



IMPORTANT INSTRUCTIONS - SAVE THESE INSTRUCTIONS

Read all instructions before installing or using the heater. Please adhere to instructions published in this manual. Failure to do so may be dangerous and may void certain provisions of your warranty.



Multi-Heater Energy Management System (EMS)

Installation & Operation Manual



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A. MULTI-HEATER ENERGY MANAGEMENT SYSTEM (EMS) OVERVIEW

A.1 Overview

The Multi-Heater Energy Management System (EMS) ensures heaters are turned on only when there is freezing rain or snow, and run them as long as necessary to keep switches clear.

The Multi-Heater EMS monitors the heaters' function and indicates alarm, with a contact closure, in the event of a problem.

A.2 Compatible Switch Heaters

The Multi-Heater EMS is compatible with the following heaters:

- Mark V Micro Series Gas Fired
- Mark VI Series Gas Fired
- Mark VII Series Gas Fired Propane Engine Driven
- Yard Master Series Gas Fired
- HF400 Series Gas Fired
- HF900 Series Gas Fired
- Special Applications

A.3 Multi-Heater EMS Key Components

1. The Multi-Heater Energy Management System is comprised of the EMS Board and Siemens LOGO!:
 - 1.1 The EMS Board (15919) provides all environmental inputs such as ambient temperature and precipitation, switch warm and low temperature set points.
 - 1.2 The Siemens LOGO! receives information from the EMS board which turns the heaters on and off according to the programmable parameters, and provides indication to the dispatcher.

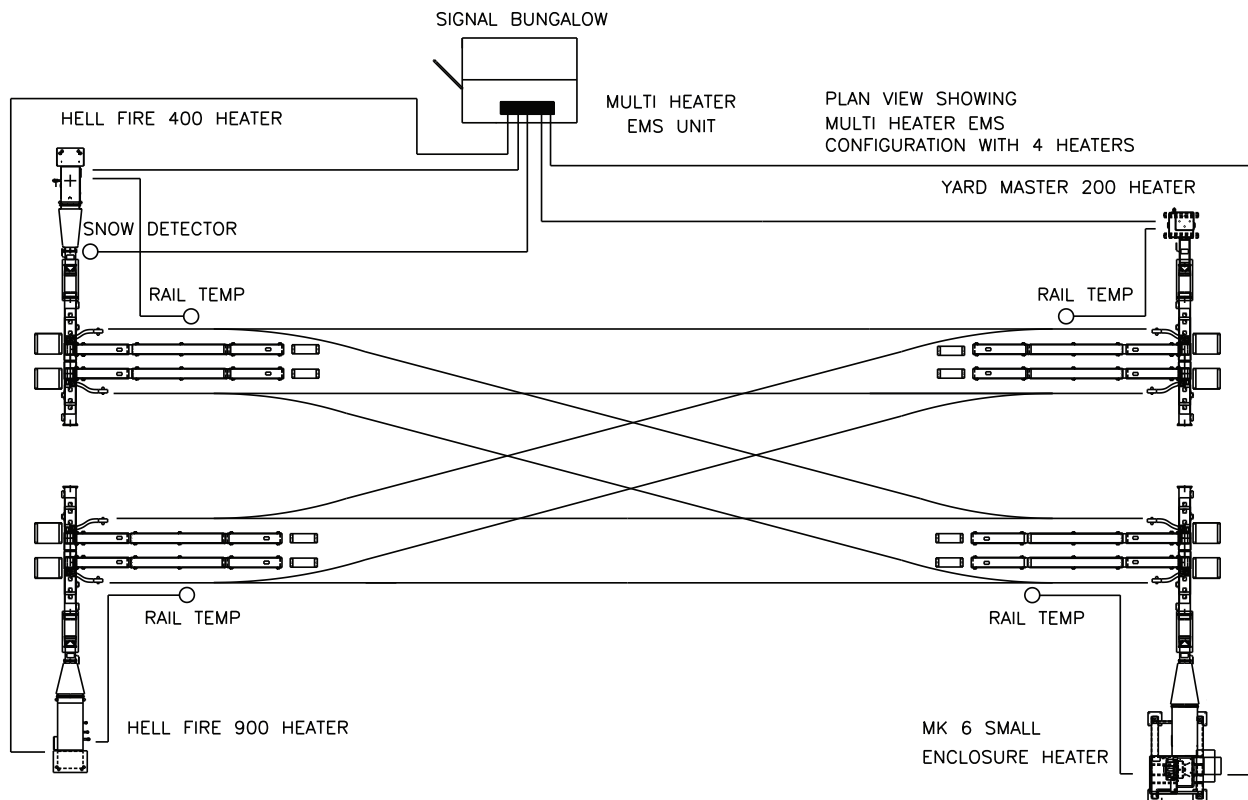
A.4 Multi-Heater EMS Inputs and Outputs

1. Inputs:
 - A precipitation sensor, to detect snow or rain
 - An ambient air temperature sensor
 - Dispatcher input
 - Low temperature cut out enable switch
 - Switch warming temperature enable switch
 - Run indication for each connected heater
 - Manual timed 'ON'
 - EMS enable / disable
 - Test switch
2. Outputs:
 - 6 heater control contacts
 - Dispatch heater 'RUN' indication contact
 - Dispatch heater 'ALARM' indication contact

