



# LME7... Burner Controls

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**Overview**

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## Introduction

The LME7 burner control is ideally suited for use in industrial thermal process applications. The LME7 is extremely flexible, and encompasses the following features:

- Accepts standard UV scanners and/or flame rods
- Integral LED display
- Programmable purge times and safety times
- Adjustable time overlap of spark ignition and pilot valve
- Adjustable time overlap of pilot and main gas valves
- Proof-of-closure (POC) switch monitoring
- Modbus RTU or BACnet MS/TP communication
- Password-protected access to OEM parameters



**Figure 1-1: The Main Components of an LME7 System**

## LME7 System Builder

The LME7 burner control system is comprised of many components. Use the following pages to choose the components needed for your specific application.

### Control Panel Components

#### Base Unit – Qty (1) Required

Choose one of the following LME7 base unit options. See page 7 for mounting information.



**LME71.000A1**

Flame safeguard, without actuator control, without self-check scanner capability, 110V

#### Program Module – Qty (1) Required

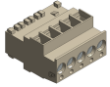
Choose one of the following PME7 program modules. The program module contains the program sequence used to operate the burner.



	Base Unit	Controls Actuator	Actuator Control Can Be Disabled	Controls PWM Blower	Flame Rod	Non-Self-Checking UV Scanner	Self-Checking UV or IR Scanner	Valve Proving	Purge	Independent Ignition Position	Analog Input for Fire Rate
<b>PME71.111A1</b>	LME71.000A1				•	•			•		

Plug Set – Qty (1) Required

The terminal plug set for the LME7 is sold separately. Each LME7 needs one plug set.

**AGG3.710**

Plug set containing all terminals for an LME7 system

LME7 Package - Optional

For convenience, the LME7 base unit, PME7 program module, and AGG3.710 plug set can be ordered as a package that is shipped pre-assembled.

**LME71.111A1PKG**

LME71.000A1 with PME71.111A1 program module  
and AGG3.710 plug set installed

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Remote Display – Optional

Each LME7 can be equipped with a remote display that provides additional status information not shown by the integral LED display on the LME7. Either the remote display or the ACS410 software are required to change parameter settings on the LME7. See page 8 for mounting information and panel cutout dimensions.



**AZL23.00A9**

Backlit remote display

Remote Display Cable – Qty (1) Required if Using the AZL23.00A9 Remote Display

This cable is required when using an AZL23 display to connect the AZL23 to the LME7 base unit.



**TDCCOMBO**

Pre-made 7 foot cable and adapter for connecting the AZL23 display to the LME7 base unit

Interface Modules and Accessories – Optional

A separate interface module is required for Modbus or BACnet MS/TP communication with the LME7.



**OCI417.10**

Modbus and BACnet MS/TP interface module



**TDC207**

7 foot cable to connect OCI417.10 to LME7 base unit

Fuses - Optional

The LME7... base units do not have a built-in replaceable fuse. It is recommended to install an external fuse on the incoming power to the LME7.



**FUSE6.3A-SLOW**

5-pack of 6.3A, 250V, 5x20mm, slow blow fuses



## Flame Scanners

### Flame Scanners – Qty (1) Required Unless Using a Flame Rod

Four flame scanners are available for use with the LME7. For technical information about these flame scanners, refer to Document No. N7711 for the QRA4.U



**QRA4.U**

Ultraviolet (UV) flame scanner, non-self-checking, forward viewing, with 3/4" NPSM connection, for use with LME71 or LME73 base units

### Additional Flame Scanner Accessories – Optional

Additional accessories are available for flame scanners to prevent heat from getting to the scanner. For more information, refer to Document No. N7711 and Document No. N7712.



**THERMAL-75X75**

Thermal barrier for use with the QRA4.U flame scanner, and QRI2B2.B180B flame scanner when used with right angle adapter AGG90.U. Adapts a 3/4" NPSM thread to a female 3/4" NPT connection. Rated for scanner tube temperatures up to 250 °F



**AGG02**

Heat insulating lens with spring washer and O-ring, for applications where the temperature at the scanner will exceed 176 °F. Can be mounted inside thermal barriers THERMAL-75X75 or THERMAL-1X75

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## Enclosures

### Enclosures - Optional

A small NEMA 1 enclosure is available for use with any LME7... base unit. Three ½" conduit knockouts are available on both the top and the bottom of the enclosure.



**LME7-ENC-KT**

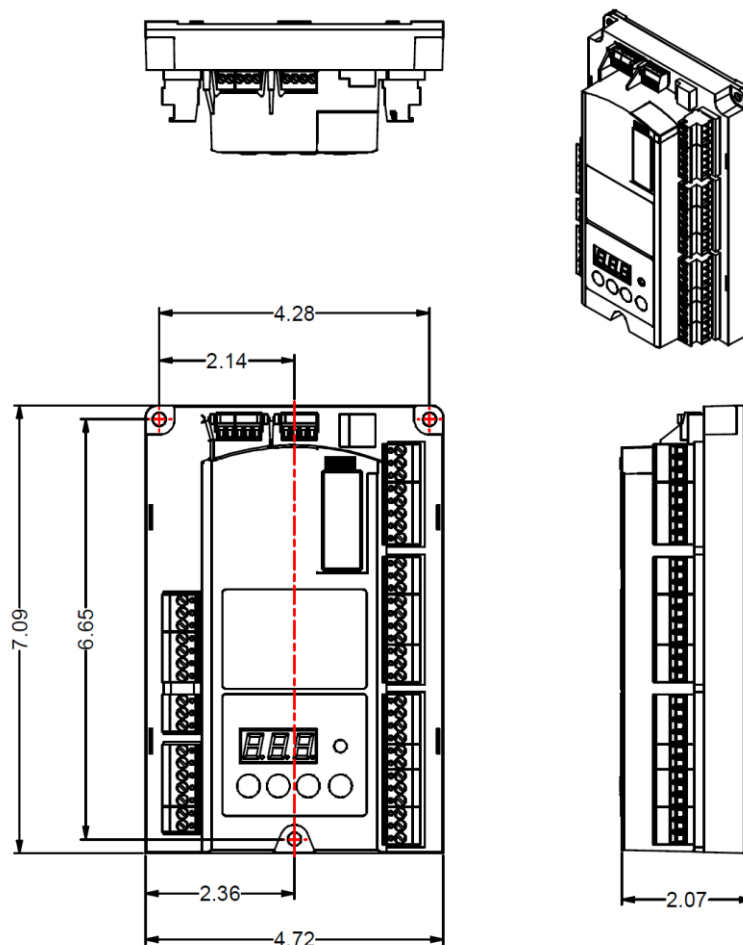
NEMA 1 enclosure for any LME7... base unit

## Mounting

### LME7 Controller

The LME7 must be mounted inside an enclosure that will protect it from dirt and moisture. The unit should be mounted with three #8 screws (not provided). The panel, which the unit sits on, should be drilled and tapped to accommodate these screws.

During the mounting process, consideration should be given to the various plugs and wires that must be attached to the LME7. Electrical connections are made via plugs that are located in the face of the unit with wires coming out to the top, left side, and right side of the unit. A space of at least one inch is recommended above, to the left, and to the right of the LME7. The recommended total space to leave for the LME7 is 8" x 6.75" x 3" because the overall dimensions of the LME7 are 7.09" x 4.72" x 2.07".



**Figure 1-2: LME7 Dimensions (inches)**

### AZL23 Display

The AZL23 is designed to be mounted in a rectangular cutout through the face / door of an electrical enclosure. It has one screw on the top and another on the bottom that engage small plastic tabs which will swing out when the screw is tightened clockwise; the screw can be loosened to retract the tab and increase clearance before tightening. The tab will pinch the sheet metal of the enclosure door between itself and the AZL23 gasket. This facilitates easy removal and replacement of the AZL23 since it is designed to be taken out of the enclosure face and held in the hands for setup and commissioning.

The AZL23 connects to the LME7 at terminal X56 with cable **TDCCOMBO**. The AZL23 has an IP54 rating when mounted in an electrical enclosure.

