May 25, 2016

LMS-188-4P

4 POINT DIGITAL MONITOR/ALARM

OPERATING INSTRUCTIONS

LEONARD®
WATER TEMPERATURE CONTROLS

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Front Panel

The Multi-Probe Alarm System front panel consists of the following:

- Graphic LCD
- Channel Status LEDs (*STATUS*)
- Alarm LED (*ALARM*)
- Audible alarm indicator (buzzer)
- Buttons
    - Test & Reset (*TEST/RESET*)
    - Step button (*STEP*)
    - Alarm Limits & decrement button (*vv*)
    - Min/Max & increment button (^^)
    - Mute & Menu increment button (*MUTE/MENU*)

Sensor Probe

The probes supplied with the Multi-Probe Alarm System are highly accurate temperature sensors. The sensor may be put in water or other mild aqueous solutions from -100°C to 100°C.
NOTE: Avoid submerging the probe in solvents or harsh chemicals. Use protective thermowells when monitoring such materials.
NOTE: The warranty does NOT cover damage to probes or electronics that is caused by exceeding temperature limitations, or damage to probes caused by using them in solvents or other unsuitable environments.
NOTE: If the displayed temperature shows a consistent high (> 100°C) or low (< -100°C) value, most likely, the probe has failed.

Probe Installation

RTD sensors supplied with the LMS-188-4P should be installed using the supplied fittings, which are 1/2" MNPT x 1/8" compression. After installing the fitting into a tee, insert the RTD into the fitting and adjust the depth of the probe so as the tip of the probe is approximately at the center of the piping. Tighten the nut finger tight, then with a small wrench turn the nut 1/4 to 1/2 turn past finger tight. Warning – do not overtighten.

Power-up

Shows LMS startup screen.

NO BATTERY
Power Down + Install Battery

The unit will run without a backup battery but will show "NoBatt!" on the display to indicate lack of backup battery.

When a battery is properly installed battery status is shown on the display

up arrow	charging
solid block	full charge
flashing block or block with blank lines	battery problem

Power-down Sequence

To shut off the battery to allow complete power down:
Tap the TEST/RESET button to enter relay test, then unplug unit.
Alternately you may Press-and-Hold the TEST/RESET button to trigger a hardware reset, and while the screen is blank unplug the unit and then Release the button.

Runtime Display

The runtime display shows the current readings of 2, 3 or 4 probes.

Alarm Conditions

Temperature Alarms

If the readings are within the alarm limits, the STATUS LED will blink green.
When the temperature reading meets or exceed the temperature limits the STATUS LED will blink red.

After the probe's alarm delay time is exceeded the unit will blink the ALARM LED and beep the buzzer.
The user can MUTE the buzzer by tapping the MUTE/MENU button. The unit will reduce the audible signal from a loud beep, to a quieter and less frequent chirp. It will remain muted until MUTE time expires or a different probe goes into alarm.
Once the Alarm state has been signaled the unit will wait the appropriate Relay Delay(s) time before tripping the appropriate Relay(s). Units with individual channel relays, have individual Relay Delay times. Units with a single relay have one Relay Delay time that applies to any alarm condition.

Limit Parameters
1 Low, 1 High, 2 Low, 2 High, 3 Low, 3 High, 4 Low, 4 High

Time Parameters
1AlarmDelay, 2AlarmDelay, 3AlarmDelay, 4AlarmDelay
Single Relay Units
RelayDelay
Individual Channel Relays
1RelayDelay, 2RelayDelay, 3RelayDelay, 4RelayDelay

Low / High Alarm Limits

For a quick view the Low and High Alarm Limits tap the DOWN ARROW.

1	AlarmLow	2.0'C
	AlarmHigh	8.0'C
2	AlarmLow	2.0'C
	AlarmHigh	8.0'C
3	AlarmLow	2.0'C
	AlarmHigh	8.0'C
4	AlarmLow	-40'C
	AlarmHigh	-20'C

Min/Max Readings

To view the Min/Max readings since power up or user commanded reset, tap the UP ARROW.

1	ActualMin	3.1'C
	ActualMax	6.8'C
2	ActualMin	3.6'C
	ActualMax	6.6'C
3	ActualMin	3.0'C
	ActualMax	7.2'C
4	ActualMin	-38'C
	ActualMax	-32'C

To manually reset the Min/Max readings, while the Min/Max readings are shown on the display, tap the TEST/RESET button. You will be asked to repeat TEST/RESET to confirm.

LMS Email Notification Feature

The LMS sends email on unit reset, alarm, continued alarm and recovery from alarm.
The unit sends email 5 minutes after email failure and repeats every 10 minutes after that.
Once daily, it sends a report of the last 24 hours that includes temperatures on the hour and alarms to contact #1.