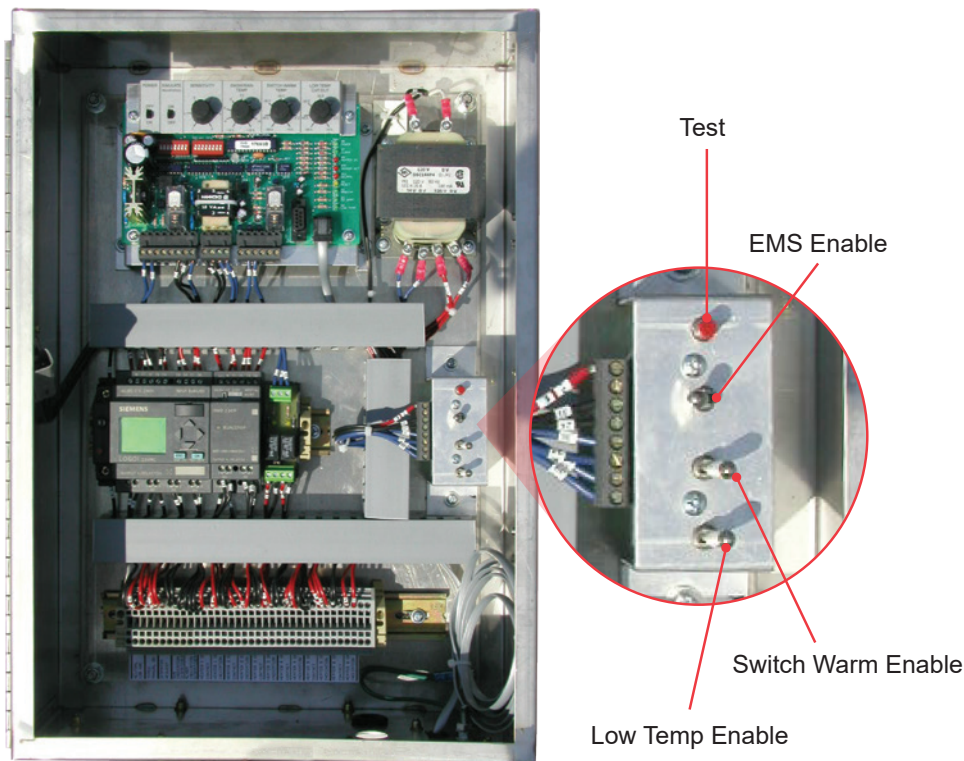
A.5 Multi-Heater EMS Capabilities

The Multi-Heater EMS is ideal for double or triple crossovers and yard situations with up to six heaters.

1. The Multi-Heater EMS controls up to 6 heaters independent of each other. This simplifies the wiring between the heaters and Multi-Heater EMS. Only one set of sensors are needed. A second precipitation sensor can be added.
2. Indication to dispatch is provided and maintained by the Multi-Heater EMS.
3. The Multi-Heater EMS controls all heaters turning them on and off as required.
4. In an alarm situation, the Multi-Heater EMS indicates an alarm to dispatch. While the Multi-Heater EMS continues to request the faulty heater to dispatch, it continues to control all other heaters according to conditions.
5. Manually adjustable parameters make the Multi-Heater EMS easy to use. These parameters also provide the ability to fine tune the heating system to specific Rail Road location needs.



B. MULTI-HEATER EMS FUNCTIONS



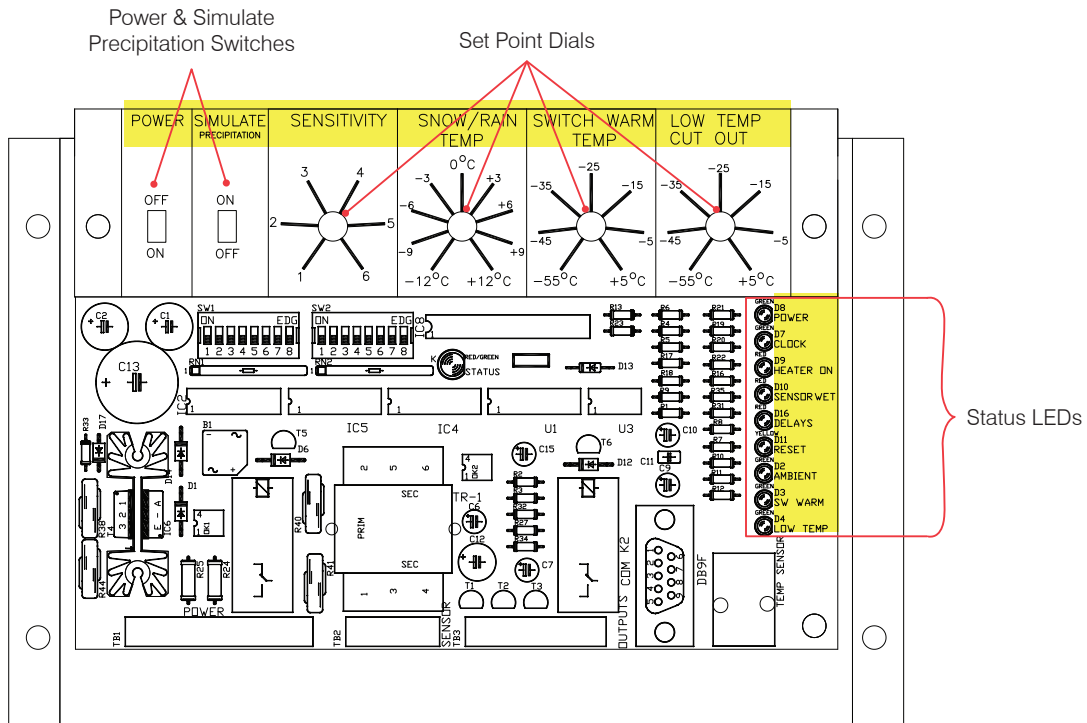
B.1 Multi-Heater EMS Functions

The available Multi-Heater EMS functions are described below. For parameter adjustments, see Section C - EMS Board Overview, D.3 - Parameters.

Function	Description
NORMAL	Snow is detected when the precipitation sensor detects moisture and the ambient temperature is below freezing (the snow/rain set point). Whenever snow is detected for more than the duration of the delay on period, the heaters are started, dispatch indication contact is closed, and they continue to run as long as snow is detected. Once the snow stops the heaters continue to run for the duration of the delay off period, then the indication contact is opened.
TIMED DISPATCH	When enabled, heaters requested by dispatch are turned off after an adjustable run time by the EMS, saving fuel and excess run time. Once turned off, the EMS continues to control the heaters according to the environmental conditions. The dispatcher can re-request the heaters for additional run time. If the function is disabled the heaters run as long as requested by dispatch.
SWITCH WARM	When enabled, the EMS cycles the heater regardless of detecting snow. The ambient temperature has to be below the SWITCH WARM TEMP set point for the duration of the wait period. Toggle switch SW3 enables this function. This function is effective at clearing hard to detect drifting snow and fallen ice debris from passing trains.

Function	Description
LOW TEMPERATURE CUT OFF	Propane does not vaporize below -42°C (44°F). When enabled the EMS can avoid nuisance alarm shut downs and subsequent manual reset of propane fired heaters due to low ambient temperatures and tank vapour pressure. The EMS stops the heaters when the ambient temperature drops below the LOW TEMP set point. If requested by dispatch, indication is maintained. Toggle switch SW4 enables this function.
HEART BEAT	When enabled, this function starts the heaters periodically to verify their operation. No run indication is made to dispatch. If a heater fails, the EMS closes the alarm indication contact. In the function two timers are available. A yearly timer, B06, to set the month and day when to start and stop the function. The weekly timer, B07, to set the day and time when the function is to test the heaters.
TIMED MANUAL	By installing a momentary push button at a convenient location, local track personnel can start and stop the heaters without accessing the EMS. The run time is limited and stops the heaters if left running. No indication is made. If a heater fails, then the EMS indicates alarm to dispatch.
TEST	Pressing the "TEST" button, located inside the EMS, starts all the heaters. Used to verify and troubleshoot the connections between the EMS and the heaters.