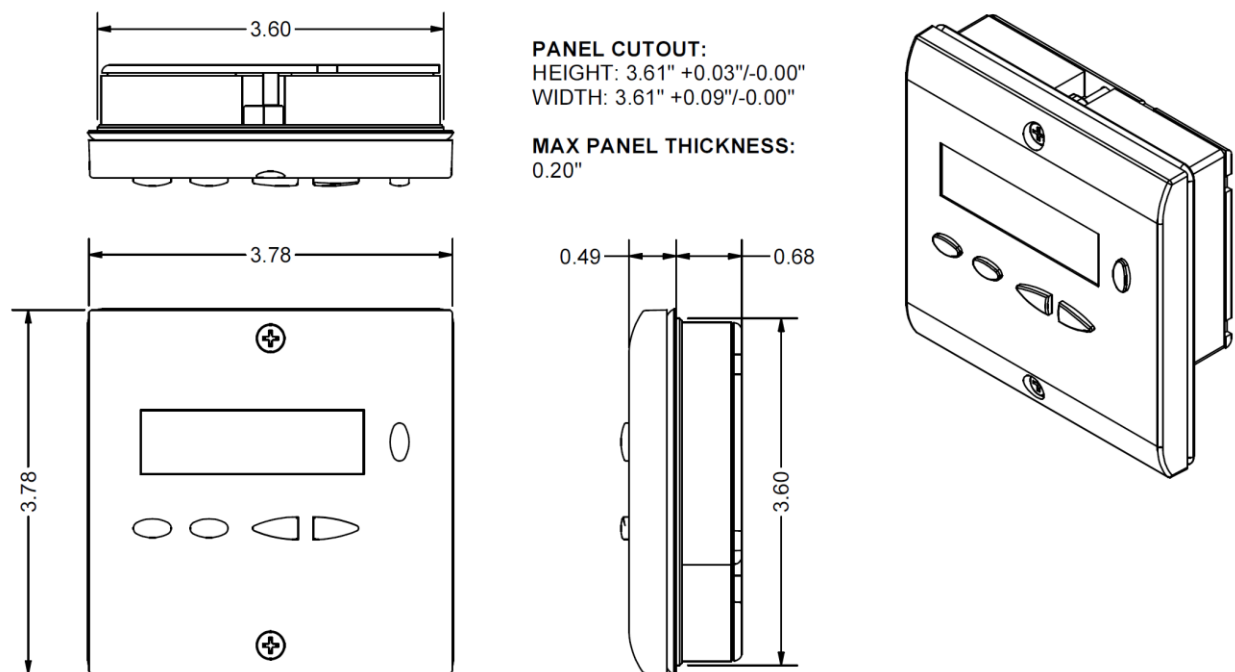


Figure 1-3: AZL23 Dimensions (inches)

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## Important Safety Notes

- The LME7 is a safety device. Under no circumstances should the unit be modified or opened. SCC Inc. will not assume responsibility for damage resulting from unauthorized modification of the unit.
- All activities (mounting, installation, service work, etc.) must be performed by qualified staff.
- Before performing any work in the connection area of the LME7, disconnect the unit from the main supply (all-polar disconnection).
- Protection against electrical shock hazard on the LME7 and all other connected electrical components must be ensured through good wiring and grounding practices.
- Fall or shock can adversely affect the safety functions of an LME7. Such units must not be put into operation, even if they do not exhibit any apparent damage.
- Condensation and the entry of water into the unit must be avoided.

## Approvals

The LME7 has the following standards and approvals:



**Applied directives:**

- Low-voltage directive 2014/35/EC
- Directive for pressure devices 2014/68/EC
- Gas Appliances Regulation (EU) 2016/426
- Electromagnetic compatibility EMC (immunity) \*) 2014/30/EC

\*) The compliance with EMC emission requirements must be checked after the burner control is installed in equipment

Compliance with the regulations of the applied directives is verified by the adherence to the following standards / regulations:

- Automatic burner control systems for burners and appliances burning gaseous or liquid fuels DIN EN 298
- Safety and control devices for gas burners and gas burning appliances DIN EN 13611
- Automatic electrical controls for household and similar use Part 2-5: Special requirements on automatic electric burner control and monitoring systems DIN EN 60730-2-5
- Safety and control devices for gas burners and gas burning appliances - Valve proving systems for automatic shut-off valves DIN EN 1643

**The relevant valid edition of the standards can be found in the declaration of conformity!**

**Note on DIN EN 60335-2-102**

Household and similar electrical appliances - Safety - Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections. The electrical connections of the LME7 and the PME7 comply with the requirements of EN 60335-2-102.



EAC Conformity mark (Eurasian Conformity mark)



ISO 9001:2015  
ISO 14001:2015  
OHSAS 18001:2007



China RoHS  
Hazardous substances table:  
<http://www.siemens.com/download?A6V10883536>



Only AC 120 V versions



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**Section 2      Wiring, Parameters and Phase Diagram**

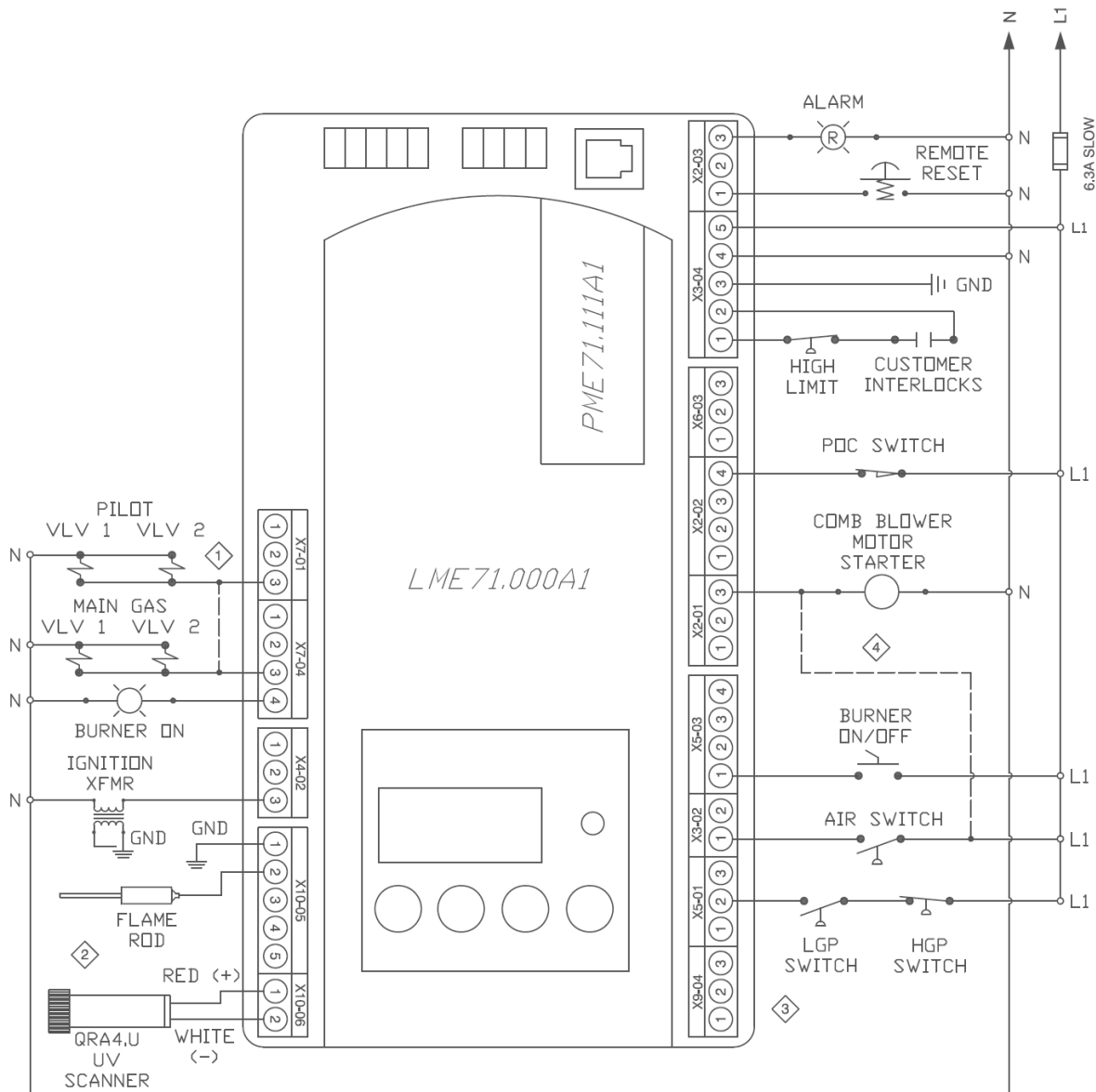
Section 3      Commissioning

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# LME71 Wiring Diagrams

## PME71.111A1 – Pilot or direct spark; with purge; no actuator control; no valve proving



**NOTES:**

- ① Add a jumper between X7-01.3 and X7-04.3 for direct spark ignition.
- ② Connect either a flame rod or UV scanner (QRA4.U), not both.
- ③ Do not connect wires to any unused terminals.
- ④ When the LME7 isn't controlling the combustion air blower, wire the combustion air switch between X2-01.3 & X3-02.1. Be sure to remove X2-01.3 to N, and X3-02.1 to L1.



