5	Holding Register	98	The temperature differential above the setpoint required before stage 3 cooling turn on for LC.
67	Cool Stage 3 Off	Cooling Stage 3 Differential Down	##### = #####. #	-5 to 5	Holding Register	100	The temperature differential below the setpoint required before stage 3 cooling turn off for LC.
68	Heat Stage 1 On	Heating Stage 1 Differential Up	##### = #####. #	-5 to 5	Holding Register	102	The temperature differential below the setpoint required before heat turn off for Zone 1.

Number	Name	Description	Format	Range	Register Type	Register	Comments
69	Heat Stage 1 Off	Heating Stage 1 Differential Down	##### = #####.#	-5 to 5	Holding Register	104	The temperature differential above the setpoint required before heat turn on for Zone 1.
70	Heat Stage 2 On	Heating Stage 2 Differential Up	##### = #####.#	-5 to 5	Holding Register	106	The temperature differential below the setpoint required before heat turn off for Zone 2.
71	Heat Stage 2 Off	Heating Stage 2 Differential Down	##### = #####.#	-5 to 5	Holding Register	108	The temperature differential above the setpoint required before heat turn on for Zone 2.
72	Heat Stage 3 On	Heating Stage 3 Differential Up	##### = #####.#	-5 to 5	Holding Register	110	The temperature differential below the setpoint required before heat turn off for Zone 3.
73	Heat Stage 3 Off	Heating Stage 3 Differential Down	##### = #####.#	-5 to 5	Holding Register	112	The temperature differential above the setpoint required before heat turn on for Zone 3.
74	Indoor Temperature Sensor Zone 1	Indoor Temperature Sensor Zone 1 Failure	Off/On = 0/1	0-1	Discrete Input	3	Displays a 1 if the primary temperature in Zone 1 has failed.
75	Remote Temperature Sensor Zone 1	Remote Temperature Sensor Zone 1 Failure	Off/On = 0/1	0-1	Discrete Input	4	Displays a 1 if the remote temperature in Zone 1 has failed.
76	Remote Temperature Sensor Zone 2	Remote Temperature Sensor Zone 2 Failure	Off/On = 0/1	0-1	Discrete Input	5	Displays a 1 if the remote temperature in Zone 2 has failed.
77	Remote Temperature Sensor Zone 3	Remote Temperature Sensor Zone 3 Failure	Off/On = 0/1	0-1	Discrete Input	6	Displays a 1 if the remote temperature in Zone 3 has failed.
78	Indoor Humidity Zone 1 Fail	Indoor Humidity Sensor Zone 1 Failure	Off/On = 0/1	0-1	Discrete Input	7	Displays a 1 if the humidity sensor in Zone 1 has failed.
79	Indoor Humidity Zone 2 Fail	Indoor Humidity Sensor Zone 2 Failure	Off/On = 0/1	0-1	Discrete Input	8	Displays a 1 if the humidity sensor in Zone 2 has failed.
80	Indoor Humidity Zone 3 Fail	Indoor Humidity Sensor Zone 3 Failure	Off/On = 0/1	0-1	Discrete Input	9	Displays a 1 if the humidity sensor in Zone 3 has failed.
81	Low Temperature Zone 1	Zone 1 Low Temperature	Off/On = 0/1	0-1	Discrete Input	10	Displays a 1 if a low temperature alarm exists in Zone 1.
82	High Temperature Zone 1	Zone 1 High Temperature	Off/On = 0/1	0-1	Discrete Input	11	Displays a 1 if a first stage high temperature alarm exists in Zone 1.
83	High Temperature Zone 2	Zone 2 High Temperature	Off/On = 0/1	0-1	Discrete Input	12	Displays a 1 if a second stage high temperature alarm exists in Zone 1.
84	Low Temperature Zone 2	Zone 2 Low Temperature	Off/On = 0/1	0-1	Discrete Input	13	Displays a 1 if a low temperature alarm exists in Zone 2.
85	High Temperature Zone 2	Zone 2 High Temperature	Off/On = 0/1	0-1	Discrete Input	14	Displays a 1 if a first stage high temperature alarm exists in Zone 2.
86	High Temperature Zone 2	Zone 2 High Temperature 2	Off/On = 0/1	0-1	Discrete Input	15	Displays a 1 if a second stage high temperature alarm exists in Zone 2.

Number	Name	Description	Format	Range	Register Type	Register	Comments
87	Low Temperature Zone 3	Zone 3 Low Temperature	Off/On = 0/1	0-1	Discrete Input	16	Displays a 1 if a low temperature alarm exists in Zone 3.
88	High Temperature Zone 3	Zone 3 High Temperature	Off/On = 0/1	0-1	Discrete Input	17	Displays a 1 if a first stage high temperature alarm exists in Zone 3.
89	High Temperature 2 Zone 3	Zone 3 High Temperature 2	Off/On = 0/1	0-1	Discrete Input	18	Displays a 1 if a second stage high temperature alarm exists in Zone 3.
90	Humidity High/Low Alarm	Humidity Alarm	Off/On = 0/1	0-1	Discrete Input	19	Displays a 1 if a humidity alarm exists in any zone.
91	Zone 1 Wall Unit Alarm	Zone 1 Wall Unit Alarm	Off/On = 0/1	0-1	Discrete Input	20	Displays a 1 if an alarm exists in one of the Units in Zone 1.
92	Zone 2 Wall Unit Alarm	Zone 2 Wall Unit Alarm	Off/On = 0/1	0-1	Discrete Input	21	Displays a 1 if an alarm exists in one of the Units in Zone 2.
93	Zone 3 Wall Unit Alarm	Zone 3 Wall Unit Alarm	Off/On = 0/1	0-1	Discrete Input	22	Displays a 1 if an alarm exists in one of the Units in Zone 3.
94	Smoke Alarm	Smoke Alarm	Off/On = 0/1	0-1	Discrete Input	23	Displays a 1 if smoke sensor detects smoke above the acceptable limit as determined by the smoke detector.
95	Hydrogen Alarm	Hydrogen Alarm	Off/On = 0/1	0-1	Discrete Input	24	Displays a 1 if hydrogen sensor detects hydrogen above the acceptable limit as determined by the hydrogen sensor limit.
96	Generator Alarm	Generator Alarm	Off/On = 0/1	0-1	Discrete Input	25	Displays a 1 if generator is running.