C. EMS BOARD OVERVIEW



C.1 Operation and Adjustments

- Set Point Dials:** The EMS board (15919) monitors environmental conditions based on various set points. All set points are easily adjustable by dials located at the top of the EMS board. These set points, when triggered by environmental conditions, send out a signal to the controller to turn the heaters on.
- Power Switch and Moisture Simulation Switch:** The power switch and a moisture simulation switch enable resetting or disabling the EMS and aid in troubleshooting.
- LED Lights:** On the right side of the EMS board there are a number of LED lights which indicate the status of the EMS board.
- 'SENSITIVITY'**
This dial is used to adjust the sensitivity of the precipitation sensor. 6 is maximum sensitivity and 1 is least sensitive. Factory set at 3.5.
- 'SNOW-RAIN TEMP'**
Adjustable set point, from -12°C to 12°C (10°F to 54°F). If the ambient temperature is below this set point and the EMS sees any moisture as snow it will turn the heater ON. Above this set point, if it detects rain it will not turn the heater ON.
- 'SWITCH WARM TEMP'**
This set point turns the 'SWITCH WARM' function ON or OFF. When the ambient temperature is below this set point, for an adjustable time in hours, the EMS will turn the heaters ON for a specified period of time (see C.1.7. DELAY ON, DELAY OFF. DIP SWITCHES).
- 'LOW TEMP CUT OUT'**
This set point determines the temperature at which the heater will be turned OFF. Usually set to -35°C (-31°F).



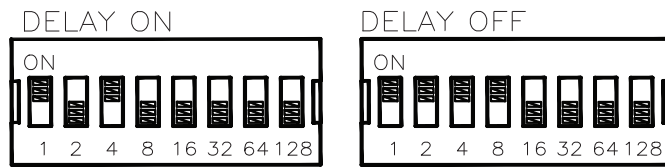
CAUTION. Turn off electrical service prior to installation. Risk of personal injury.

NOTE: Refer to schematic inside door for electrical connections.

C.2 Switches & Dials

- 'POWER ON/OFF'** This allows you to turn OFF/ON the EMS. This switch is also used to reset the EMS in case of a lockout.
 - 'SIMULATE PRECIPITATION ON/OFF'**
This is normally OFF. To simulate moisture (snow or rain) move the switch to ON. The EMS receives a signal that the sensor is wet. This switch is used to test and troubleshoot the EMS.
- NOTE:** Propane gas does not provide adequate vapour pressure below -40°C/F. By disabling the heater at temperatures below the set point, alarm shutdown and manual resets are avoided.
- NOTE:** Natural gas fired heaters or propane tanks with tank heaters DO NOT require this feature and the set point can be lowered to the minimum of -55°C (-67°F).

7. 'DELAY ON', 'DELAY OFF' DIP SWITCHES ON THE BOARD



These switches are used to set the DELAY ON and DELAY OFF times for EMS operation. The value of the time is calculated by adding the binary code value of the actual switch. Minimum step is one minute. The values are 1, 2, 4, 8, 16, 32, 64, and 128 and any combination between, and up to 255 minutes. Example shown has 5 minutes delay on and 15 minutes delay off.

C.3 Status LEDs

Status LED	Description
POWER	Indicates 12V DC present on the board
CLOCK	Blinking once a second means clock is working
HEATER ON	Heater relay is energized. Heaters requested to run
SENSOR WET	Indicates when the sensor is wet or simulated wet

Status LED	Description
DELAYS	Shows Delay Status: - Dark: No delay time active - Lit: Delay time active. Either delay off or delay on time - If 'HEATER ON' LED is dark - delay on time - If 'HEATER ON' LED is lit - delay off time - Blinking: Delay time reset to zero
RESET	Not applicable.
AMBIENT	Ambient temperature is below SNOW/RAIN TEMP and sensor is wet
SW WARM	Ambient temperature is below SWITCH WARM set point. Activates the SWITCH WARM function.
LOW TEMP	When the ambient temperature drops below the LOW TEMP set point, the EMS turns off the heaters to avoid a loss of flame signal alarm due to inadequate gas supply pressure. HEATER ON LED is dark. The heaters are allowed to operate again once the temperature rises above the set point.
STATUS	The STATUS LED shows the state of the EMS processor. - Green with a red flash indicates normal function. - Toggle red green once a second indicates the reset timer is running. - Solid red indicates the EMS board is in alarm and must be reset.

D. SIEMENS LOGO! OVERVIEW

D.1 Siemens LOGO!

- Monitors the inputs at all times and turns the heaters ON or OFF accordingly
- Provides the RUN and ALARM indication to the dispatcher
- Display indicates heater status and messages

The Siemens LOGO! is installed with one extension module. The extension module provides additional inputs and outputs as described in D.2 Siemens LOGO! Inputs and Outputs.

D.2 Inputs and Outputs

Output	
1	Run indication to dispatcher
2	Alarm indication to dispatcher
3	Heater 1 control contact
4	Heater 2 control contact
5	Heater 3 control contact
6	Heater 4 control contact
7	Heater 5 control contact
8	Heater 6 control contact

Input	
1	EMS board heater request relay
2	Switch warm relay
3	Low temp relay
4	Dispatch request
5	Test cycle switch
6	Timed manual
7	Heater 1 run indication
8	Heater 2 run indication
9	Heater 3 run indication
10	Heater 4 run indication
11	Heater 5 run indication
12	Heater 6 run indication

D.3 Parameters

The Siemens LOGO! has a number of adjustable parameters. See table below.