Parameter Number	Parameter Name	LEGEND - Password Level: S = Service; O = OEM; S/O = View - Service, Write - OEM; Info = Info Menu; Ser = Service Menu Shaded Parameters = Frequently Used			Description
		PW Level	Default	Range	
<b>000 Level: Parameter Backup / Restore / Change Passwords</b>					
041	Service Level PW	O	7173	Any 4 characters	The service level password can be changed here. It must be exactly 4 characters in length. Enter the current password, then enter the new password twice to change it (c = current, n = new, r = repeat).
042	OEM Level PW		L7un1	Any 5 characters	The OEM level password can be changed here. It must be exactly 5 characters in length. Enter the current password, then enter the new password twice to change it (c = current, n = new, r = repeat).
060	Backup / Restore	S	Backup - 0 Restore - 0	0-1	Used to perform parameter backups and restores. <b>Backup: Transfer LME7 parameters to PME7. Restore: Transfer PME7 parameters to LME7.</b> Set parameter to 1 and press the info button to begin the backup or restore. Once a parameter backup is successful, the screen will display "bAC End". Once a parameter restore is successful, the screen will display "rSt End".
<b>100 Level: General Information / Display Mode</b>					
102	Production Date		Read only		Date that the LME7 was produced in the DD.MM.YY format.
103	Serial Number		Read only		Serial number of the LME7.
113	Burner ID	Info	Not set	0-999999999	The burner ID can be viewed through the AZL23 but can only be set using the ACS410 software. The burner ID must be all digits (no letters), from 1-8 digits in length. Typically the burner serial number is used. This serves as an identifier for the parameter set. The burner ID must be set in order to perform a parameter backup to a PC using the ACS410 software. Parameter backups to the PME7 program module can be made without setting the burner ID.
140	Display Mode	S	1	1-4	Sets what will be displayed by the LME7 integral display. 1 = phase 2 = flame signal (QRA... flame scanner or flame rod) 3 = not used 4 = load
164	Startups		Reset only		Displays the total number of startups. To reset this value, press and hold the info button until the value begins to flash, then let go. The value will automatically change to 0. Press the info button again to confirm the reset.
166	Total Startups		Reset only		Displays the total number of startups. Not resettable.
170	Number of Relay Cycles	Info	Read only		Displays the number of cycles on different internal relays in the LME7. Index 00 = K12 relay cycles Index 01 = K11 relay cycles Index 02 = K2 relay cycles Index 03 = K1 relay cycles
171	Max Relay Cycles		Read only		Displays the maximum number of relay cycles allowed on the internal relays of the LME7.

Parameter Number	Parameter Name	LEGEND - Password Level: S = Service; O = OEM; S/O = View - Service, Write - OEM; Info = Info Menu; Ser = Service Menu Shaded Parameters = Frequently Used			Description
		PW Level	Default	Range	
<b>200 Level: Burner Control</b>					
225	Prepurge Time		29.106 sec	0-1237 sec	Sets the prepurge time (length of phase 30). The LME7 has a base prepurge time of 2.1 seconds. This setting adds seconds to the base time.
230	Pilot / Main Stabilization Time	S/O	3.234 sec	3.234-74.97 sec	This setting defines the pilot stabilizing period if a pilot is used. During this period, only the pilot valve is open. The spark is de-energized.
231	Pilot and Main Overlap Time		9.996 sec	0-74.97 sec	When a fuel train with a pilot is used, this setting defines the overlap of the pilot (output X7-01.3) and the main fuel valves (output X7-04.4). After this time expires, the pilot is de-energized. Sets the length of phase 50.
234	Postpurge Time		19.404 sec	0-1237 sec	Sets the postpurge time (length of phase 74).
237	POC Switch	S	1	0-2	This setting defines the function of POC switch input X2-02.4. 0 = deactivated 1 = activated (verify POC switch is closed on startup and shutdown) 2 = activated (verify POC switch is closed on startup and shutdown, and open during operation)
239	Forced Intermittent		0	0-1	When activated, this forces the LME7 to shut the burner down every 24 hours of uninterrupted operation. The burner will automatically restart afterwards. The purpose of the shutdown is to check and cycle safety devices. 0 = deactivated 1 = activated
240	Repetition Flame	S/O	0	Index 00 = 0-2 Index 01 = 0-4	This sets the numbers of times a flame failure must occur before causing a lockout. Most North American codes require 1. Index 00 = flame failures during operation Index 01 = flame failures during main trial for ignition 0 = no repetitions 1 = no repetitions 2 = 1 repetition 3 = 2 repetitions 4 = 3 repetitions

Parameter Number	Parameter Name	LEGEND - Password Level: S = Service; O = OEM; S/O = View - Service, Write - OEM; Info = Info Menu; Ser = Service Menu Shaded Parameters = Frequently Used			Description
		PW Level	Default	Range	
247	Intermittent Pilot		0	0-1	Sets the type of pilot being used. If set to 1, the pilot valve will remain open from phase 40 to the end of main operation (OP1). 0 = interrupted pilot 1 = intermittent pilot
254	Flame Failure Response Time (FFRT)	S/O	1	0-1	Sets the flame failure response time (FFRT). The FFRT is the maximum length of time that the flame signal can go away before a lockout occurs. This setting also doubles as the length of time the signal from the air pressure switch can go away before a lockout occurs. On PME71.901A1, the FFRT is fixed at 1 second. 0 = 1 second 1 = 3 seconds
257	Trial for Ignition		4.116 sec	0-13.23 sec	This setting defines the overlap of the spark (output X4-02.3) and the pilot valve (output X7-01.3) if a pilot is used. After this time expires, the spark is de-energized. The LME7 has a base time of 0.3 seconds. This setting adds seconds to the base time. Sets the length of phase 40.
<b>700 Level: Fault History</b>					
701-711	Fault History	Ser	Read only		Shows the current status (fault) along with the 10 most recent faults. 701 = current status, 702 = most recent fault, 703 = next most recent fault, etc. Each fault has indices that provide additional information about the fault: Index 00 = fault code Index 01 = start number Index 02 = phase Index 03 = load
<b>900 Level: Operational Data</b>					
920	Target Speed %				Displays the real time target speed of the PWM blower as a percentage of the maximum blower speed (parameter 519). Will always display as a "-" on PME71.111A1.
936	Actual Speed %				Displays the real time actual speed of the PWM blower as a percentage of the maximum blower speed (parameter 519). Will always display as a "-" on PME71.111A1.
951	Incoming Voltage	Ser	Read only		Displays the real time mains voltage. Measured at terminal X3-04 pin 4 (neutral) and pin 5 (line).
954	Flame Signal				Displays the raw flame signal from 0-100% for any flame scanner type. A flame failure occurs when the flame signal drops below 20% for the time period specified by parameter 254. This signal refers to input terminal X10-06 (UV scanners) or input terminal X10-05.2 (flame rods).

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## LME71 Phase Diagrams

The Siemens LME7 burner controls can perform a number of different burner sequences based upon which PME7 program module is used, how certain parameters are set, and how the LME7 is wired.

Each program module has an associated phase diagram. The phase diagrams illustrate when input and output terminals are expected to be energized or de-energized. A legend on the bottom of each page describes the various symbols used in the diagrams.

### Notes:

- 1) A jumper can be added between terminals X7-04.4 and X7-01.3 for direct spark ignition. If this jumper is added, main valve output X7-04.4 and pilot valve output X7-01.3 will be energized from phase 40 through the end of operation (oP1).

