



ROHNER OVEN | OPERATOR MANUAL



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INTRODUCTION

This document provides a guide to operating and maintaining a Rohner oven control panel. This panel is designed to run a single oven with one (1) Rohner process heater. All gas train components to be controlled by main control panel. Optional remote HMI panel available for purchase.

GENERAL SAFETY



SYSTEM OVERVIEW

The system can be broken down into a couple of key components. Here is a brief description of each set of components and how they are used in the system. There are some devices that are omitted from this list. This list is provided to give a quick overview of the key components within the control system.

HMI/PLC

The HMI (FIGURE 1) is the touch-screen interface mounted on the control panel enclosure door (or on a separate operator interface panel). This is the main operator interface and is how the operator will control the oven. From the HMI, operators can start and stop the oven and access diagnostic data. The HMI serves as a hub for communication between the **SOLO TEMPERATURE CONTROLLER**, as well as the PLC.



Figure 1 - SCHNEIDER ELECTRIC HMI



Figure 2 - PLC

The PLC (FIGURE 2) is the main controller for the system. It is responsible for controlling fans, initiating burner demands, and monitoring multiple interlocks in conjunction with the **SIEMENS BURNER CONTROLLER**. The HMI communicates with the PLC over MODBUS TCP/IP (Ethernet). This ethernet network is designed to remain isolated and is only for communication between the HMI and PLC.

SIEMENS BURNER CONTROLLER

Each Process Heater has its own individual gas train and burner. All burner components are controlled and monitored by the Siemens LME71 burner controller (FIGURE 3). This includes monitoring low and high gas pressure limits, gas valve position, main gas valves (2), and pilot valves (2). See [GAS TRAIN](#) for more information.

This controller has a display to read the sequence of operation and any fault codes. For more information, see the [TROUBLESHOOTING](#) section, as well as the LME71 manufacturer documentation.

Most faults on this controller will give a LOC code. See [TROUBLESHOOTING](#) for more information. The controller can be reset by pressing the “RESET” button on the STATUS screen of the HMI.



Figure 3 - SIEMENS BURNER CONTROLLER

HIGH TEMP LIMIT

The high temperature limit (FIGURE 4) is a separate controller mounted in the main control panel. A separate thermocouple (Type K) is mounted in the process heater near the recirculation fan. This limit is used to shut down the oven if the process heater rises above a safe limit. In most high-temp applications, the setpoint is upwards of 800°F.

This controller does not automatically reset. When tripped, a buzzer will sound from it inside the control panel. To reset the controller, the temperature needs to drop below the setpoint (typically 800°F), then press the “RST” (reset) button.



Figure 4 - HIGH TEMP LIMIT

SOLO TEMPERATURE CONTROLLER

The gas train has a modulation (butterfly) valve that opens and closes to change the amount of gas that enters the burner. This modulation is controlled by a 4-20mA signal generated from a SOLO temperature controller (FIGURE 5) mounted inside the control panel.

The SOLO controller runs a PID loop for corrections to achieve a setpoint written from the HMI. The left side of the screen shows your Process Variable (PV) and right side shows the Setpoint Variable (SV). In addition to those displays, there are individual indicator lights along the bottom (see for more information).



Figure 5 - SOLO CONTROLLER

Table 1 - SOLO INDIACTOR LIGHTS

INDICATOR LIGHT	DESCRIPTION
AT	FLASHING: Autotune in progress. Once complete, light will turn off and SOLO will return to normal functionality automatically.
OUT1	ON: 4-20mA Signal at 20mA (100% output). Burner at high fire. FLASHING: 4-20mA signal between 4mA and 20mA (Flashing duty cycle will show % Output) OFF: 4-20mA signal at 4mA (0% output). Burner at low fire.
OUT2	Same as OUT1, but not used in this application.
ALM	SOLO is in alarm. See manufacturer documentation for more information.
°F	Displayed temperatures set to Fahrenheit
°C	Displayed temperatures set to Celsius