Parameter	Title	Description	Default
B01	Dispatch timer enable	Software switch used to turn the Dispatch timer function ON or OFF.	OFF
B02	Dispatch run time	When the dispatch timer function is ON, this is the length of time the heaters will run when requested by dispatcher. Once the run time expires, the heaters are turned off.	30 minutes (0 - 99 minutes)
B03	Manual run time	A push button function for track personal. Once pressed the EMS turns on all heaters for an adjustable time. No indication is provided to dispatcher.	30 minutes (0 - 99 minutes)
B04	Switch warm function timer	"COLD TIME", is the time the ambient temperature MUST be below the "SW TEMP" set point. "RUN TIME", is the time that the heaters are run after the "COLD TIME" expires.	24 hours (0 - 99 minutes) 30 minutes (0 - 99 minutes)
B05	HEART BEAT function enable	This software switch turns the heart beat function on or off.	OFF
B06	Year timer	The period of the year the heart beat function is active.	Oct 1 - Apr 1 Jan 1 - Dec 31
B07	Weekly timer	Select the days of the week to test the heaters, and set the test time and duration.	Monday to Sunday inclusive 4:00 - 4:30 (0:00 - 24:00)
B08	Test cycle timer	Turns on all heaters regardless of conditions. Used to test the EMS connections to the heaters.	10 minutes (0 - 99 minutes)
B13	HEATER 3 enable	Enables control of heater 3.	OFF
B14	HEATER 4 enable	Enables control of heater 4.	OFF
B15	HEATER 5 enable	Enables control of heater 5.	OFF
B16	HEATER 6 enable	Enables control of heater 6.	OFF
B21	HEATER 1 delay start timer	Used to stagger start the heaters.	0 seconds (0 - 99 seconds)
B22	HEATER 2 delay start timer		5 seconds (0 - 99 seconds)
B23	HEATER 3 delay start timer		10 seconds (0 - 99 seconds)
B24	HEATER 4 delay start timer		0 seconds (0 - 99 seconds)
B25	HEATER 5 delay start timer		0 seconds (0 - 99 seconds)
B26	HEATER 6 delay start timer		0 seconds (0 - 99 seconds)

D.4 Parameter Adjustments

1. All parameters are adjustable on the Siemens LOGO! front display.
 - 1.1 To access the parameters, press ESC, cursor down to SET PARAM and press OK. The first parameter is displayed.
 - 1.2 Cursor through, with the up or down arrow to the desired parameter, and press OK. The cursor blinks on the first digit of the timer and the value can be changed with the up or down arrow.
 - 1.3 The right or left arrow changes to the next digit. Once the desired value is entered, press OK and the new value is stored.
 - 1.4 To abort a change, press ESC.

D.5 Turning Heaters ON and OFF

NOTE: At least two heaters must be controlled by the Multi-Heater EMS at any given time. HEATER1 and HEATER2 are factory set to enable ON.

1. Parameters B13 to B16 enable/disable up to four additional heaters.
 - 1.1 Parameters B13 to B16 show "Switch=ON" or "Switch=OFF" on the display. Press OK and the cursor blinks ON or OFF.
 - 1.2 Press the up or down arrow to change to the other status.
 - 1.3 Press OK to save the new status.

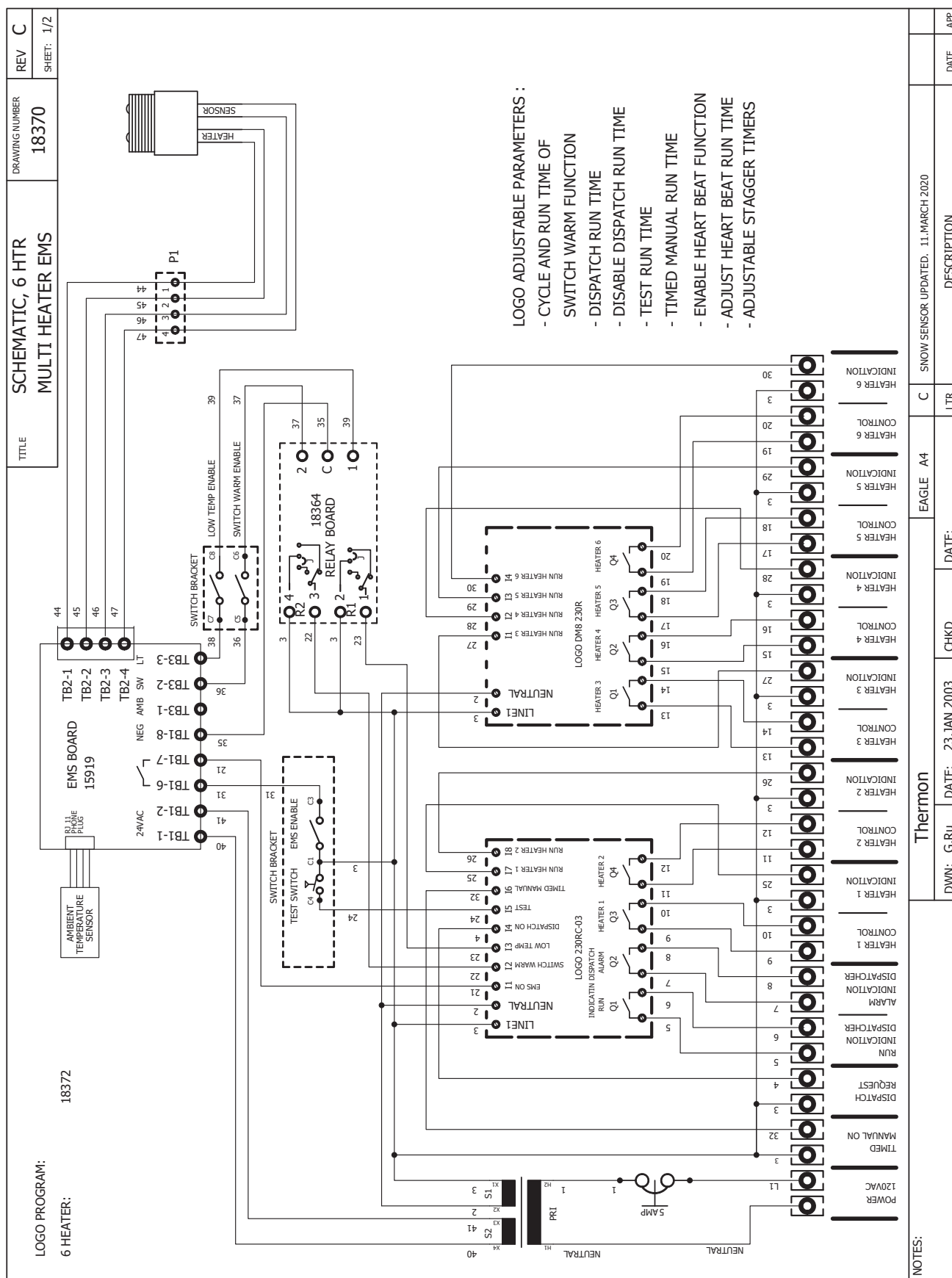
2. Parameter B21 to B26 default to stagger start the heaters in 5 second intervals. Stagger starting minimizes initial start up current, to reduce line and circuit breaker sizes, and avoid brown outs. These parameters are adjustable from 0 to 99 seconds allowing the heaters to be started in any order. Typically the heater furthest away from the power source is started first.
3. To go back to the INPUT, OUTPUT or CLOCK display press ESC twice.