**PME71.111A1 Phase Diagram**

Terminal	Description	Notes	STARTUP										OPER- ATION	SHUTDOWN		
			Phase	LOC	OFF	21	22	30	40	42	44	50	50	240	74	10
			Param.				225	257		230	231	254	OP1	234		
X3-04.5	Main Voltage															
X3-04.1	Safety Loop			X	X											X
X5-03.1	Burner On				M											
X3-02.1	Air Pressure Switch					X										
X5-01.2	Gas Pressure Switch(es)															
X10-05.2	Flame Signal															
X10-06.1/2																
X2-02.4	POC (P237 = 1)															
	POC (P237 = 2)															
X2-02.3	POC Source			X	X											X
	Safety Valve			X	X											X
X2-01.3	Blower			X	X											X
X4-02.3	Ignition Transformer			X	X											X
X7-04.4	Main Valve V1	Note 1		X	X											X
X2-03.3	Alarm															
	Pilot Valve (P247 = 0)	Note 1		X	X											X
X7-01.3	Pilot Valve (P247 = 1)	Note 1		X	X											X

Legend :

Energized

Energized or de-energized

X De-energized

M Must be energized by end of phase

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### Commissioning a New LME7 Burner Control

1. Ensure all devices are properly connected to the LME7. See Section 2 of this manual for more information on wiring devices to the LME7 burner control.
2. Install the PME7 program module into the LME7 burner control. Apply power to the LME7.
3. The LME7 will alternately display “rSt” and “PrC”, indicating that the parameter set from the PME7 program module needs to be restored into the LME7 burner control. To do so, press and hold the info button on the LME7 burner control until the LED on the LME7 turns yellow, then release. This should take approximately three seconds.
4. The word “run” will briefly be displayed. Then, the display will alternate between “rSt” and “End”. This indicates that the restore process was successful.
5. Press and hold the info button for approximately two seconds to reset the LME7. If everything was done properly, the LME7 should now display “OFF”.
6. If any LME7 parameters need to be changed from their default values, an AZL23 display unit is required. Plug in the AZL23 display unit.
7. To log in to the LME7 and access the parameters, press and hold the F and A buttons simultaneously on the AZL23 until the word “CodE” appears.
8. Enter the password for the desired access level. The default password is:  
  
Service Level Password – 7173
9. Set all parameters as necessary for the application. See Section 2 of this manual for more information on setting the parameters in the LME7 burner control.
10. At this point, the LME7 burner control is fully commissioned. It is recommended to perform a parameter backup to synchronize the parameter settings of the LME7 burner control and PME7 program module. See the next section for instructions on performing a parameter backup.

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## Parameter Backups / Restores

Both the LME7 burner control and PME7 program module contain one parameter set. The parameter set in the LME7 burner control is always the one that is used for burner operation. The parameter set in the PME7 program module is simply a backup parameter set. At any time, these two parameter sets can be synchronized with a parameter backup or a parameter restore.

Parameter backup – Overwriting the PME7 parameter set with the LME7 parameter set

Parameter restore – Overwriting the LME7 parameter set with the PME7 parameter set

The following procedures can be used to perform parameter backups or parameter restores.

### Parameter Backup (LME7 -> PME7) Using the LME7 Built-in Display

1. Press and hold the + and - buttons on the LME7 together for approximately one second. “PrC” will be displayed briefly, then the display will show “rSt”.
2. Press the + or - button to toggle to “bAC”.
3. Press and hold the info button until the word “run” is displayed, then release.
4. The LME7 will alternately display “bAC” and “End” once the parameter backup is complete.
5. Press the info button to return to the normal display.

### Parameter Restore (PME7 -> LME7) Using the LME7 Built-in Display

Use to overwrite the parameters in the LME7 with those previously saved in the PME7.

1. Press and hold the + and - buttons on the LME7 together for approximately one second. “PrC” will be displayed briefly, then the display will show “rSt”.
2. Press and hold the info button until the word “run” is displayed, then release.
3. The LME7 will alternately display “rSt” and “End” once the parameter restore is complete.
4. Press the info button to return to the normal display.

### Parameter Backup (LME7 -> PME7) Using the AZL23 Display Unit

1. Press and hold the F and A buttons on the AZL23 until “CodE” is displayed, then release.
2. Log in at the service or OEM level.
3. The display will show “000: Int”. Press the info button on the AZL23.
4. Toggle to parameter 060 using the + and - buttons, then press the info button.
5. Press the + or - button to toggle to “bAC\_UP”, then press the info button.
6. Tap the + button twice to change the value to 1, then press the info button.
7. The word “run” will be displayed during the backup process.
8. The AZL23 will display “bAC End” once the parameter backup is complete.
9. Press the info button to return to the normal display.



### Parameter Restore (PME7 -> LME7) Using the AZL23 Display Unit

Use to overwrite the parameters in the LME7 with those previously saved in the PME7.

1. Press and hold the F and A buttons on the AZL23 until "CodE" is displayed, then release.
2. Log in at the service or OEM level.
3. The display will show "000: Int". Press the info button on the AZL23.
4. Toggle to parameter 060 using the + and - buttons, then press the info button.
5. "rEStorE" will be displayed. Press the info button.
6. Tap the + button twice to change the value to 1, then press the info button.
7. The word "run" will be displayed during the restore process.
8. The AZL23 will display "rSt End" once the parameter restore is complete.
9. Press the info button to return to the normal display.

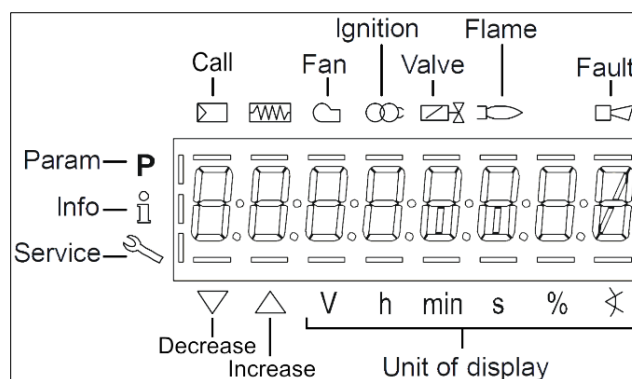
### **Displaying the Flame Signal from the LME7 Burner Control**

The flame signal can be viewed on the LME7 burner control using the following procedures.

#### LME71 Burner Control

1. Press and hold the + button on the LME7 burner control. "FL1" will be displayed briefly, followed by the flame signal from 0-100%.
2. Holding the + button for less than three seconds will briefly display the flame signal. Upon releasing the + button, the display will return to normal.
3. Holding the + button for more than three seconds will leave the flame signal displayed for two minutes. This is indicated by the point after the flame signal value flashing. After two minutes, or after pressing the + and - buttons together (escape), the display will return to normal.

### **AZL23 Display Unit Icons**



**Figure 5-1: AZL23 Display Unit Icons**

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## Troubleshooting Introduction

The LME7 has an extensive list of fault codes to help clarify the nature of any fault. A table later in this section describes every fault code in detail and gives guidance on how to correct it.

When a fault occurs, the LME7 will alternate between displaying “Loc” and the fault number.

The fault history is stored in the 700 set of parameters. These are only accessible with an AZL23 remote display or through the ACS410 software. To access the 700 set of parameters on the AZL23, press and hold the info button until “SEr” is displayed, then let go. The LME7 stores the last 11 fault codes:

Parameter 701 displays information about the current status of the LME7.

Parameter 702 displays information about the most recent fault.

Parameter 703 displays information about the second most recent fault.

...

Parameter 711 displays information about the 10<sup>th</sup> most recent fault.

Each fault code listed has indexes that provide additional information about the fault:

Index 00 = Fault code

Index 01 = Start number

Index 02 = Phase

Index 03 = Load

Index 01 will display a value of “.\_.”. This means that the AZL23 display ran out of room to display the start number. When this happens, hold down the info button to display the value.

An example of how the AZL23 displays a fault code in the fault history is shown below:



**Figure 7-1: LME7 Fault History Example with Indexes**

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### Navigating the Fault History

To navigate the fault history, use the following key strokes on the AZL23.

- When the parameter number is flashing, press the “+” or “-” button to cycle through the list of faults (parameters 701-711).
- When the parameter number is flashing, press and hold the info button to move the cursor from the parameter number to the index number. This will cause the index number to begin flashing.
- When the index number is flashing, press the “+” or “-” button to cycle through the list of indexes (00-03).
- When the index number is flashing, press the “+” and “-” buttons together to escape and move the cursor from the index number to the parameter number. This will cause the parameter number to begin flashing.

### Resetting Faults on the LME7 Burner Control

Faults can be reset in one of three ways on the LME7... burner control:

1. Pressing the info button on the LME7 burner control for 1-3 seconds.  
**Note:** Pressing the info button for less than one second has no effect. Pressing the info button for more than three seconds places the LME7 into diagnostic mode.
2. Pressing the info button on the AZL23 remote display until the word “rESET” appears, then releasing.  
**Note:** Releasing the info button before the word “rESET” appears has no effect. Pressing the info button too long accesses the “InFo” menu.
3. Connecting neutral to reset terminal X2-03.1 for more than one second. This is typically done with the use of a push button connected between neutral and X2-03.1.  
**Note:** Connecting neutral to X2-03.1 for less than one second has no effect.

### Accessing the Service (SEr) Menu

The service (SEr) menu contains the fault history as well as the 900 series of parameters that are used for diagnostic purposes, such as flame signal (954) and incoming voltage (951).

