

LXi Fire Pump Controllers

For use with Electric Motor

Driven Fire Pumps – Microprocessor Type

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Hubbell Fire pump Motor Controllers are designed to comply with the latest standard of the National Fire Protection Association for the installation of stationary pumps for fire protection (NFPA-20).

Models

The following combination controllers are available:

- ◆ **Model LXi-1100** - Solid State Soft Start/Stop combined Manual and Automatic controllers are designed to control squirrel cage motors where the power source does not permit full voltage starting and to reduce mechanical and hydraulic stress on plumbing.
- ◆ **Model LXi-1200** - Across-the-Line combined Manual and Automatic Controllers are designed to control squirrel cage motors by means of Across-the-Line starting.
- ◆ **Model LXi-1300** - Autotransformer combined Manual and Automatic Controllers are designed to control squirrel cage motors where the power source does not permit full voltage starting.
- ◆ **Model LXi-1400** - Reduced Voltage Primary Resistor Start combined Manual and Automatic Controllers are designed to control squirrel cage motors by means of Primary Resistor starting.
- ◆ **Model LXi-1600** - Wound Rotor Manual Controllers are designed to control wound rotor motors driving multi-stage fire pumps. They are available with five speed points (standard) through nine speed points (optional). NYC MEA Approved.



- ◆ **Model LXi-1700** - Part Winding combined Manual and Automatic Controllers are designed to control squirrel cage motors by means of Part Winding Starting.
- ◆ **Model LXi-1800** - (Closed) & **LXi-1900** (Open) Transition - Wye/Delta combined Manual and Automatic Controllers with ATS are designed to control squirrel cage motors by means of Wye/Delta Starting either Open or Closed Transition.
- ◆ Suitable for use as service entrance equipment
- ◆ Full compliment of visual indicators
- ◆ Communications port
- ◆ LCD display shows system pressure, and simultaneous reading of all phases for amps and volts
- ◆ Full range of horsepower ratings and voltages
- ◆ Ample cable bending space
- ◆ Printer Available
- ◆ Digital Pressure Recording
- ◆ **New Small Cabinet Design Saves Pump Room Space**

Features

- ◆ **LXi** Microprocessor Logic & Control
- ◆ Coordinated design engineered, built, tested and labeled by one manufacturer

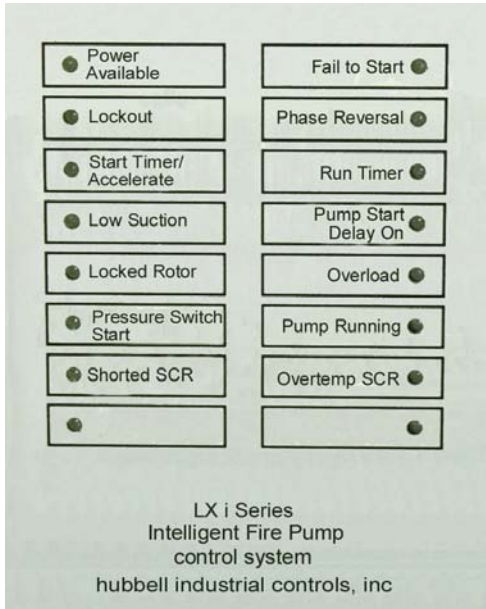
Examples:

40h x 22w x 13 deep for maximum of 40wp @ 208v-230V, 75hp @ 480v

Fire Pump Controllers with *LXi* Logic

The LED display module is mounted on the enclosure flange, the LED's are multi-color, red for critical alarms, yellow for informational indications, and green for status.

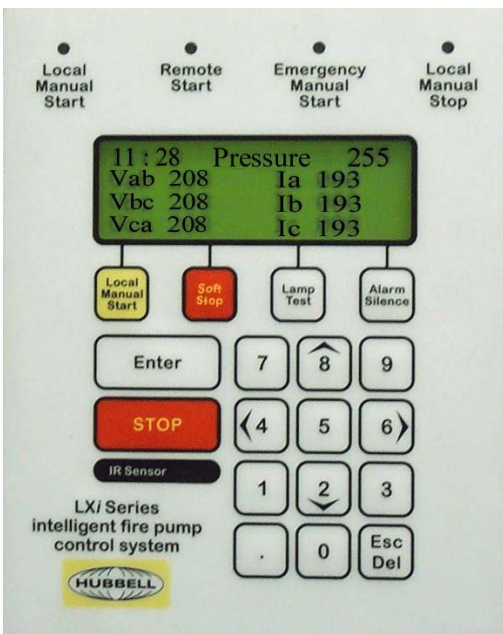
A total of (16) LED's are available to match most any requirement for alarm indications.



Standard Indications for *LXi* controllers

- Power Available
- Lockout
- Start Time/Acceleration (reduced voltage/current models only)
- Low Suction
- Locked Rotor
- Pressure Switch Start
- Shorted SCR (*LXi-1100* only)
- Fail to Start
- Phase Reversal
- Run Timer
- Pump Start Delay On
- Overload
- Pump Running
- Overtemp SCR (*LXi-1100* only)

The LCD display/programming module displays four screens of (4) lines x 20 characters per screen. Each individual screen may be scrolled in the display by the operator without a password. The LCD display/programming module is mounted in the enclosure flange.



Main Screen Real Time Information

- System Pressure
- Simultaneous 3-Phase Volts – Phase to Phase
- Simultaneous 3-Phase Amps

(4) Additional LED's

- Local Manual Start
- Remote Start
- Emergency Manual Start
- Local Manual Stop

The system pressure settings are set using the touch pad after a password is entered .