D.6 Displays

1. The Logo features a total of 8 displays to aid understanding of the heater operation and that help with trouble shooting. The displays are:

E. TERMINAL CONNECTIONS & ELECTRICAL SPECIFICATIONS

E.1 Wiring Schematic

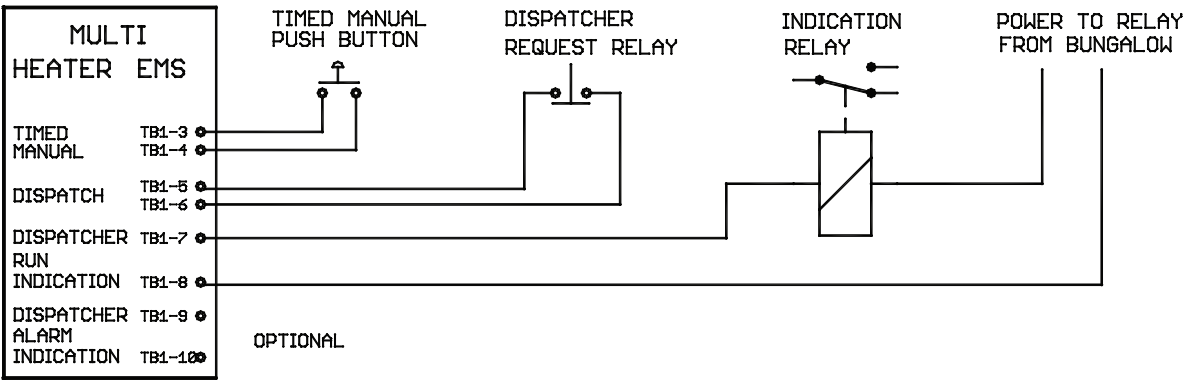


E.2 Electrical Specifications

- Input 120 Vac, 2 Amp Max.
- Precipitation detector operates at 24 Vac
- Power to Siemens LOGO! is isolated 120V AC
- Indication lines from EMS to heaters are 120V AC from isolated source
- Relay Contacts 240VAC 8Amp
- All wires are AWG 18

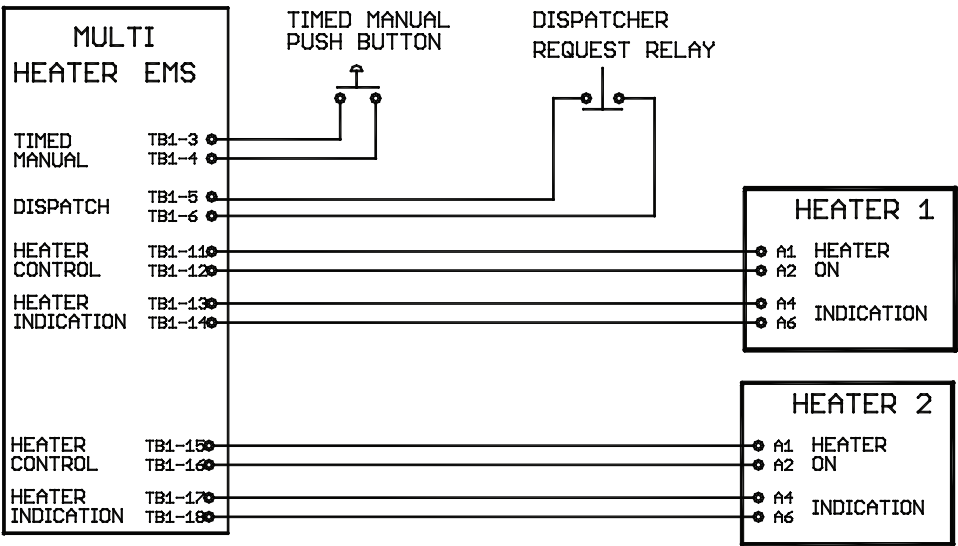
E.3 Multi-Heater EMS & Dispatcher Terminal Connections

The wiring of heaters to dispatch and EMS control is simplified using the Multi-Heater EMS. All connections to and from dispatcher and signal bungalow, are made only to the Multi-Heater EMS and not to every heater. Control and indication to dispatcher is provided by the Multi-Heater EMS only and not the heater directly. The heaters are checked by the Multi-Heater EMS for proper functioning.



E.4 Multi-Heater EMS & Heater Terminal Connections

The wiring from the Multi-Heater EMS to the heaters require only for control wires. Two for control, (ON/OFF), and two indication wires. HELLFIRE heater terminals are shown below.



See following tables for specific heater terminal connections.

E.5 HELLFIRE Heater Terminal Connections

Control and Run Indication to the Multi-Heater EMS, connect the following wires:

Heater Connections		Multi-Heater EMS Connections					
		Heater 1	Heater 2	Heater 3	Heater 4	Heater 5	Heater 6
Control Wires	A1	TB1 - 11	TB1 - 15	TB1 - 19	TB1 - 23	TB1 - 27	TB1 - 31
	A2	TB1 - 12	TB1 - 16	TB1 - 20	TB1 - 24	TB1 - 28	TB1 - 31
Indication Wires	A4	TB1 - 13	TB1 - 17	TB1 - 21	TB1 - 25	TB1 - 29	TB1 - 31
	A5	TB1 - 14	TB1 - 18	TB1 - 22	TB1 - 26	TB1 - 30	TB1 - 31

E.6 Yard Master Heater Terminal Connections

Control and Run Indication to the Multi-Heater EMS, connect the following wires:

Heater Connections		Multi-Heater EMS Connections					
		Heater 1	Heater 2	Heater 3	Heater 4	Heater 5	Heater 6
Control Wires	TB1 - 4	TB1 - 11	TB1 - 15	TB1 - 19	TB1 - 23	TB1 - 27	TB1 - 31
	TB1 - 5	TB1 - 12	TB1 - 16	TB1 - 20	TB1 - 24	TB1 - 28	TB1 - 31
Indication Wires	TB2 - 1	TB1 - 13	TB1 - 17	TB1 - 21	TB1 - 25	TB1 - 29	TB1 - 31
	TB2 - 2	TB1 - 14	TB1 - 18	TB1 - 22	TB1 - 26	TB1 - 30	TB1 - 31

E.7 Mark VI Heater Terminal Connections

- Before making any connections, confirm the following run and alarm indication contact closures provided by the heater:
 - Terminals A7, A8, and A9 have been reserved for use by the EMS.
 - A7 is the common, A8 is the alarm, and A9 is the run indication.
 - Use an ohmmeter to check the contact position.
 - With the heater off A7 to A9 will be an open circuit, and A7 to A8 will be open.
 - With the heater running, A7 to A9 will be closed, and A7 to A8 will be open.
 - Only when the heater is in alarm will A7 to A8 close.
 - If the alarm contact toggles, open and closed without the heater actually going into alarm. Remove wire 24 connected to terminal 21 of the request relay in a small enclosure Mark VI heater.