1. From the home screen (OFF), press and hold the info button until the word “SEr” is displayed, then release. The word “InFo” will briefly be displayed before “SEr”.
2. Press the + or - button to navigate through the parameters in the “SEr” menu.
3. When finished, press the “+” and “-” buttons together to escape.

## Complete Fault Code List

Fault Code	Description of the Fault	Corrective Action
2	No flame at start-up	<p>A flame failure occurred during lightoff.</p> <ol style="list-style-type: none"> <li>1. Check the wiring of the ignition transformer, pilot valve, and main valve(s).</li> <li>2. Ensure manual shutoff valves on the pilot gas line and main gas line are open.</li> <li>3. Check the fuel / air ratio at lightoff.</li> <li>4. Check the flame detector signal in the presence of a known flame source. Replace the flame detector if it does not produce the anticipated signal.</li> </ol>
3	Air pressure switch open	<p>The air pressure switch connected to terminal X3-02.1 is open, causing a fault. Ensure the setpoint of the switch is set to an appropriate value. Check the wiring of the air pressure switch. If no air pressure switch is being used, place a jumper from terminal X2-01.3 to X3-02.1.</p>
4	Extraneous light	<p>An extraneous light (flame signal present when there should be none) fault occurred.</p> <ol style="list-style-type: none"> <li>1. Ensure that the source of light is not a flame. If it is, take corrective action immediately.</li> <li>2. Ambient light can cause an extraneous light fault. Ensure the flame scanner is viewing a dark area.</li> <li>3. UV scanners typically fail on, giving a false flame signal. Remove UV scanner and cover the bulb to ensure it is not seeing any light. Look inside the bulb and see if any purple arcs of electricity are occurring between the electrodes in the bulb. If there are, replace the UV scanner.</li> </ol>
5	Air pressure switch closed	<p>The air pressure switch connected to terminal X3-02.1 is closed before the blower output is energized in phase 22, causing a fault. Ensure the setpoint of the switch is set to an appropriate value. Check the wiring of the air pressure switch. If no air pressure switch is being used, place a jumper from terminal X2-01.3 to X3-02.1.</p>
7	Loss of flame	<p>A flame failure occurred during normal operation.</p> <ol style="list-style-type: none"> <li>1. Check the fuel / air ratio.</li> <li>2. Check the flame detector signal in the presence of a known flame source. Replace the flame detector if it does not produce the anticipated signal.</li> </ol>
10	Wiring or other error	<p>This fault is a catchall and can be caused by a variety of issues. See Section 4-3 for a list of all known causes of this fault. If none of the causes listed in Section 4-3 appears to be the cause, review all wiring on the LME7 and check to see if a wire is landed on an incorrect terminal.</p>
14	Proof-of-closure (POC) switch failure	<p>The POC switch is not in the expected state. If a POC switch exists, ensure it is wired to terminal X2-02.4 on the LME7.</p> <p>If no POC switch exists, either set parameter 237 to 0 or install a jumper between terminals X2-02.3 and X2-02.4.</p>

Fault Code	Description of the Fault	Corrective Action
20	Gas pressure fault	One of the gas pressure switches wired to terminal X5-01.2 opened, causing a fault. It is common for both the high and low gas pressure switches to be wired to terminal X5-01.2, so the fault could be either a high gas or low gas event. Check the gas supply and open any manual shutoff valves. Check the wiring of all gas pressure switches. Check the setpoint of any gas pressure switches to ensure the setpoint is set to an appropriate value.
22	Safety loop open	Check all of the switches wired into the safety loop on terminal X3-04.1. One of the switches opened, causing the fault. Fix the condition that caused the switch to open and reset the fault.
138	Restore process successful	There is no fault. This fault occurs when a parameter set was successfully restored from the PME7 program module to the LME7 base unit. Reset the fault.
139	No program module detected	This fault occurs when no PME7 program module is plugged into the LME7 base unit. Insert a PME7 program module into the LME7 base unit and reset the fault.
167	Manual lockout	A manual lockout is caused by pressing the info button and any other button, either on the LME7 base unit or on the AZL23 remote display. Reset the fault.
206	Inadmissible combination of units (LME7 / AZL23)	Reset the LME7. If the fault occurs continuously, replace the LME7 and / or AZL23.
rSt Er1	Incompatible PME7 and LME7	The PME7 program module and LME7 base unit being used are incompatible. PME71 program modules are only compatible with LME71 base units, PME73 program modules are only compatible with LME73 base units, and PME75 program modules are only compatible with LME75 base units.
rSt Er2		
rSt Er3	Fault during restore process	The PME7 program module was removed during the restore process. Re-install the PME7 program module and reset the fault to complete the restore process.
bAC Er3	Fault during backup process	The PME7 program module was removed during the backup process. Re-install the PME7 program module and reset the fault. Perform the backup process again.
Err PrC	No program module detected	This fault occurs when no PME7 program module is plugged into the LME7 base unit. Insert a PME7 program module into the LME7 base unit and reset the fault.

## Other Common Faults

### Known Causes of Loc 10

Loc 10 is a catchall fault that can be caused by a variety of issues. All known causes of Loc 10 are listed below in Table 4-1.

**Table 4-1: All Known Causes of Loc 10**

Cause #	Description	Phase	Corrective Action
1	Line power is directly connected to safety loop input X3-04.1	OFF	Power to the safety loop must be sourced from terminal X3-04.2
2	Line power directly connected to blower output terminal X2-01.3	OFF	Correct feedback/wiring error
3	K4 relay contacts welded	21	With no power on the LME7, check continuity across pins X2-01.3 and X2-02.3. If there is continuity, replace the LME7. See Note 1 below.
4	Line power directly connected to POC source terminal X2-02.3	OFF	Correct feedback/wiring error
5	Line power directly connected to SV output terminal X6-03.3	OFF	Correct feedback/wiring error
6	Ambient temperature exceeds 140°F	OFF	Adjust the temperature back within the controller g h range. Add enclosure cooling if necessary.
7	Flame failure incorrectly being logged as Loc 10	44, 50	Adjust combustion to avoid flame failures during light-off

#### Notes:

1. It is likely that the rating on the blower motor output X2-01.3 was exceeded. Output X2-01.3 has a 2 Amp rating at 120 V, 50/60 Hz.

### LME7 LED is Flashing Red

When the LED on the front of the LME7 is flashing red very quickly, this indicates that the LME7 has been placed into Diagnostic Mode. While being in Diagnostic Mode does not prevent successful operation of the burner, it does remove the status that is typically displayed by the LED, as well as causes operators to incorrectly conclude that the LME7 is damaged.

There is no practical use for Diagnostic Mode. To exit Diagnostic Mode, simply press and hold the info button until the LED flashes yellow, then release the info button.

---

A hm fh h A mhg h g h

Ensure that neutral is not directly connected to terminal X2-03.1, the remote reset input. To remotely reset the LME7, neutral is momentarily applied to input X2-03.1. If neutral is applied to X2-03.1 permanently, an LME7 fault cannot be reset and the LME7 will not start the burner even when a call for heat signal is applied to input X5-03.1.

#### LME7 Stuck in Phase 90 (P90)

This indicates there is no power on input terminal X5-01.2. Typically, the low gas pressure switch and/or high gas pressure switch are connected to terminal X5-01.2. Check for appropriate gas pressure, and reset pressure switches if they are manual reset. Once power is restored to terminal X5-01.2, the LME7 will exit Phase 90 automatically.



Section 1	Overview
Section 2	Wiring, Parameters and Phase Diagram
Section 3	Commissioning
Section 4	Troubleshooting
<b>Section 5</b>	<b>Modbus</b>

## Modbus RTU and BACnet MS/TP Communication

### Introduction

The physical connection from the LME7 burner control to the Modbus RTU or BACnet MS/TP system is made via an external OCI417.10 interface module. The OCI417.10 is compatible with all LME7... burner controls and PME7... program modules.

### Physical Connections

#### Power

Power to the OCI417.10 must be either 9-24VDC or 9-24VAC (nominal). Power consumption is 2.5W or less. **SCC part number AGA15-24** is available as a suitable power supply.

Terminal designations:

Label	Function
L+	DC + / AC ~
N-	DC - / AC ~

#### Connection to the LME7...

The connection from the OCI417.10 to the LME7... should be made with a 4-wire RJ-11 cable with reversed connections (voice cable), such as **SCC part number TDC207**. **Maximum allowed cable length is 3 meters.**

X56 Port LME7...