GAS TRAIN

The gas train is assembled and tested at Rohner. The entire assembly contains the following:

- Main Shutoff (Ball) Valve
- Main Gas Valve Housing
 - Regulator
 - Main Gas Valves (x2 in series)
 - Low Gas Pressure Switch
 - Valve Proving Limit Switch
 - Valve Position Indicator
 - High Gas Pressure Switch
- Pilot Shutoff (Ball) Valve
- Pilot Regulator
- Pilot Gas Valves (x2 in series)
- Modulation Valve
- Manifold Shutoff (Ball) Valve

Along with the gas train, there are two (2) pressure switches. One monitors burner differential pressure, and the other monitors fresh air coming through the filters on the back of the process heater. In PURGE mode, the countdown will not begin counting down.

All gas train components are controlled from the [SIEMENS BURNER CONTROLLER](#) and [SOLO TEMPERATURE CONTROLLER](#). See the control panel electrical schematics for more information on connections between the gas train components and Rohner control panel.

FANS

There is one (1) exhaust fan for the oven and one (1) recirculation fan mounted on the Process Heater. The recirculation fans are responsible for recirculating air in the oven, as well as pulling fresh air across the burner. Fans are belt-driven and require general periodic maintenance including lubrication.

Fans are typically controlled by motor starters and overloads. In some cases, VFDs are used as an upgraded option. In either case, the PLC controls the run command for fans and monitoring fault conditions. Fault conditions can be viewed from the HMI.

MISCELLANEOUS COMPONENTS

Exhaust Pressure Switch:

A pressure switch is mounted near the exhaust fan. The exhaust pressure switch is used to prove exhaust airflow, and is plumbed according to the construction set provided with the equipment. The oven will not purge or light the burner without it. In PURGE mode, the countdown will not begin counting down until this pressure switch is proven.

Process Temperature Thermocouple Probe:

A Type K thermocouple is used to monitor and control the temperature inside the oven. The location of the probe is depicted on the construction set. It is wired back to the corresponding thermocouple connector in the control panel. NOTE: Needs to be ran with Type K thermocouple wire.

High Temp Limit Thermocouple Probe:

A second Type K thermocouple is mounted on the process heater near the recirculation fan. It monitors for excessive heat within the heater box, and can shut down the burner if it reaches above a safe limit. It is wired back to the corresponding thermocouple connector in the control panel. NOTE: Needs to be ran with Type K thermocouple wire.

HMI SCREENS

Rohner’s oven controls HMI is designed to be simple and straight-forward for operators and maintenance staff. A navigator section is present on the right side of the screen to choose which screen to navigate to. In general, operator parameters are accessible all the time, and commissioning/configuration parameters are hidden behind password-protected screens.

MAIN

This is the MAIN (Home) screen. Here, the current operational mode is displayed in the center. The current temp in the oven, the setpoint temperature, the recipe time and time remaining are all displayed on the MAIN screen. Navigation buttons are on the right. To the left of the Mode display, there is a Purge timer that will be visible during PURGE mode.

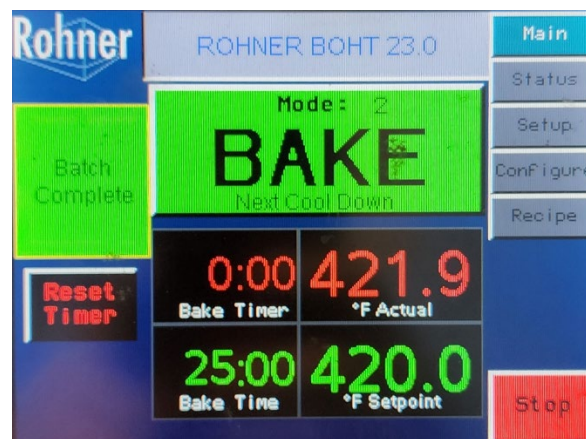


Figure 6 - HMI “MAIN” SCREEN

STATUS

The STATUS screen (FIGURE 7) is the first place to look while troubleshooting. There is a color indicator for each fault condition, as well as general status indicators to determine proper functionality of the equipment. Color codes can be broken down into the following (TABLE 2).