Heater Connections		Multi-Heater EMS Connections					
		Heater 1	Heater 2	Heater 3	Heater 4	Heater 5	Heater 6
Control Wires	A1	TB1 - 11	TB1 - 15	TB1 - 19	TB1 - 23	TB1 - 27	TB1 - 31
	A2	TB1 - 12	TB1 - 16	TB1 - 20	TB1 - 24	TB1 - 28	TB1 - 31
Indication Wires	A7	TB1 - 13	TB1 - 17	TB1 - 21	TB1 - 25	TB1 - 29	TB1 - 31
	A9	TB1 - 14	TB1 - 18	TB1 - 22	TB1 - 26	TB1 - 30	TB1 - 31

E.8 Mark VII Heater Terminal Connections

- Before making any connections, confirm the following run and alarm indication contact closures provided by the heater:
 - Terminals A4, A6 are used for run indication. Terminals A4, A5 are used for alarm indication.
- Control and Run Indication to the Multi-Heater EMS, connect the following wires:

Heater Connections		Multi-Heater EMS Connections					
		Heater 1	Heater 2	Heater 3	Heater 4	Heater 5	Heater 6
Control Wires	A1	TB1 - 11	TB1 - 15	TB1 - 19	TB1 - 23	TB1 - 27	TB1 - 31
	A2	TB1 - 12	TB1 - 16	TB1 - 20	TB1 - 24	TB1 - 28	TB1 - 31
Indication Wires	A4	TB1 - 13	TB1 - 17	TB1 - 21	TB1 - 25	TB1 - 29	TB1 - 31
	A6	TB1 - 14	TB1 - 18	TB1 - 22	TB1 - 26	TB1 - 30	TB1 - 31

E.9 Mark V Micro Series Heater Terminal Connections

Control and Run Indication to the Multi-Heater EMS, connect the following wires:

Heater Connections		Multi-Heater EMS Connections					
		Heater 1	Heater 2	Heater 3	Heater 4	Heater 5	Heater 6
Control Wires	A1	TB1 - 11	TB1 - 15	TB1 - 19	TB1 - 23	TB1 - 27	TB1 - 31
	A2	TB1 - 12	TB1 - 16	TB1 - 20	TB1 - 24	TB1 - 28	TB1 - 31
Indication Wires	A7	TB1 - 13	TB1 - 17	TB1 - 21	TB1 - 25	TB1 - 29	TB1 - 31
	A9	TB1 - 14	TB1 - 18	TB1 - 22	TB1 - 26	TB1 - 30	TB1 - 31

E.10 Configuration, Adjustments, & Maintenance

- To stagger start the heaters set the delay timer in the Multi-Heater EMS. Start the heater furthest away from the power feed first. The heater closest to the power feed last. This limits the voltage drop at start up, to a minimum.
- The sensing grid in the precipitation detector should be cleaned with a soft cloth at least once a season.
- The sensitivity of the precipitation detector can be increased or decreased by varying the adjustment knob on the EMS board. "1" being the least and "6" the most sensitive
- The ambient temperature set point can be adjusted by the dial on the EMS board.
- The delay on timer (5 minute default) keeps the heater off for a predetermined amount of time during which the precipitation sensor must be wet. This timer is built into the EMS board and is adjustable from 1 to 256 minutes using the DIP switches on the EMS board.
- The delay off timer keeps the heater running for a predetermined amount of time once the precipitation detector becomes dry. It is also built into the EMS board and is adjustable from 1 to 256 minutes using the DIP switches on the EMS board.
- The red push button on the switch bracket, SW1, is used to start a test cycle. Pushed once the Multi-Heater EMS turns on all heaters regardless of any conditions, low temp etc, except the heaters that are unable to start because of failure. The test cycle runs for a predetermined time.
- There are three "Enable/Disable" toggle switches located within the Multi-Heater EMS control box. The first toggle switch, SW2, controls the operation of the Multi-Heater EMS, the second toggle switch, SW3, controls the switch-warming feature, the third toggle switch, SW4, controls the low temperature cut out feature.

NOTE: By disabling the Multi-Heater EMS, the heater will not be turned on by the Multi-Heater EMS. This does not mean the heaters have been disabled or that the Multi-Heater EMS has been powered off. The Multi-Heater EMS still maintains indication to dispatch and runs the heaters on dispatch control as well as the switch warm feature, low temp cut out, timed manual, test features and heart beat function.

F. MULTI-HEATER EMS INSTALLATION

F.1 Multi-Heater EMS Control Box Installation

1. Position the Multi-Heater EMS control box on an inside wall of a signal bungalow (or any other convenient bungalow). The Multi-Heater EMS can be mounted outside if necessary. Mount the control box to the wall using the four self-drilling screws provided. Four mounting holes are provided on the top and bottom of the control box for ease of installation.
2. On the bottom of the Multi-Heater EMS control box is an aluminum plate. Drill as many holes as needed for strain relief. Feed the wires through and connect to the proper location on the terminal block.
3. Mount the Ambient temp sensor outside preferably on the north face of the bungalow in a shady place. Avoid any heat sources which will give a false reading. Feed wire through into the Multi-Heater EMS control box and plug into the EMS board.
4. If mounted outside, the ambient sensor can be mounted to the two studs on the bottom of the control box. Remember it needs to be shaded from direct sun.
5. Once all wires are connected adjust the parameters as required, including software switches, B13 to B16 to enable the connected heaters.
6. Adjust the stagger timers, B20 to B26 such that the heater furthest away from the power feed starts first and the heater closest to the power feed starts last.