Pin 1: 5V Out  
Pin 2: Transmit  
Pin 3: Receive  
Pin 4: 0V Out

OCI417.10



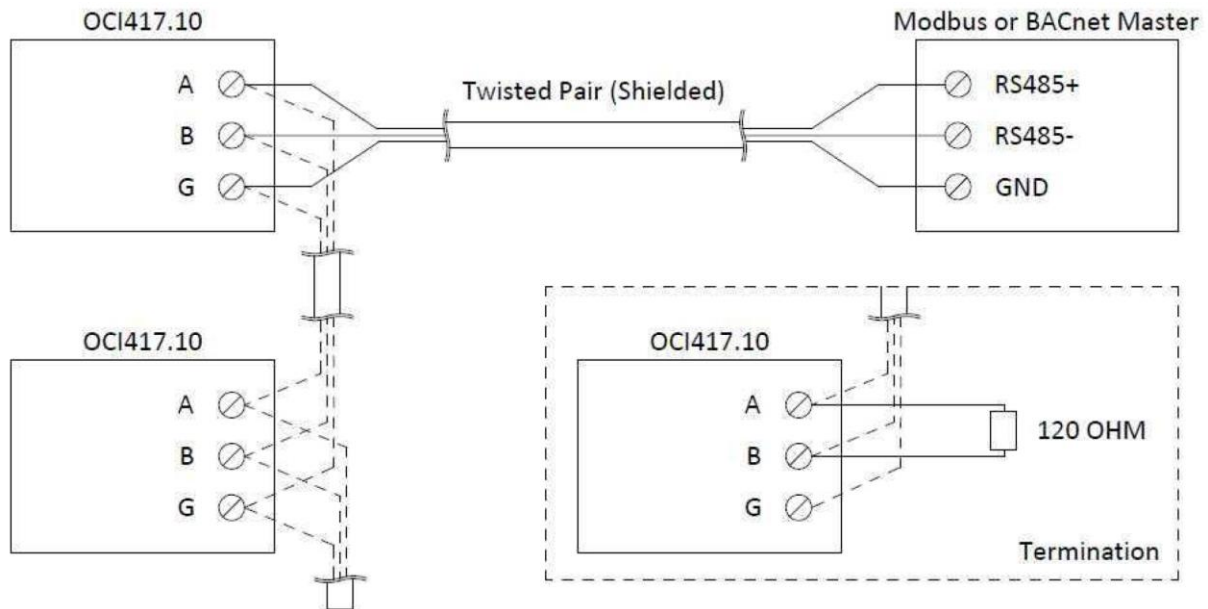
Pin 1: 0V In  
Pin 2: Transmit  
Pin 3: Receive  
Pin 4: 5V In

**Note that while the OCI417.10 is connected, the AZL23... or PC tool ACS410 via OCI410... may not be simultaneously connected.** Connecting multiple interfaces to the LME7... using a multi-way cable or splitter may result in damage to the connected LME7..., OCI417.10, AZL23..., or OCI410...



Connection to the BMS

The connection from the BMS to the OCI417.10 is via terminal block. The physical medium is RS-485. Multiple RS-485 nodes may be connected in a daisy-chain. For long runs (typically greater than 1,000 feet) or noisy environments, termination may be required on the end node.



Terminal designations:

Label	Function
A	RS-485 Data (+)
B	RS-485 Data (-)
G	RS-485 Common Ground

**Status LED**

The status LED annunciates the status of the OCI417.10 and the connection to the LME7...

Color	Status
Green Flashing	No Connection to LME7...
Green / Red Alternating	Communicating with LME7...
Red Flashing	Internal Error OCI417.10

**Tx/Rx LED**

The LED will flash red to indicate incoming communication on the RS-485 connection. The LED will flash green to indicate outgoing communication. With normal communication, the LED will rapidly alternate between green and red. NOTE: If the poll rate is fast the flashes may be very brief and hard to notice.

**Modbus RTU Connection Details**

Modbus RTU protocol selection and addressing is done using the PC tool **OCI417 Configuration Utility** (see next section).

Supported addresses: 1-247

Supported baud rates: 2400, 4800, 9600, 19200, 38400, 57600 and 115200

Supported data bits: 8

Supported parity and stop bits: none (1 or 2 stop bits), odd (1 stop bit), and even (1 stop bit)

Supported function codes: 3 (read holding registers), 4 (read input registers)

Maximum read length: 125 (if beginning and ending registers are valid addresses)

### **BACnet MS/TP Connection Details**

BACnet MS/TP protocol selection and addressing is done using the PC tool **OCI417 Configuration Utility** (see next section).

Supported addresses: 0-127

Supported baud rates: 9600, 19200, 38400, 57600, 76800 and 115200

Supported data bits: 8

Supported parity and stop bits: none (1 stop bit)

Supported device instances: 0-4194302

### Using the OCI417 Configuration Utility

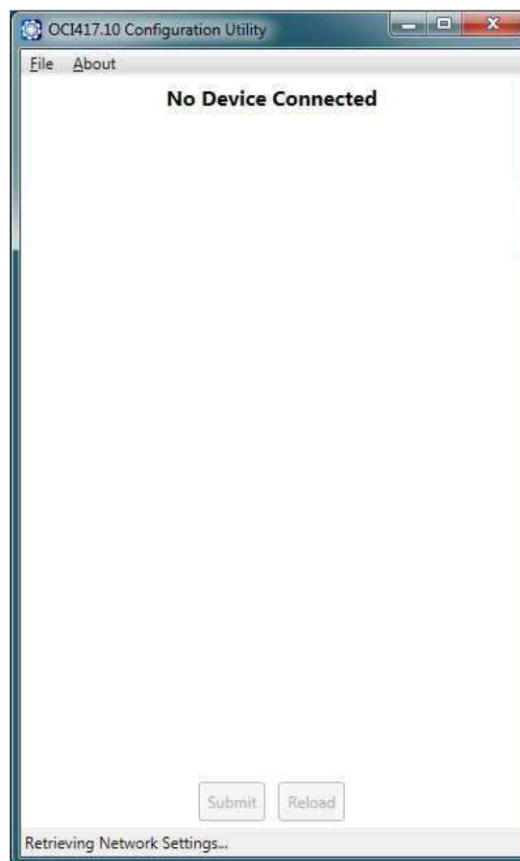
1. To download the OCI417 configuration utility, go to the following website and click the “OCI417.10 Configuration Utility” link to download and install the software.

<http://www.scccombustion.com/flame.htm>.

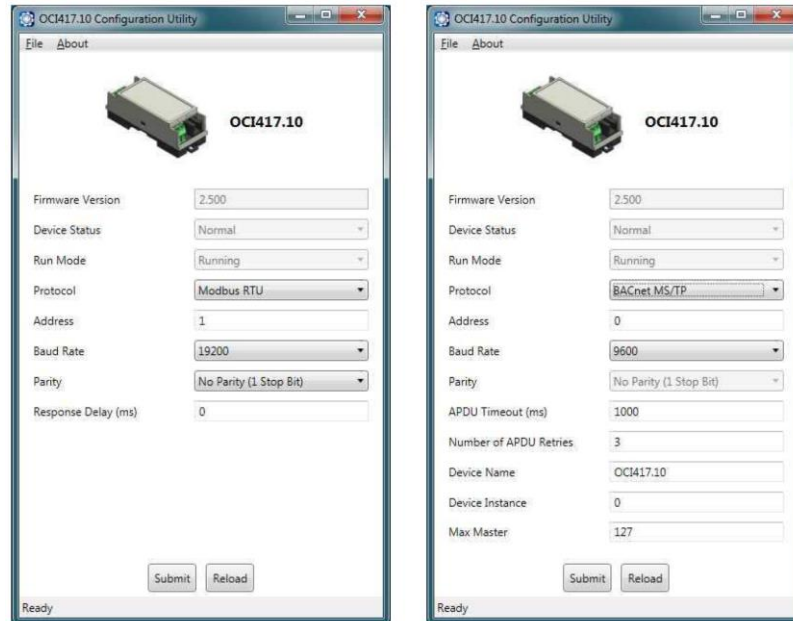
2. Once installed, double-click the icon to open the configuration utility.



3. The utility will open and show the connection status of the OCI417.10.



4. Use a mini-USB cable to connect the OCI417.10 to the computer, such as **SCC part number AGA5-05M**. A driver may self-install the first time a connection is made. The connected device will then be indicated on the screen.



5. The protocol can be changed between Modbus RTU and BACnet MS/TP from this screen. See the previous sections for further details on the protocol-specific settings that can be changed. Once the desired settings have been entered, click **Submit** to apply. Click **Reload** to refresh the displayed settings.