Table 2 - STATUS INDICATORS

Color	Meaning
●	FAULT – A fault has occurred and requires the condition to be rectified before normal operation can continue. In some cases, a reset is required.
●	ACTIVE – Status is active, indicating that part of the system is energized and functioning as expected.
●	INACTIVE – Indicates that part of the system is not active, but is not expected to be active. This is NOT an indication of a fault.

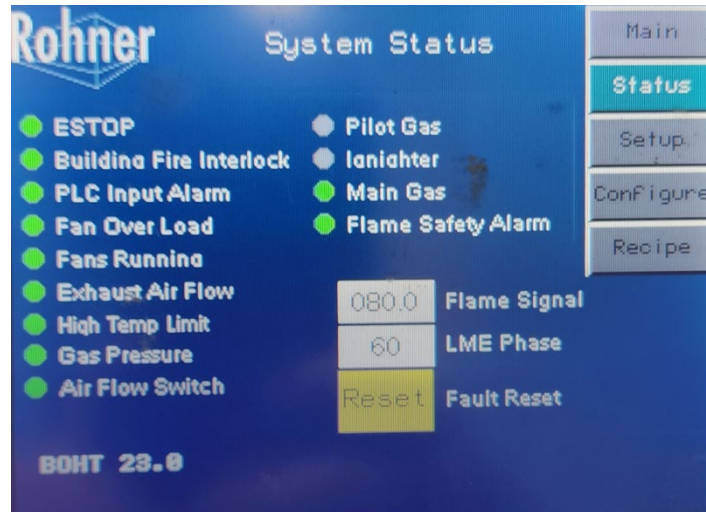


Figure 7 - HMI "STATUS" SCREEN

SETUP

The SETUP page is for recipe management. A checkbox is used to determine which recipe is selected. The left column is for a temperature setpoint, and the second column is the recipe time associated at that temperature. Only one recipe can be selected at a time.

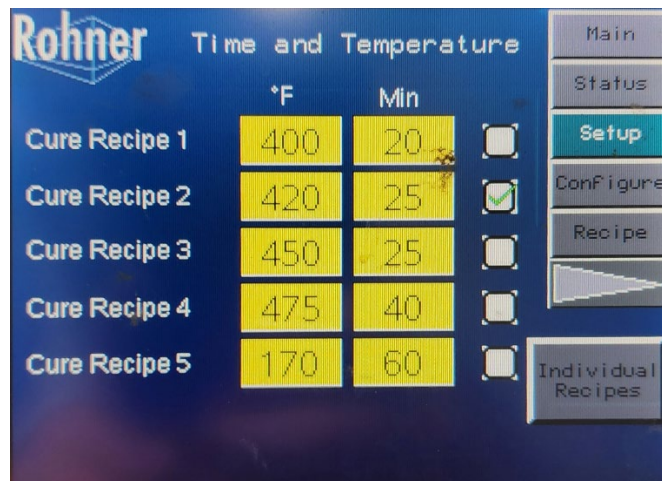


Figure 8 – "SETUP" SCREEN

At the end of the recipe, the oven will either go into COOLDOWN, or continue to run with a pop-up notification on the MAIN screen (see SEQUENCE OF OPERATION for more information).

CONFIG/LOGIN

There are a handful of configuration parameters that are hidden behind a password-protected screen. Some of these parameters completely change the functionality of the system and can cause damage to the equipment if changed from factory settings. When navigating to any protected screen, a popup login screen will display (FIGURE 9).