The email subject line identifies the unit and reports the current temperature. The message reports the last 10 minutes of data. The unit is identified by the name ID001, where 001 is the unit number assigned by the user as an LMS parameter. All mail settings are setup using web pages accessed by the IP assigned to the unit.

LMS EMAIL SETUP PARAMETERS -- IP, Setup Web Page Passcode

NAME	Description	Explanation	Factory Set
IP1	IP 1	First number of IP (1.2.3.4)	192
IP2	IP 2	Second number of IP	168
IP3	IP 3	Third number of IP	0
IP4	IP 4	Fourth number of IP	141
NetworkCode	PassCode	5 digit PassCode for Setup web page access (-30000 to 30000)	-22718

Depending on the Network being utilized, the factory setting on the alarm unit for IP1, IP2 and IP3 may need to be changed to match the corresponding settings of the network. IP4 may also need to be changed if another device is using the default number.

Main page:

Access by entering IP address on your browser's URL.
Main page displays
- the designated email server and the email address
- the last 10 minutes of data from the LMS
- the contact list of up to 8 email addresses

Main page has links to
- edit the contact list *
- send a test email to all contact list addresses
- view a log of alarm emails and test emails
- clear the email log *
- retry getting date & time from nist server

* requires list name/password

Setup page:
Requires the Master name "setupadmin", and the LMS five digit passcode.
Allows specification of Subnet Mask, Gateway, DNS Server, SMTP Server, SMTP auth user, SMTP password, List Administrator Name, List Password, Time zone [EST: -5, CST: -6, MST: -7, PST –8], Daylight Savings start and end, and the time the daily report should be sent [0-23].

Edit contact link:
Requires the List User Name and List Password for access.
Allows specification of up to 8 email contact addresses.

Protonode Option

If the Protonode option has been installed with the alarm unit, please contact Leonard Valve for complete interface instructions.

Resetting Computer IP Address

If LMS-188-4P is not communicating with your computer, your computer's IP address may need to be manually set. Use the following directions: 1) Get to the 'Network and Sharing Center' section either through 'Control Panel' or the internet connection icon on your taskbar. 2) Click on 'Local Area Connection' to bring up the status page. 3) Click properties and then highlight 'Internet Protocol Version 4 (TCP/IPv4)' and click 'Properties'. 4) In this new window, click the option 'Use the Following IP Address' and enter the numbers for IP1, IP2 and IP3 from the LMS unit. For IP4, enter any combination of numbers, 1-3 digits long. Just be sure it is not the same as LMS-188-4P. Subnet Mask is 255.255.255.0 and the Default Gateway is left blank.

Web Pages:

[Main Page]
[Access by entering the IP in browser address bar]

[Setup page – "initial setup"]
[Access by adding "setup.html" to the IP]
[User: setupadmin (not editable, case sensitive) Password:<5-digit code from LMS>]

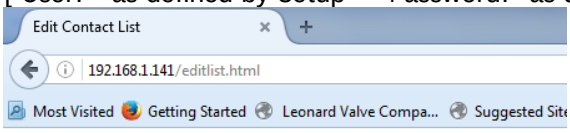
Setup Info

Subnet Mask	255.255.255.0
Gateway	192.168.1.100
DNS Server	8.8.8.8
SMTP Server	smtp.1and1.com
SMTP auth user	t140@hampshirecontrols.com
SMTP password	D41yR757368
List/Log User	listadmin
List/Log Password	idoemaillist
Timezone(EST:-5,PST:-8)	-5
DST *starts (mm/dd/yy)	3/13/16
DST *ends (*Sunday)	11/6/16
Daily Report Time(0-23)	8

Submit Reset

Gateway on Setup Page **MUST** match the Gateway of the network that is utilized. See Network administrator for DNS Server & SMTP information. If these parameters are unavailable, use **8.8.8.8** for **DNS Server**, **smtp.1and1.com** for SMTP Server, **t140@hampshirecontrols.com** for **SMTP auth user**, and **D41yR757368** for SMTP password. **Note that these parameters are for test purposes only!**

[Contact List Page for maintaining contact list]
[Access via link from main page]
[User: <as defined by Setup> Password:<as defined by Setup>]



Edit Contact List

1	ericcosta@leonardvalve.com
2	efontaine@leonardvalve.com
3	rcota@leonardvalve.com
4	cpotter@leonardvalve.com
5	
6	
7	
8	

Submit Reset

Defaults:

Web	Setup Administrator	setupadmin	*this is coded into the firmware and is not editable
	Setup Password	-22718	*use LMS NetworkCode as password
Web	List Administrator	listadmin	
	List Password	idoemaillist	