## Updating the OCI417.10 Firmware

1. From the OCI417.10 Configuration Utility, click **File -> Update Device...**



2. Locate the supplied update file with a **.duf** extension and click **Open**.



3. The device will automatically reboot and reconnect with the OCI417.10 Configuration Utility once the firmware update is complete. When a device is connected, the firmware version is shown as one of the read-only parameters.





### Modbus Mapping

ADDRESS	ACCESS	DESCRIPTION	FORMAT	NOTES
0	R	PHASE	Unsigned Int 16	
1	R	FLAME INTENSITY	Unsigned Int 16	x10
2	R	MAINS VOLTAGE	Unsigned Int 16	x10
3	R	STARTUPS RESETTABLE	Unsigned Int 32	
5	R	STARTUPS TOTAL	Unsigned Int 32	
7	R	RELAY K12 CYCLES	Unsigned Int 32	
9	R	RELAY K11 CYCLES	Unsigned Int 32	
11	R	RELAY K2 CYCLES	Unsigned Int 32	
13	R	RELAY K1 CYCLES	Unsigned Int 32	
15	R	MAX RELAY CYCLES	Unsigned Int 32	
17	R	CURRENT OUTPUT PERCENT	Unsigned Int 16	> 100 IS STAGES (101=S1, 102=S2)
18	R	ACTUATOR ACTUAL PERCENT	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
19	R	ACTUATOR TARGET PERCENT	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
20	R	EXT LOAD CONTROLLER PERCENT	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
21	R	FAN SPEED RPM	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
22	R	FAN SPEED PERCENT	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
23	R	TARGET FAN SPEED PERCENT	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
24	R	PWM SIGNAL PERCENT	Unsigned Int 16	65535 (-1) IS NOT OPTIONED
25	R	STATUS INPUT WORD <b>LME71/LME73</b>	Unsigned Int 16	SEE BIT BREAKDOWN
25 bit 0	R	SAFETY LIMIT (SK)	Boolean	TERMINAL X3.04.1
25 bit 1	R	PROOF OF CLOSURE (POC)	Boolean	TERMINAL X2.02.4
25 bit 4	R	PRESS SW VALVE PROVING (P LT)	Boolean	TERMINAL X9.04.2
25 bit 5	R	LOW GAS PRESSURE SWITCH (Pmin)	Boolean	TERMINAL X5.01.2
25 bit 6	R	CONTROL SWITCH (ON/OFF)	Boolean	TERMINAL X5.03.1
25 bit 7	R	COMBUSTION AIR SWITCH (LP)	Boolean	TERMINAL X3.02.1
25 bit 8	R	RESET TERMINAL (EK2)	Boolean	TERMINAL X2.03.1
25 bit 10	R	INCREASE MODULATION (LR-OPEN)	Boolean	TERMINAL X5.03.3
25 bit 11	R	DECREASE MODULATION (LR-CLOSED)	Boolean	TERMINAL X5.03.2
25 bit 12	R	ACTUATOR FEEDBACK (SA-R)	Boolean	TERMINAL X2.09.4
25 bit 14	R	RESET BUTTON LME	Boolean	
26	R	STATUS OUTPUT WORD	Unsigned Int 16	SEE BIT BREAKDOWN
26 bit 0	R	FLAME PRESENT	Boolean	
26 bit 1	R	ALARM (AL)	Boolean	TERMINAL X2.03.3
26 bit 2	R	NO COMM TO LME	Boolean	STATUS FROM OCI417
26 bit 7	R	SAFETY VALVE (SV)	Boolean	TERMINAL X6.03.3
26 bit 8	R	ACTUATOR LOW-FIRE (SA-KL)	Boolean	TERMINAL X2.09.2
26 bit 9	R	ACTUATOR HIGH-FIRE (SA-NL)	Boolean	TERMINAL X2.09.3
26 bit 10	R	PILOT VALVE (PV)	Boolean	TERMINAL X7.01.3
26 bit 12	R	IGNITION (Z)	Boolean	TERMINAL X4.02.3
26 bit 13	R	FAN (M)	Boolean	TERMINAL X2.01.3
26 bit 14	R	VALVE 1 (V1)	Boolean	TERMINAL X7.04.4
26 bit 15	R	VALVE 2 (V2)	Boolean	TERMINAL X7.02.3
27	R	STATUS INPUT WORD <b>LME75</b>	Unsigned Int 16	SEE BIT BREAKDOWN
27 bit 0	R	PRESS SW VALVE PROVING (P LT)	Boolean	TERMINAL X9.04.2
27 bit 1	R	VALVE PROVING ENABLE (LT) HIGH GAS PRESSURE SWITCH (Pmax) PROOF OF CLOSURE (POC)	Boolean	TERMINAL X2.02.4

**Modbus Mapping**

ADDRESS	ACCESS	DESCRIPTION	FORMAT	NOTES
27 bit 2	R	INCREASE MODULATION (LR-OPEN)	Boolean	TERMINAL X5.03.3
27 bit 3	R	DECREASE MODULATION (LR-CLOSED)	Boolean	TERMINAL X5.03.2
27 bit 4	R	COMBUSTION AIR SWITCH (LP)	Boolean	TERMINAL X3.02.1
27 bit 5	R	LOW GAS PRESSURE SWITCH (Pmin)	Boolean	TERMINAL X5.01.2
27 bit 6	R	RESET BUTTON LME	Boolean	
27 bit 7	R	RESET TERMINAL (EK2)	Boolean	TERMINAL X2.03.1
27 bit 8	R	ACTUATOR FEEDBACK (SA-R)	Boolean	TERMINAL X2.09.4
27 bit 9	R	SAFETY LIMIT (SK)	Boolean	TERMINAL X3.04.1
27 bit 10	R	CONTROL SWITCH (ON/OFF)	Boolean	TERMINAL X5.03.1
27 bit 11	R	INPUT CAMS (SA-ZL)	Boolean	TERMINAL X2.09.8
50	R	PRODUCT ID	String	
60	R	BURNER ID	String	
70	R	OEM PRODUCT ID	String	
80	R	PME PRODUCT ID	String	
90	RW	OCI PRODUCT ID	String	WRITABLE DATA AREA
100	R	CURRENT ERROR CODE	Unsigned Int 16	
101	R	CURRENT ERROR STARTUPS	Unsigned Int 32	
103	R	CURRENT ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
104	R	CURRENT ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
110	R	HISTORY 1 ERROR CODE	Unsigned Int 16	
111	R	HISTORY 1 ERROR STARTUPS	Unsigned Int 32	
113	R	HISTORY 1 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
114	R	HISTORY 1 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
120	R	HISTORY 2 ERROR CODE	Unsigned Int 16	
121	R	HISTORY 2 ERROR STARTUPS	Unsigned Int 32	
123	R	HISTORY 2 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
124	R	HISTORY 2 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
130	R	HISTORY 3 ERROR CODE	Unsigned Int 16	
131	R	HISTORY 3 ERROR STARTUPS	Unsigned Int 32	
133	R	HISTORY 3 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
134	R	HISTORY 3 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
140	R	HISTORY 4 ERROR CODE	Unsigned Int 16	
141	R	HISTORY 4 ERROR STARTUPS	Unsigned Int 32	
143	R	HISTORY 4 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
144	R	HISTORY 4 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
150	R	HISTORY 5 ERROR CODE	Unsigned Int 16	
151	R	HISTORY 5 ERROR STARTUPS	Unsigned Int 32	
153	R	HISTORY 5 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
154	R	HISTORY 5 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
160	R	HISTORY 6 ERROR CODE	Unsigned Int 16	
161	R	HISTORY 6 ERROR STARTUPS	Unsigned Int 32	
163	R	HISTORY 6 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
164	R	HISTORY 6 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
170	R	HISTORY 7 ERROR CODE	Unsigned Int 16	
171	R	HISTORY 7 ERROR STARTUPS	Unsigned Int 32	
173	R	HISTORY 7 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
174	R	HISTORY 7 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED

**Modbus Mapping**

ADDRESS	ACCESS	DESCRIPTION	FORMAT	NOTES
180	R	HISTORY 8 ERROR CODE	Unsigned Int 16	
181	R	HISTORY 8 ERROR STARTUPS	Unsigned Int 32	
183	R	HISTORY 8 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
184	R	HISTORY 8 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
190	R	HISTORY 9 ERROR CODE	Unsigned Int 16	
191	R	HISTORY 9 ERROR STARTUPS	Unsigned Int 32	
193	R	HISTORY 9 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
194	R	HISTORY 9 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED
200	R	HISTORY 10 ERROR CODE	Unsigned Int 16	
201	R	HISTORY 10 ERROR STARTUPS	Unsigned Int 32	
203	R	HISTORY 10 ERROR PHASE	Unsigned Int 32	PHASE IS 0 WHEN NO ERROR
204	R	HISTORY 10 ERROR LOAD	Unsigned Int 16	255 IS NO LOAD RECORDED