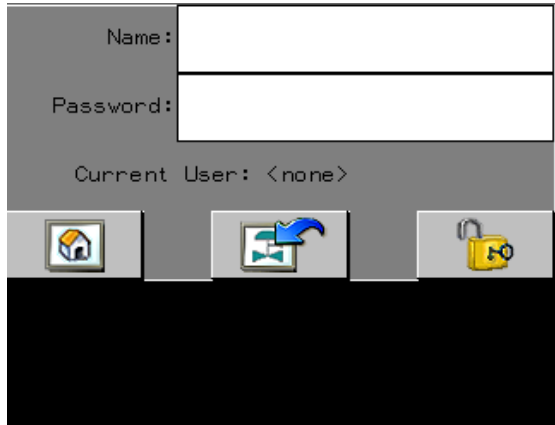


Figure 9 – HMI "LOGIN" SCREEN

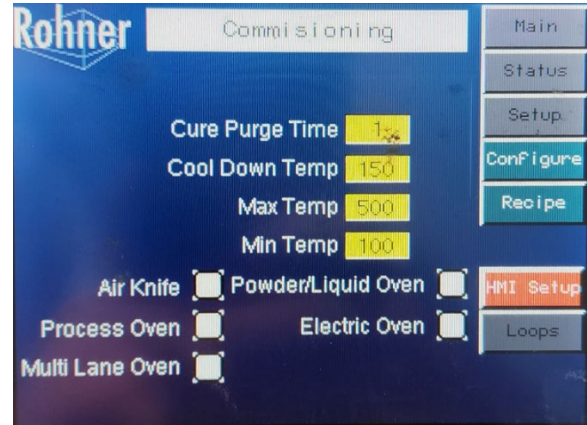


Figure 10 - HMI "CONFIGURATION" SCREEN

Once commissioning is complete, there would not be any reason to access these pages. If needed, please contact the Service department at Rohner for support to ensure the equipment performs as designed.

OPERATIONAL MODES

Below are the operational modes that system can be in. Just as mentioned previously, the current operational mode is displayed on the MAIN page. Each mode is color coordinated and can be seen from the MAIN screen on the HMI.



Figure 11 – OFF MODE



Figure 13 – BAKE MODE



Figure 12 – PURGE MODE



Figure 14 – COOLDOWN MODE

Operational Mode "OFF" is the default mode of the system. While in the "OFF" mode, all motors/fans are disabled. Burner is disabled, and the system is ready to be started. This is the mode that the equipment should be left in when operators are done using it.

Purge mode is the first mode that the oven goes into after pressing the "START" button. PURGE mode has a countdown timer based on oven size and exhaust size. The countdown timer doesn't start until all interlocks are proven:

- Recirculation Fan Running
- Exhaust Fan Running
- Exhaust Airflow Switch

Once the timer is complete, the oven will automatically change to a BAKE mode.

Bake mode is when the burner is enabled. The oven will now heat up to the current temperature setpoint and maintain that temperature. The MAIN screen will also show a countdown timer for the current recipe selected.

Oven can be set to be in a continuous or batch mode. When in continuous, the oven runs and announces the end of the countdown timer on the MAIN screen. If set to batch mode, upon completion of the timer, the oven will automatically go into COOLDOWN mode and eventually shut down once the temperature drops below the cooldown setpoint.

Cooldown is the automatic shutdown sequence. Upon recipe completion in batch mode or hitting the physical stop button or hitting the HMI stop button, the oven will enter a COOLDOWN mode. During this mode, the fans will continue running and the burner will be disabled.

COOLDOWN is designed to allow all equipment in and around the oven to cool down to safe temperature to avoid damaging equipment. If oven is shutdown improperly, heat-soaked components, including fans, can warp or become damaged.

