MODSYNC LX:
Modular Boiler Sequencing System

FOR BOILERS:
Steam

Fulton's ModSync LX is a highly-optimized sequencing control system engineered to maximize the thermal efficiency of modular (multiple boiler) plants for exceptional energy savings. A user-friendly intuitive touchscreen interface provides rapid access to robust functionality. Reliable lead-lag staging precisely matches system load to boiler output, thereby minimizing boiler cycling and extending equipment life. Control system functions and Sequence of Operation (SOO) are custom tailored to your project's unique requirements. ModSync LX solutions offer the flexibility to satisfy and simplify the complex needs of high-performance applications which cannot be met by the rigid mold of off-the-shelf and integrated boiler control systems.

STANDARD FEATURES: VERSION 6.5.4.0 AND NEWER

- Lead-Lag of Steam Boilers
- Support for Sequential or Parallel Modulation Staging
- Modbus Communication Protocol
- Supply Header Pressure Monitoring (Process Variable)
- System Clock with Setback Schedule Modes
- Automatic Boiler Rotation via Cycle/Run Hour Ratio
- Trending Data Logging of Supply and Setpoint
- Alarm History of the Last 100 Alarm Conditions
- Access Password and Screensaver Time Out

PROJECT DETAILS:

Project Name		City, State (Province)	
Date Submitted		Engineer of Record	
Fulton Representative		Contractor	

PROJECT TAILORED CUSTOM CONTROL OPTIONS:

Lead-Lag for _____ Steam Boilers
BACnet Communication Protocol
LonWorks Communication Protocol
Hybrid Fuel-Fired and Electric Boiler Plant Switchover
Panel Mount Alarm Horn
0-10VDC to 4-20mA Setpoint Signal Converter
Individual Alarm Contact (Per Each Boiler)
Warm Standby for Idle Boilers
Outdoor Air Temperature Monitoring
Forced Boiler Rotation
Running Transition for Seamless Rotation
Flue Gas Exhaust Temperature Monitoring (Per Each Boiler)

4-20mA Input for Remote CO Monitor (Device Not Included)
4-20mA Input for Feedwater Flow Meter (Device Not Included)
4-20mA Input for Steam Flow Meter (Device Not Included)
4-20mA Input for Gas Flow Meter (Device Not Included)
4-20mA Input for Supply Fuel Oil Flow Meter (Device Not Included)
4 -20mA Input for Return Fuel Oil Flow Meter (Device Not Included)
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OPTIONAL ACCESSORIES: PARTS SHIP LOOSE FOR FIELD INSTALLATION

Supply Header Pressure Transducer (0-30 PSI)   *2-40-000996*
Supply Header Pressure Transducer (0-100 PSI)   *2-40-000999*
Supply Header Pressure Transducer (0-200 PSI)   *2-40-000994*
Outdoor Air Temperature Sensor Kit   *4-30-000500*

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Fulton practices continuous product improvement and reserves the right to change specifications and/or dimensions without notice. Always refer to the current documentation available for download on Fulton.com

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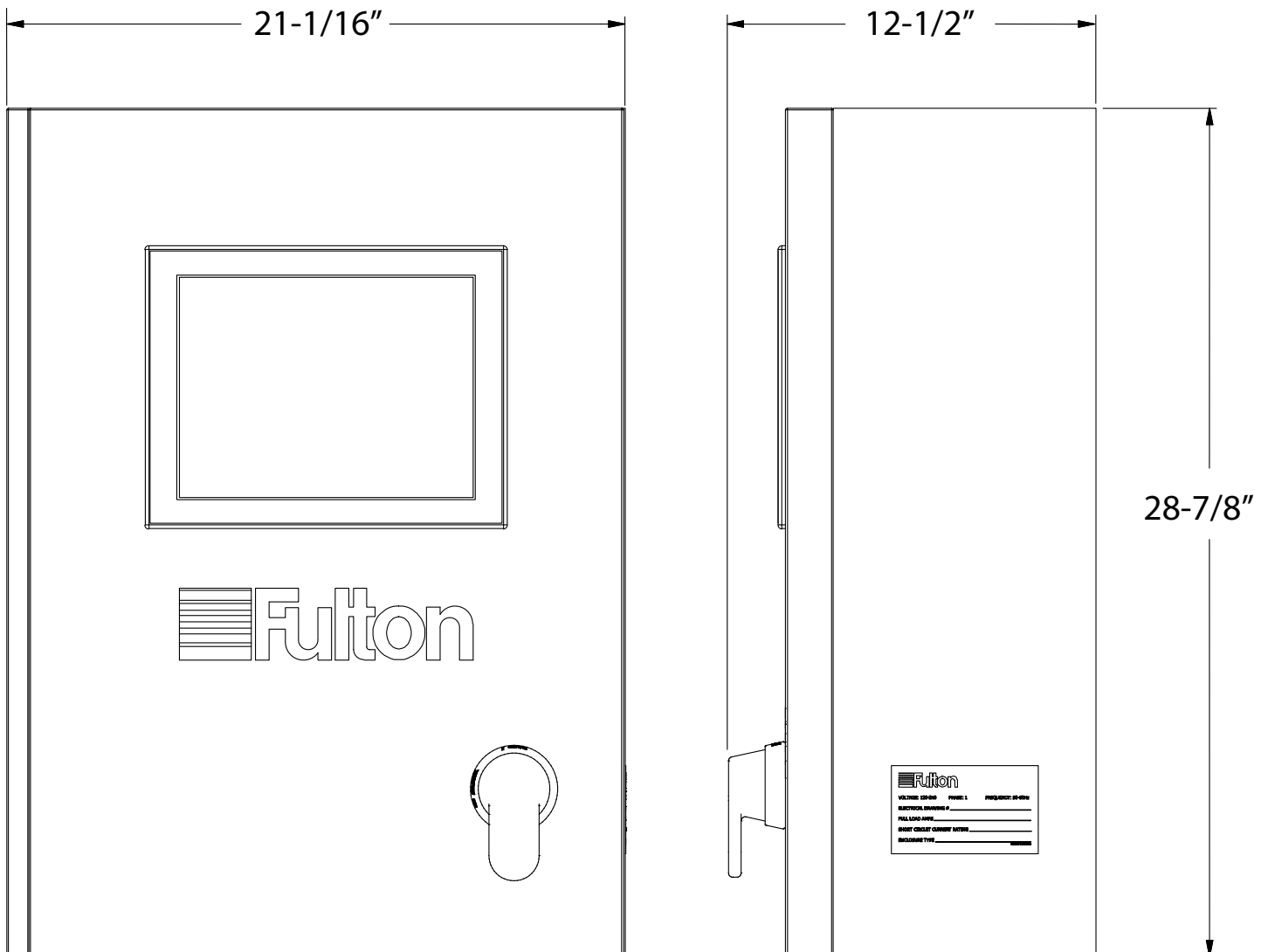
BOILER CONTROL INTEGRATION:

Fulton PURE Control™
Siemens LMV3 Series
Siemens LMV5 Series

Fulton SC500
Fulton SC750
Legacy I/O *(Enable, 4-20mA fire rate, status)*

HARDWARE SPECIFICATIONS: PART NUMBER 7-53-006000C

- 12.1-inch 65,536 Color Touchscreen Display
- UL 508A Listed and Labeled
- NEMA4X Enclosure

- Panel Mount Non-Fused Disconnect Switch
- 120VAC 60Hz 1ø
- 5,000A SCCR
- Syphon Loop

PANEL DIMENSIONS:

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BOILER LEAD/LAG SEQUENCE OF OPERATION:

1. The ModSync monitors the steam header pressure using a pressure transducer. A Proportional/Integral/Derivative (PID) Control Variable (CV) determines when the steam boilers will begin sequencing based on the difference between the actual header pressure and the steam pressure setpoint.

2. When the ModSync determines a request for steam, the lead steam boiler is energized. The initial firing rate is determined by the Lead Start Firing Rate variable set in the Lead/Lag configuration screens.

3. If the steam pressure continues to decrease the PID Control Variable will increase. The Lead Steam boiler's firing rate will increase with the Control Variable. The ModSync will enable a Lag Boiler when the Lag Boiler Start control variable value has been reached.

4. If additional steam is required, the ModSync will enable each additional Lag Boiler until all of the available boilers in the loop have been energized.

5. Both sequential and parallel staging methods are provided through an interface selection. Sequential staging allows each boiler to reach a high firing rate before the next stage is enabled. Parallel staging commands the plant to modulate in parallel at the same firing rate to satisfy demand at the lowest possible firing rate.

6. As the steam pressure increases, the ModSync will begin to decrease the firing rate of the boilers required to maintain the header pressure. If a boiler is at low fire and the control variable decreases to a user configurable level, the ModSync will stage that boiler off. The first lag boiler energized will be the last boiler to be disabled. The boilers will continue to be disabled based on the pressure rise and control variable response.

7. The lead boiler is disabled when the Header Pressure reaches a selectable value referenced around the setpoint.

8. Automatic Rotation of the boiler Lead and Lag positions will be determined using configurable operating history cycle count or run hours.

CUSTOM SEQUENCE OF OPERATION:

OTHER FUNCTIONS:

1. *Hybrid Fuel-Fired and Electric Boiler Plant Switchover:* Permits the operator to select energy priority. This will run exclusively on fuel or electricity, or may utilize fuel or electricity as Lead and the other energy source will be enabled to satisfy peak demand conditions or as a backup. The plant switchover can be performed through manual selection, time of day, outdoor temperature, or digital input or BAS communication.

2. *Warm Standby:* To ensure boilers are prepared to respond to rapid steam demands the control will enable any boiler which has remained idle for a configurable amount of time and command the burner to low fire.

3. *Running Transition:* Rotates the boilers at a configurable time or day of the week and will not wait for the next heat demand to rotate Lead and Lag positions.

4. *General Alarm:* Provides a dry contact that will close whenever an alarm condition is present.

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