**BACnet Mapping**

ADDRESS	DESCRIPTION	UNITS	ACTIVE TEXT	INACTIVE TEXT
AV1	PHASE	NO UNITS	--	--
AV2	FLAME INTENSITY	PERCENT	--	--
AV3	MAINS VOLTAGE	VOLTS	--	--
AV4	STARTUPS RESETTABLE	NO UNITS	--	--
AV5	STARTUPS TOTAL	NO UNITS	--	--
AV6	RELAY K12 CYCLES	NO UNITS	--	--
AV7	RELAY K11 CYCLES	NO UNITS	--	--
AV8	RELAY K2 CYCLES	NO UNITS	--	--
AV9	RELAY K1 CYCLES	NO UNITS	--	--
AV10	MAX RELAY CYCLES	NO UNITS	--	--
AV11	CURRENT OUTPUT PERCENT	PERCENT	--	--
AV12	ACTUATOR ACTUAL PERCENT	PERCENT	--	--
AV13	ACTUATOR TARGET PERCENT	PERCENT	--	--
AV14	EXT LOAD CONTROLLER PERCENT	PERCENT	--	--
AV15	FAN SPEED RPM	RPM	--	--
AV16	FAN SPEED PERCENT	PERCENT	--	--
AV17	TARGET FAN SPEED PERCENT	PERCENT	--	--
AV18	PWM SIGNAL PERCENT	PERCENT	--	--
AV19	CURRENT ERROR CODE	NO UNITS	--	--
AV20	CURRENT ERROR STARTUPS	NO UNITS	--	--
AV21	CURRENT ERROR PHASE	NO UNITS	--	--
AV22	CURRENT ERROR LOAD	PERCENT	--	--
AV23	HISTORY 1 ERROR CODE	NO UNITS	--	--
AV24	HISTORY 1 ERROR STARTUPS	NO UNITS	--	--
AV25	HISTORY 1 ERROR PHASE	NO UNITS	--	--
AV26	HISTORY 1 ERROR LOAD	PERCENT	--	--
AV27	HISTORY 2 ERROR CODE	NO UNITS	--	--
AV28	HISTORY 2 ERROR STARTUPS	NO UNITS	--	--
AV29	HISTORY 2 ERROR PHASE	NO UNITS	--	--
AV30	HISTORY 2 ERROR LOAD	PERCENT	--	--
AV31	HISTORY 3 ERROR CODE	NO UNITS	--	--
AV32	HISTORY 3 ERROR STARTUPS	NO UNITS	--	--
AV33	HISTORY 3 ERROR PHASE	NO UNITS	--	--
AV34	HISTORY 3 ERROR LOAD	PERCENT	--	--
AV35	HISTORY 4 ERROR CODE	NO UNITS	--	--
AV36	HISTORY 4 ERROR STARTUPS	NO UNITS	--	--
AV37	HISTORY 4 ERROR PHASE	NO UNITS	--	--
AV38	HISTORY 4 ERROR LOAD	PERCENT	--	--
AV39	HISTORY 5 ERROR CODE	NO UNITS	--	--
AV40	HISTORY 5 ERROR STARTUPS	NO UNITS	--	--
AV41	HISTORY 5 ERROR PHASE	NO UNITS	--	--
AV42	HISTORY 5 ERROR LOAD	PERCENT	--	--
AV43	HISTORY 6 ERROR CODE	NO UNITS	--	--
AV44	HISTORY 6 ERROR STARTUPS	NO UNITS	--	--
AV45	HISTORY 6 ERROR PHASE	NO UNITS	--	--
AV46	HISTORY 6 ERROR LOAD	PERCENT	--	--

**BACnet Mapping**

ADDRESS	DESCRIPTION	UNITS	ACTIVE TEXT	INACTIVE TEXT
AV47	HISTORY 7 ERROR CODE	NO UNITS	--	--
AV48	HISTORY 7 ERROR STARTUPS	NO UNITS	--	--
AV49	HISTORY 7 ERROR PHASE	NO UNITS	--	--
AV50	HISTORY 7 ERROR LOAD	PERCENT	--	--
AV51	HISTORY 8 ERROR CODE	NO UNITS	--	--
AV52	HISTORY 8 ERROR STARTUPS	NO UNITS	--	--
AV53	HISTORY 8 ERROR PHASE	NO UNITS	--	--
AV54	HISTORY 8 ERROR LOAD	PERCENT	--	--
AV55	HISTORY 9 ERROR CODE	NO UNITS	--	--
AV56	HISTORY 9 ERROR STARTUPS	NO UNITS	--	--
AV57	HISTORY 9 ERROR PHASE	NO UNITS	--	--
AV58	HISTORY 9 ERROR LOAD	PERCENT	--	--
AV59	HISTORY 10 ERROR CODE	NO UNITS	--	--
AV60	HISTORY 10 ERROR STARTUPS	NO UNITS	--	--
AV61	HISTORY 10 ERROR PHASE	NO UNITS	--	--
AV62	HISTORY 10 ERROR LOAD	PERCENT	--	--
BV1	SAFETY LIMIT (SK) <b>LME71/73</b>	--	CLOSED	OPEN
BV2	SAFETY LIMIT (SK) <b>LME75</b>	--	CLOSED	OPEN
BV3	PROOF OF CLOSURE (POC) <b>LME71/73</b>	--	CLOSED	OPEN
BV4	VALVE PROVING ENABLE (LT) <b>LME75</b> HIGH GAS PRESS SW (Pmax) <b>LME75</b> PROOF OF CLOSURE (POC) <b>LME75</b>	--	CLOSED	OPEN
BV5	PRESS SW VALVE PROVING (P LT) <b>LME71/73</b>	--	CLOSED	OPEN
BV6	PRESS SW VALVE PROVING (P LT) <b>LME75</b>	--	CLOSED	OPEN
BV7	LOW GAS PRESSURE SWITCH (Pmin)	--	CLOSED	OPEN
BV8	CONTROL SWITCH (ON/OFF) <b>LME71/73</b>	--	CLOSED	OPEN
BV9	CONTROL SWITCH (ON/OFF) <b>LME75</b>	--	CLOSED	OPEN
BV10	COMBUSTION AIR SWITCH (LP) <b>LME71/73</b>	--	CLOSED	OPEN
BV11	COMBUSTION AIR SWITCH (LP) <b>LME75</b>	--	CLOSED	OPEN
BV12	RESET TERMINAL (EK2) <b>LME71/73</b>	--	CLOSED	OPEN
BV13	RESET TERMINAL (EK2) <b>LME75</b>	--	CLOSED	OPEN
BV14	INCREASE MODULATION (LR-OPEN)	--	CLOSED	OPEN
BV15	DECREASE MODULATION (LR-CLOSED)	--	CLOSED	OPEN
BV16	RESET BUTTON LME	--	CLOSED	OPEN
BV17	INPUT CAMS (SA-ZL) <b>LME75</b>	--	CLOSED	OPEN
BV18	FLAME PRESENT	--	FLAME	NO FLAME
BV19	ALARM (AL)	--	ALARM	NO ALARM
BV20	NO COMM TO LME	--	OK	NO COMM
BV21	ACTUATOR FEEDBACK (SA-R)	--	CLOSED	OPEN
BV22	SAFETY VALVE (SV)	--	CMD ON	CMD OFF
BV23	ACTUATOR LOW-FIRE (SA-KL)	--	CMD ON	CMD OFF
BV24	ACTUATOR HIGH-FIRE (SA-NL)	--	CMD ON	CMD OFF
BV25	PILOT VALVE (PV)	--	CMD ON	CMD OFF
BV26	IGNITION (Z)	--	CMD ON	CMD OFF
BV27	FAN (M)	--	CMD ON	CMD OFF
BV28	VALVE 1 (V1)	--	CMD ON	CMD OFF

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**BACnet Mapping**

ADDRESS	DESCRIPTION	UNITS	ACTIVE TEXT	INACTIVE TEXT
BV29	VALVE 2 (V2)	--	CMD ON	CMD OFF

**Unused Inputs**

Any inputs unused by the selected PME... will still annunciate. For example, although PME71.111A1 does not support valve proving, applying 120VAC to terminal X9-04.2 will still cause Modbus address 25, bit 4 to show this terminal as active.