SEQUENCE OF OPERATION

STARTING THE OVEN:

- Start with oven in OFF mode
- Press start button (on HMI or with physical button)
- Oven begins PURGE mode, countdown timer visible
- Once countdown timer completes, changes to BAKE mode
- Oven will begin burner lighting sequence:
 - Burner controller purge sequence
 - light pilot
 - light main
 - Begin modulating to hit setpoint
- Once oven temp reaches 10°F of setpoint, timer begins
 - Timer visible on the MAIN screen
 - Timer counts down from recipe time setpoint
- End of Recipe action determined by continuous/batch operation:
 - Batch: Oven goes into COOLDOWN
 - Continuous: MAIN Screen popup “Complete”, oven remains at current setpoint and remain in BAKE mode.
- In COOLDOWN, fans remain running. Burner is disabled
- Once COOLDOWN temperature reached, oven changes to OFF mode

TROUBLESHOOTING

Below is a basic guide to troubleshooting a Rohner oven control panel. This should only be done by qualified individuals. These control panels have 3-phase high voltage power, along with 120VAC and 24VDC control power.

BEFORE TROUBLESHOOTING:

WARNING: HIGH VOLTAGE PRESENT IN CONTROL PANEL. USE PROPER LOCK OUT TAG OUT PROCEDURES (LOTO) WHEN WORKING ON EQUIPMENT.

SPECIALTY TOOLS REQUIRED:

- MULTIMETER
 - 600VAC RATED
 - CONTINUITY TESTING
 - RESISTANCE TESTING
 - AMP DRAW MEASUREMENTS (FOR MOTORS 3-PHASE AC MOTORS)
- MANOMETER
 - MEASURES INCHES OF WATER COLUMN (IN W.C.)
 - UP TO 2 OR 5 PSI (5 PSI PREFERRED)

COMMON FAULTS

Table 3 – FAULT RESOLUTION

FAULT	CAUSE	POSSIBLE SOLUTION
E-Stop	E-Stop has been pressed.	Reset E-Stop on operator panel.
Building Fire Interlock	Building Fire Interlock has been lost/broken	Verify either factory jumper is in place or field-wired N.C. contact is closed. Rohner provides this interlock for their panel but is not responsible for connecting to and testing with the fire system.
Fan Overload	Either recirculation or exhaust fan overload has tripped.	Reset the tripped overload inside Rohner main panel.
Exhaust Air Flow	Airflow switch near exhaust is not closing	Verify wiring and make sure exhaust fan is running. Verify with a manometer that the differential pressure between the copper tubes attached to the airflow switch measures approx. 0.5 in. w.c.
High Temp Alarm	High Temp alarm has tripped	High Temp controller will need to be reset inside main Rohner control panel. Typically caused by inadequate airflow in the process heater.
Gas Pressure	Either low gas or high gas pressure tripped	Verify incoming gas pressure. If too low (4 in. W.C.) or too high (14 in.

FAULT	CAUSE	POSSIBLE SOLUTION
		W.C.), switches will trip and require a manual reset by pressing the clear cover over the red dot.
Air Flow Switch	Proof of fresh air or burner airflow is not working.	Verify poly-tube connections to both airflow switches near the gas train. A manometer should be used to verify airflow across burner, and fresh airflow through the intake filters
Flame Safety Alarm (LOC 2)	No Flame on Startup	
Flame Safety Alarm (LOC 7)	Loss of Flame during operation	
Flame Safety Alarm (LOC 10)	Catch-all fault (see LME manual)	

LME CODES

The Siemens Burner Controller (LME) has numerous phase and fault codes. The HMI will display both phase and fault codes. If any fault is active, the Flame Safety Alarm will also turn red. Below are tables describing the different codes (TABLE 4 - LME PHASE CODES) (TABLE 5 – LME LOC CODES).