Please define:
LMS: IP (IP1, IP2, IP3, IP4)
NetworkCode: number –30000 to 30000
Web Setup: Subnet Mask SMTP Server
Gateway SMTP auth user
DNS Server SMTP password
Contacts: At least 1 email contact

Installation Instructions:

#1 – Set Your IP
From the LMS front panel: Tap Menu to ender Edit.
Tap Test and Menu simultaneously, to switch to the *SETUP* group of parameters.
Use Step to advance to IP1,IP2,IP3,IP4 and set them accordingly.
If desired modify your Unit ID and NetworkCode.
Tap Menu 3 times to advance out of Edit and back to the runtime temperatures.
Hold Reset until the display goes blank, then release.

#2 -- Define your network and email settings
Using your web browser enter the IP address to access the unit.
After reviewing main web page, add "/setup.html" to the IP, to access the Setup Info.
Name: setupadmin (unchangable, case sensitive) Passcode: -22718
Enter your Subnet Mask, Gateway, DNS Server.
Enter your SMTP server, SMTP auth user, and SMTP password.
Submit.
Back at the main page verify server and address at top of page, then click "Edit Contact List"
Name: listadmin Passcode: idoemaillist
Please add one contact email address.
Submit.

#3 -- Test
Back at main page click "Send test email", and wait.
Click "View Test/Email Failure Log".
Success: "Admin Test 1sent"
Failure: “Admin Test 1fail”
Check your email for message received

After Daylight Savings Time ends in November, and before it begins in March, please update the Setup Parameters DST start and end to ensure proper date/time.

DST Start	DST End
Sunday March 13, 2016	Sunday November 6, 2016
Sunday March 12, 2017	Sunday November 5, 2017
Sunday March 11, 2018	Sunday November 4, 2018
Sunday March 10, 2019	Sunday November 3, 2019
Sunday March 8, 2020	Sunday November 1, 2020
Sunday March 14, 2021	Sunday November 7, 2021
Sunday March 13, 2022	Sunday November 6, 2022

LMS Overview

Buttons: **TEST/RESET**, **STEP**, **DOWN**, **UP**, **MUTE/MENU**

Runtime Display

```
1:   8.9'C
2:   8.4'C
```

Edit Parameters

At Runtime tap **MENU**

```
Edit Limits
1 Low
     -30.3
To STEP BACK tap TEST
```

Repeat **MENU**, **MENU**,.. To **Edit Limits** , **Edit Times** , Return to Runtime or while in Edit tap **MENU** AND **RESET** simultaneously to access ***SETUP*** group

To step through parameters in group use **STEP**

To modify parameter values use **DOWN** , **UP**

To step out of edit and back to runtime screen use **MENU**

Group 1 **Limits**

1 Low, 1 High, 2 Low, 2 High

Group 2 **Times**

1AlarmDelay, 2AlarmDelay, DoorAlrmDly,
1RelayDelay, 2RelayDelay, Mute

Special Group ***SETUP***

1 Offset, 2 Offset,
 # channels,
1 Define, 0:tenthC 1:wholeC 2:tenthF 3:wholeF 4:wholeRH
2 Define,
Relay Def, 0:single unit relay 1:individual channel relays
DoorAlarm -1:AlarmOnContactClosed 0:NoAlarm 1:AlarmOnContactOpen
Unit ID -1:AlarmOnContactClosed 0:NoAlarm 1:AlarmOnContactOpen
IP1, IP2, IP3, IP4, IP 1.2.3.4
NetworkCode **-30,000 to 30,000** Setup Web Page Password

Door Status Display

Upon Door Alarm, the Door Status Displays until user responds, OR By User command at Runtime tap **STEP**

Door	Door	Door	
Closed	Open	Open	<DoorStatus: Open/Closed>
Ok	Delay	Alarm	<AlarmStatus: Ok/Delay/Alarm>

Low/High Alarm Setpoint Display

At Runtime tap **DOWN**

```
1  AlarmLow   2.0'C
   AlarmHigh  8.0'C
2  AlarmLow   2.0'C
   AlarmHigh  8.0'C
```

Min/Max Temperatures Display

At Runtime tap **UP**

```
1  ActualMin  3.1'C
   ActualMax  6.8'C
2  ActualMin  3.6'C
   ActualMax  6.6'C
```

Min/Max Reset

*while viewing Min or Max tap **RESET**

```
Min & Max
   Reset
RESET to confirm
STEP to cancel
```

Relay Test

At Runtime tap **TEST**

Relay Test	Relay Test	
Rly1 15	Rly2 15	* seconds counting down
To Step, tap STEP	To Step, tap STEP	
To Hold, hold STEP	To Hold, hold STEP	