General Specifications for *LXi* Controllers

These fire pump controllers are factory assembled, wired, and tested as a unit assembly, and conform to the requirements of the latest editions of NFPA-20 and NFPA-70, and are Listed/Approved by and bear the label of Underwriters' Laboratories and Factory Mutual. The controllers are equipped with Hubbell's *LXi* microprocessor logic.

The controllers are of the combined manual/automatic type and furnished in a floor mounted drip-proof steel Type 2 enclosure with lifting eyes. The enclosures are red with a non-glare surface. The controllers are designed, tested, and marked for the rated horsepower and 3-phase voltage and frequency in a 40 degree C. ambient.

All electrical components are accessible from the front for maintenance and service. No components or component wiring are on the door of the enclosure. The controllers have a common operating handle for both the line isolating switch and the controller circuit breaker mounted in the enclosure flange. The minimum withstand rating for the fire pump controller is 100,000 amps RMS symmetrical at 200-480 volts. The controllers are Listed/Approved with UL/FM as "Suitable For Use As Service Equipment".

The controllers have separate and independent pressure settings with minimum run timing capable of a setting up to 10 minutes. Settings of the pressures should be established at the time of the field acceptance test. Provisions are included to allow manual or automatic shutdown in the field.

Provided are two sets of Form "C" contacts for Pump Running, Phase Reversal, and Power/Phase Failure, and one set of Form "C" contacts for Trouble. The Trouble contacts are activated by the following: Invalid Configuration Memory, Emergency Manual Start, Pump Running, Phase Failure, Phase Reversal, Overload, Locked Rotor, Fail-to-Start, and Lockout.

These controllers are equipped with *LXi intelligent fire pump control system logic*. All firmware is non-volatile flash based CPLD (*complex-programmable logic device*). The boot-up time for the logic is 3 seconds or less. An RS232 serial port shall be supplied for downloading event history to a PC for analysis and printing.

The digital pressure readings and settings are displayed on the *LXi LCD* mounted on the enclosure flange. The LCD screen is 4 x 20 (4 lines of 20 characters) per screen, and the screens may be scrolled to give a total of 320 characters. The real time display gives simultaneous 3-phase digital amps and volts for the pump power, and digital display for the system pressure, reducing the need for scrolling during startup.

The event alarm caches are compartmentalized, and none of the compartments over-ride other compartments. The compartments allow for analysis of four types of information events without having to look through all events including those not related to a problem. Events are shown with Date and Time for each event occurrence:

1. Events that have occurred during a pump idle period
2. Events that occurred during the last start period
3. Events that occurred during the last run period
4. Events that occurred during the last stop period.

The LED display is mounted on the enclosure flange and includes LED as shown on page 2 of this brochure.

Programming of the *LXi* logic accomplished from the touch pad mounted on the enclosure flange. Programming is password protected so that only authorized personnel can change the logic functions.

Horsepower Ratings

This table summarizes the major electrical & horsepower configurations that are available. For special configurations consult the factory.

Full Service Fire Pump Controllers Normal Source

Voltage	Hz	HP Range	Withstand Rating <i>Amps Symmetrical</i>
208	50/60	15-200	100,000 †
220/240	50/60	15-200	100,000 †
380/415	50/60	15-350	100,000 †
440/480	50/60	15-400	100,000 †

Optional Short Circuit Ratings
of 150,000 and 200,000 amps are available

Temperature Range - 41°F (5°C) to 104°F (40°C); Optional 130°F/55°C Rating Available
† Consult Factory for higher ratings.

Controller Selection Chart

This table summarizes the starting characteristics of the controls.

For specific information, please request specification sheets from the factory.

Model Number	Type of Starting	Motor Requirements	Starting Characteristics			Description of Operation
			Voltage @ Motor	Line Current	Starting Torque	
LXi-1100	Solid State Soft Start/Stop	Standard Motor	0-100%	45-100%	0-100%	Motor is started with reduced voltage via SCR's in each phase to limit inrush and provide smooth stepless acceleration to full speed and deceleration to full stop greatly reduces water hammer.
LXi-1200	Full Voltage (Across-the-line)	Standard Motor	100%	100%	100%	Motor is started Across-the-Line with no additional impedance nor special connections to reduce inrush or starting torque.
LXi-1300	Autotransformer	Standard Motor	Taps at 80%, 65%, 50%	64% 42% 25%	64% 42% 25%	Motor is started with 3 phase autotransformer in primary to limit inrush. Multiple taps (manually set) provide variable starting characteristics. Closed circuit transition to full speed.
LXi-1400	Primary Resistor	Standard Motor	50%	50%	25%	Motor is started with resistance in each phase to limit inrush. Closed circuit transition to full speed.
LXi-1600	Manual - Secondary Resistor Special Regulated	Wound Rotor Motor	100%	25-50%	25-50%	Motor is started with resistance in the secondary rotor circuit to limit inrush and to regulate multiple speed points. Built per application to provide acceleration and speed control.
LXi-1700	Part-Winding	Special Motor w/ Part Winding	100%	65%	48%	Motor is started on one part of its 2 windings to limit inrush. Closed circuit transition to second winding at full speed.
LXi-1800	Wye-Delta Closed Transition	6 or 12 Lead Delta Wound Motor	100%	33%	33%	Motor is started connected Wye to reduce voltage across windings and reduce inrush. Closed circuit transition to Delta winding/full speed.
LXi-1900	Wye-Delta Open Transition	6 to 12 Lead Delta Wound Motor	100%	33%	33%	Motor is started connected Wye to reduce voltage across windings and reduce inrush. Open circuit transition to Delta winding/full speed.



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