Table 4 - LME PHASE CODES¹

CODE	DESCRIPTION	NOTES
0	OFF	Standby – Waiting for Call for Heat
21	TEST AIR PROVE	IGNORE (proven in Call to Heat signal)
22	BLOWER ON	IGNORE (blower not controlled by LME controller)
30	Prepurge	30 Second Prepurge built in (separate from oven PURGE mode)
40	Trial for Ignition	Pilot open and ignitor energized
42	Flame Detection	Ignitor shut off, pilot remains open
44	Interval 1 – Pilot Stabilization	Verify flame signal from pilot being lit
50	Safety Time 2 & Interval 2 – Main Stabilization	Main gas valve opened, verify flame signal
60	Operation	Burner is now running. Pilot closed.
74	Postpurge	30 Second Postpurge (separate from oven controls)

¹ From LME-1000 Document from Siemens (LME Manual)

Table 5 – LME LOC CODES²

CODE	DESCRIPTION	CORRECTIVE ACTION
2	No flame at start-up	<p>A flame failure occurred during lightoff.</p> <ol style="list-style-type: none"> 1. Check the wiring of the ignition transformer, pilot valve, and main valve(s). 2. Ensure manual shutoff valves on the pilot gas line and main gas line are open. 3. Check the fuel / air ratio at lightoff. 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.
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"> 1. Ensure that the source of light is not a flame. If it is, take corrective action immediately. 2. Ambient light can cause an extraneous light fault. Ensure the flame scanner is viewing a dark area. 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.
5		<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>

² From LME-1000 Document from Siemens (LME Manual)

CODE	DESCRIPTION	CORRECTIVE ACTION
6		<p>The required position feedback from the connected SQM... actuator was not received.</p> <ol style="list-style-type: none"> Ensure the potentiometer on the SQM... actuator is wired correctly. <ol style="list-style-type: none"> For counter-clockwise actuators (SQM40..., SQM50...), terminal "c" on the potentiometer should be wired to terminal X66.1 on the LME7, and terminal "a" on the potentiometer should be wired to terminal X66.3 on the LME7. For clockwise actuators (SQM41..., SQM50...R), terminal "a" on the potentiometer should be wired to terminal X66.1 on the LME7, and terminal "c" on the potentiometer should be wired to terminal X66.3 on the LME7. Ensure the SQM... actuator is wired properly to the LME7, especially the position feedback on terminal X2-09.4 of the LME7. Ensure no mechanical stops are preventing the actuator from reaching its expected position. While not common, heavy vibration on the actuator can wear a track in the position feedback potentiometer. If the fault always occurs at the same actuator position, the actuator may need to be replaced, and the vibration needs to be reduced to avoid having a similar issue with the new actuator.
7		<p>A flame failure occurred during normal operation.</p> <ol style="list-style-type: none"> Check the fuel / air ratio. 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. 10 Wiring or other error This fault is a catchall and can be caused by a variety
10	Wiring or other error	<p>This fault is a catchall and can be caused by a variety of issues. See Section 7-3 for a list of all known causes of this fault. If none of the causes listed in Section 7-3 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>
12	Fuel valve V2 leaking (PME73.840A1) Fuel valve V1 leaking (all other PME7s)	<p>On PME73.840A1, the downstream gas valve V2 failed valve proving. On all other PME7 program modules, the upstream gas valve V1 failed valve proving.</p> <ol style="list-style-type: none"> Bubble test the gas valve to ensure the valve is not leaking. If the valve is leaking, replace the valve. Ensure that the setpoint of the valve proving pressure switch is set to 50% of the inlet pressure to the upstream gas valve.
13	Fuel valve V1 leaking (PME73.840A1) Fuel valve V2 leaking (all other PME7s)	<p>On PME73.840A1, the upstream gas valve V1 failed valve proving. On all other PME7 program modules, the downstream gas valve V2 failed valve proving.</p> <ol style="list-style-type: none"> Bubble test the gas valve to ensure the valve is not leaking. If the valve is leaking, replace the valve. Ensure that the setpoint of the valve proving pressure switch is set to 50% of the inlet pressure to the upstream gas valve.
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. On an LME75 burner control, the source of power to the common side of the POC switch must come from terminal X2-02.3.</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>