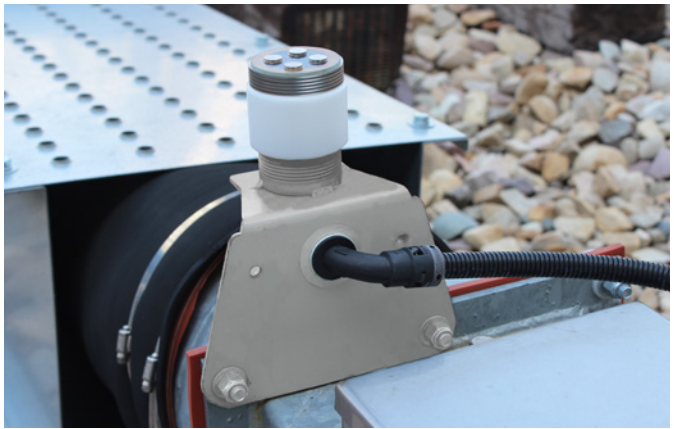
F.2 ArcticSense Installation

1. The ArcticSense is mounted on the sensor duct of a heater, close to the Multi-Heater EMS control box location. Keep the Precipitation Sensor as close to the switch and as low to the ground as possible.

NOTE: Mounting the ArcticSense low will improve the detection of drifting snow.

2. Mount the ArcticSense to the sensor duct flange, as shown.

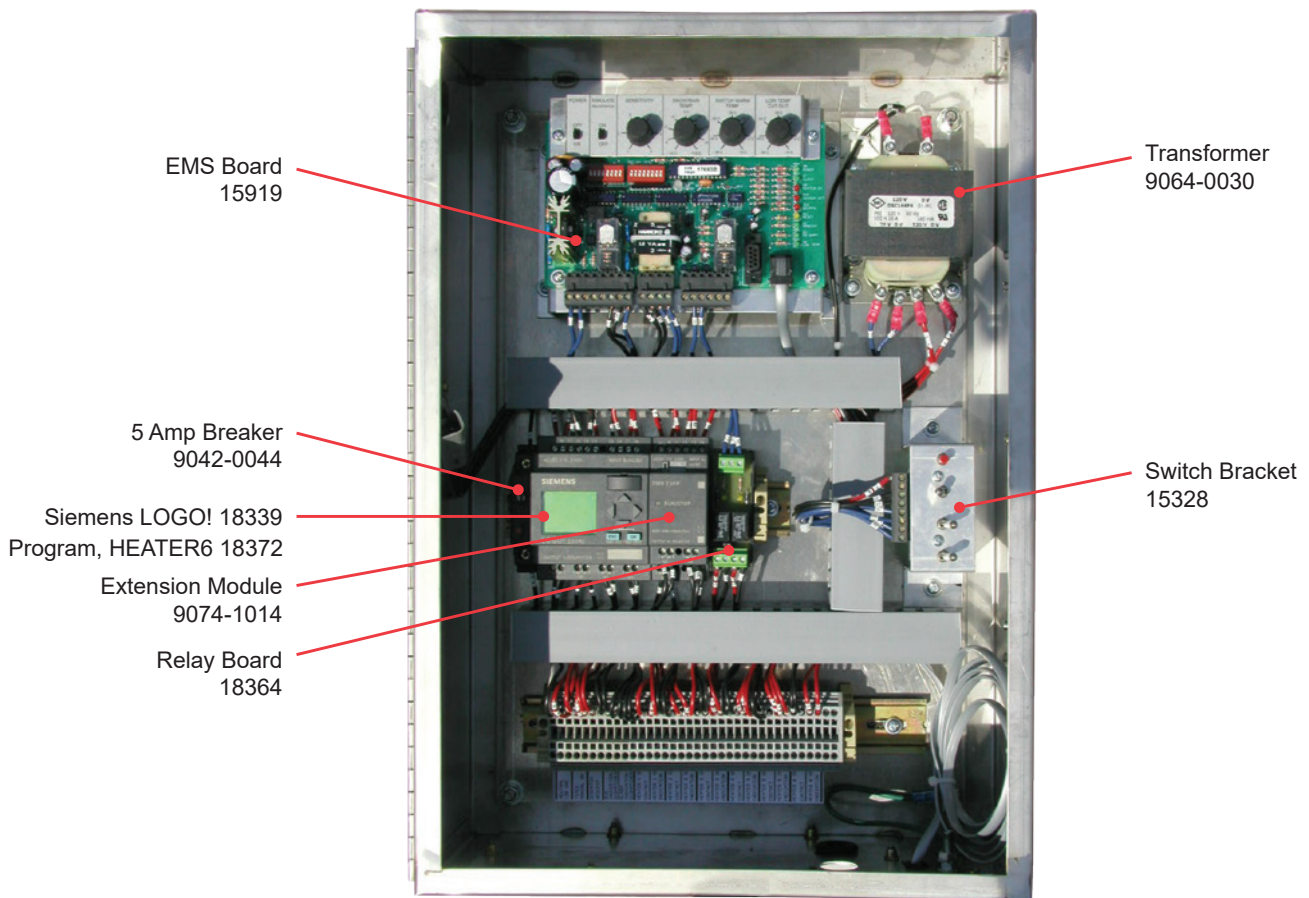
NOTE: Mounting to the flange allows the residual heat from the duct to clear the ArcticSense for the next snowfall.



G. SPARE PARTS

G.1 Multi-Heater EMS Internal Spare Parts

NOTE: To accurately select the correct part for the Multi-Heater EMS, please have the model and serial number ready when placing an order.





ArcticSense, c/w 10' cable
13849-02



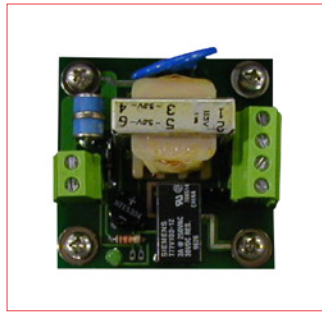
ArcticSense head only
13849-03



Rail thermostat c/w 40' cable
16442-03



Rail thermostat only, 13340-03
Enclosure only, 17895



Rail thermostat surge isolator.
Replacement board only, 15948



Rail thermostat jumper
16422-02



Ambient temperature sensor
16426

H. TROUBLESHOOTING

Problem	Conditions	Probable Cause	Solution
No heaters turn ON	- Snowing. - No display on Siemens LOGO! - No lights on EMS board.	Power disconnected or turned OFF.	- Restore 5 amp breaker. - Restore power.
	- Snowing. - Siemens LOGO! display lit. - Multi-Heater EMS: - POWER LED lit. - CLOCK LED lit. - PRECIP LED lit. - AMBIENT LED NOT lit.	- Ambient temperature set point is set below freezing. - No Input 1.	Raise ambient temperature set point to above freezing.
	- Snowing. - Siemens LOGO! display lit. - Multi-Heater EMS: - POWER LED lit. - CLOCK LED lit. - PRECIP LED NOT lit. - AMBIENT LED lit.	Precipitation sensitivity set to low.	Raise set point.
	- Snowing. - Siemens LOGO! display lit. - Multi-Heater EMS: - POWER LED lit. - CLOCK LED lit. - PRECIP LED lit. - AMBIENT LED lit.	- Rail is warm. - Rail TEMP SWITCH open on heater, will not run.	Allow rail to cool below 3°C (38°F), or check function of rail thermostat.

Problem	Conditions	Probable Cause	Solution
No heaters turn ON	• Snowing. • Siemens LOGO! display lit. • INPUT I1 NOT lit. • Multi-Heater EMS: – POWER LED lit. – CLOCK LED lit. – PRECIP LED lit. – AMBIENT LED lit.	Multi-Heater EMS disabled.	Toggle switch SW2 on switch bracket to enable, INPUT I1 light turns ON.
	• Snowing. • Siemens LOGO! display lit. • Multi-Heater EMS: – POWER LED lit. – CLOCK LED lit. – PRECIP LED NOT lit. – AMBIENT LED lit. – DELAY LED lit.	Multi-Heater EMS is in DELAY ON mode.	Wait for the delay period (factory set at 5 minutes).
	• Snowing. • Siemens LOGO! display lit. – OUTPUT Q2 ON. • Multi-Heater EMS: – STATUS LED solid red.	EMS board and/or Siemens LOGO! in ALARM mode.	Turn power off at 5 amp circuit breaker for 10 seconds, and reconnect.
	• Snowing. • Siemens LOGO! display lit. – OUTPUT Q1 ON. • Multi-Heater EMS: – LOW TEMP LED lit.	Ambient temperature is below the low temperature set point INPUT I3.	Lower "LOW TEMP" set point, or disable switch SW4.
	• Dispatch requested. • Siemens LOGO!: – INPUT 4 ON. – Indication OUTPUT Q1 ON.	Dispatch RUN TIME expired.	Re-request from dispatcher.
	• Dispatch requested. • Siemens LOGO!: – INPUT 4 ON. – INPUT I3 ON. – Indication OUTPUT Q1 ON.	LOW TEMP function in ON INPUT 3 Siemens LOGO!	1. Turn function off SW4 switch bracket. 2. Lower LOW TEMP set point on the EMS board.
	Timed manual button pressed.	Time expired.	Press again.
	• Time manual button pressed. • RELAY 1 ON, RELAY board ON. • Multi-Heater EMS: – LOW TEMP LED lit.	LOW TEMP function ON.	Lower "LOW TEMP" set point, or disable switch SW4. *Not recommended on propane fired heaters.
	Test button SW1 pressed on switch bracket. Siemens LOGO! display lit.	Heater power disconnected. Selector switches turned OFF.	1. Turn power ON. 2. Turn selector switch to REMOTE.
Some heaters will not turn ON	• Heaters requested. • Only two heaters turn ON, all others OFF.	Software switches B19 to B21 turned OFF.	Turn the desired heaters on, B19 to B16.
	• Test button pressed on switch bracket. • Only two heaters turn ON.	Software switches B13 to B16 turned OFF.	Turn the desired heaters on, B13 to B16.
	• Siemens LOGO! indicates ALARM. – OUTPUT Q2 ON.	Heater(s) in ALARM.	1. Correct heater failure. 2. Reset heater(s).



PLEASE ADHERE TO INSTRUCTIONS IN THIS MANUAL
Failure to do so may be dangerous and may void certain provisions of your warranty.

For further assistance, please call 1.855.244.3128

WARRANTY: Under normal use the Company warrants to the purchaser that defects in material or workmanship will be repaired or replaced without charge (from date of shipment) for a period of:

- 84 months - SwitchBlade® Heaters
- 60 months - DC Heaters
- 36 months - DC Control Panels
- 36 months - HELLFIRE Heaters, FEB Heaters
- 12 months - All other Fastrax® Products

Any claim for warranty must be reported to the sales office where the product was purchased for authorized repair or replacement within the contract terms.

Subject to State or Provincial law to the contrary, the Company will not be responsible for any expense for installation, removal from service, transportation, or damages of any type whatsoever, including damages arising from lack of use, business interruptions, or incidental or consequential damages.

The Company cannot anticipate or control the conditions of product usage and therefore accepts no responsibility for the safe application and suitability of its products when used alone or in combination with other products. Tests for the safe application and suitability of the products are the sole responsibility of the user.

This warranty will be void if, in the judgment of the Company, the damage, failure or defect is the result of:

- Vibration, radiation, erosion, corrosion, process contamination, abnormal process conditions, temperature and pressures, unusual surges or pulsation, fouling, ordinary wear and tear, lack of maintenance, incorrectly applied utilities such as voltage, air, gas, water, and others or any combination of the aforementioned causes not specifically allowed for in the design conditions
- Or, any act or omission by the Purchaser, its agents, servants or independent contractors which for greater certainty, but not so as to limit the generality of the foregoing, includes physical, chemical or mechanical abuse, accident, improper installation of the product, improper storage and handling of the product, improper application or the misalignment of parts.

No warranty applies to paint finishes except for manufacturing defects apparent within 30 days from the date of installation.

The Company neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the product(s).

The Purchaser agrees that all warranty work required after the initial commissioning of the product will be provided only if the Company has been paid by the Purchaser in full accordance with the terms and conditions of the contract.

The Purchaser agrees that the Company makes no warranty or guarantee, express, implied or statutory, (including any warranty of merchantability or warranty of fitness for a particular purpose) written or oral, of the Article or incidental labour, except as is expressed or contained in the agreement herein.

LIABILITY: Technical data contained in the catalog or on the website is subject to change without notice. The Company reserves the right to make dimensional and other design changes as required. The Purchaser acknowledges the Company shall not be obligated to modify those articles manufactured before the formulation of the changes in design or improvements of the products by the Company.

The Company shall not be liable to compensate or indemnify the Purchaser, end user or any other party against any actions, claims, liabilities, injury, loss, loss of use, loss of business, damages, indirect or consequential damages, demands, penalties, fines, expenses (including legal expenses), costs, obligations and causes of action of any kind arising wholly or partly from negligence or omission of the user or the misuse, incorrect application, unsafe application, incorrect storage and handling, incorrect installation, lack of maintenance, improper maintenance or improper operation of products furnished by the Company.

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