CODE	DESCRIPTION	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.
21	High gas pressure fault	The high gas pressure switch wired to terminal X2-02.4 (PME75.811A1) or X9-04.2 (PME75.812A1) opened, causing a fault. Check the wiring of the high gas pressure switch. Check the setpoint of the high gas pressure switch and ensure it is set to an appropriate value. Check pressure regulators for ruptured diaphragms or incorrect setpoints.
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.
60	Analog input out of range	The 4-20 mA input connected to terminal X65 is out of range. This input determines the position of the actuator or speed of the PWM blower. Check the wiring of the analog input. If a fault is not desired when the input drops below 4 mA, set parameter 654 to a 5.
83	PWM blower speed fault	The speed of the PWM blower does not match the expected speed. More specifically, the blower speed fell outside of tolerance band 1 (parameter 650.00) for a time longer than the maximum speed deviation allowed (parameter 660), or the blower speed fell outside of tolerance band 2 (parameter 650.01). There are many possible corrective actions: <ol style="list-style-type: none"> 1. Increase ramp time up (parameter 522) and/or ramp time down (parameter 523) to allow the blower more time to achieve the expected speed. 2. Increase the setting of tolerance band 1 (parameter 650.00) and/or tolerance band 2 (parameter 650.01). 3. Ensure that the maximum fan speed (parameter 519) and the number of pulses per revolution (parameter 644) are set correctly for the blower being used. 4. Inspect wiring from PWM blower to LME7 to ensure the tachometer speed feedback signal is wired correctly.
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.
225	PWM blower speed fault	The speed of the PWM blower dropped below the minimum prepurge speed (parameter 675.00) during prepurge, or the speed of the PWM blower exceeded the maximum ignition speed (parameter 675.01) during ignition. Adjust parameter 675.00 or 675.01, or adjust purge speed (503.01) or ignition speed (403.00).

CODE	DESCRIPTION	CORRECTIVE ACTION
226	PWM blower parameterization error	The following parameter settings are not allowed. Correct the parameter setting that is incorrect and reset the fault. <ol style="list-style-type: none"> Speed low-fire (P1) > speed high-fire (P2) Speed low-fire (P0) = 0 Maximum blower speed (parameter 519) = 0
227	PWM blower parameterization error	One or more PWM blower settings are not compatible. Make sure the following three conditions on the minimum and maximum speed settings are met. <ol style="list-style-type: none"> $516.00 \leq P0 \leq 516.01$ $517.00 \leq P1 \leq 517.01$ $518.00 \leq P2 \leq 518.01$
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.

RECOMMENDED MAINTENANCE

The following is a minimum recommended maintenance guide. Depending upon use and Customer specific processes additional maintenance may be required at increased intervals to keep equipment running at peak performance.

Maintenance and regular equipment inspections are critical to proper equipment operation. Any damaged, worn or defective components must be replaced immediately to ensure proper equipment function. Dangerous conditions may result from improperly maintained equipment and may result in personal injury, risk of fire, or explosion. Only replace equipment components with factory original equipment.

Table 6 - MAINTENANCE TABLE

MAINTENANCE	INSPECTION FREQUENCY
Visually inspect filters. Depending on the environment the oven is in, frequency of replacement will vary. At most, replace every 600 hours, if not sooner.	Every Month
Inspect exhaust & blower bearings, and belts for proper operation and excessive wear. (lube as per blower maintenance schedule)	Every 3 Months
Clean oven interior and surrounding areas to prevent the buildup of flammable and combustible dust.	Every Day
Inspect Brixon door latch assembly for proper function	Every 6 Months
Inspect Flame Rod and Ignitor assembly. Flame rod should be cleaned using a Scotch-Brite pad to remove carbon buildup. If any cracks are detected, the flame rod should be replaced.	Annually

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