AC Power
For *Business-Critical Continuity™*

Liebert® LBS Controller™ for Liebert NX™ 225-600kVA

User Manual

EMERSON
Network Power

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual presents an overview of the components and use of your Liebert LBS (Load Bus Sync) Controller. The Liebert LBS Controller must be installed by properly trained and qualified personnel.

Read this manual thoroughly, paying special attention to the sections that apply to your installation, before working with the UPS. **Retain this manual for use by installing personnel.**

WARNING

Risk of electric shock. Can cause injury and death.

Under typical operation and with all UPS doors closed, only normal safety precautions are necessary. The area around the UPS system should be kept free of puddles of water, excess moisture and debris.

Special safety precautions are required for maintenance of the UPS system, including the Liebert LBS Controller and the batteries. Observe all safety precautions in this manual before working with the UPS system. Observe all precautions in this manual**,** before as well as during performance of all maintenance procedures. Observe all battery safety precautions before working on or near the battery.

This equipment contains circuits that are energized with high voltage. Only test equipment designed for troubleshooting should be used. This is particularly true for oscilloscopes. Always check with an AC and DC voltmeter to ensure safety before making contact or using tools. Even when the power is turned Off, dangerously high electric charges may exist within the UPS or Liebert LBS Controller.

All power and control wiring should be installed by a qualified electrician. All power and control wiring must comply with the NEC and applicable local codes.

ONLY qualified service personnel should perform maintenance on the UPS system. When performing maintenance with any part of the equipment under power, service personnel and test equipment should be standing on rubber mats. The service personnel should wear insulating shoes for isolation from direct contact with the floor (earth ground).

Never work alone, even if all power is removed from the equipment. A second person should be standing by to assist and summon help in case an accident should occur.

NOTICE

Risk of improper electromagnetic shielding. Can cause radio communication interference.

This unit complies with the limits for a Class A digital device, pursuant to Part 15 Subpart J of the FCC rules. These limits provide reasonable protection against harmful interference in a commercial environment. This unit generates, uses and radiates radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. This unit is not designed for use in a residential area. Operation of this unit in a residential area may cause harmful interference that the user must correct at his own expense.

1.0 INTRODUCTION

The Liebert LBS (Load Bus Sync) Controller is an option designed to synchronize two Liebert NX™ 225-600 UPS units in a dual bus application.It is available either as a factory-installed option or as a kit that is installed and configured by Emerson-trained and certified personnel.

The controller consists of an electronic unit housed in a metal box that must be securely mounted inside the UPS at designated locations, preventing electrical shorts of the LBS signal cables and enclosure and energized UPS components. It requires a 480V input reference supply.

The Liebert LBS Controller operates by determining the reference frequency of a UPS and providing a synchronization signal to the other UPS frequency. The reference frequency will be generated only when the master utility supply line is within acceptable limits.

The equipment is supplied with these components:

Table 1 Installation Kit - NX2MODLBS components

Description	Quantity
LBS Enclosure	1
Signal Cable	1
Installation Manual	1

1.1 Electrical Characteristics

Table 2 Electrical characteristics

	Minimum	Nominal	Maximum
Supply Voltage (50/60 Hz sinusoidal), volts	336	480	528
Supply Current, mA	—	14	—
Output Current (Per Channel), mA	25	—	30
Working Temperature °F (°C)	14 (-10)	—	104 (40)
Phase Stability Error	—	0.18	—
Phase Shift Within Voltage Tolerance Range, Degrees *	—	1.5	°

1.2 Mechanical Characteristics

The Liebert LBS Controller has these dimensions:

- Length = 9" (229mm)
- Width = 5.2" (132mm)
- Height = 4.5" (114mm)

Table 3 Liebert LBS Controller port connections

Port/Connection	Description
U1	Supply Connection, Phase A/L1
U2	Supply Connection, Phase B/L2
U3	Ground Connection
UPS 1 *	Connection to Master or Slave UPS
UPS 2	Reserved

* If the Liebert LBS Controller is in the master UPS, the Ethernet cable will connect to the UPS 1 port on the Liebert LBS and to an I/O port on the slave UPS.

Figure 1 Liebert LBS Controller signal cable connections panel reference supply input

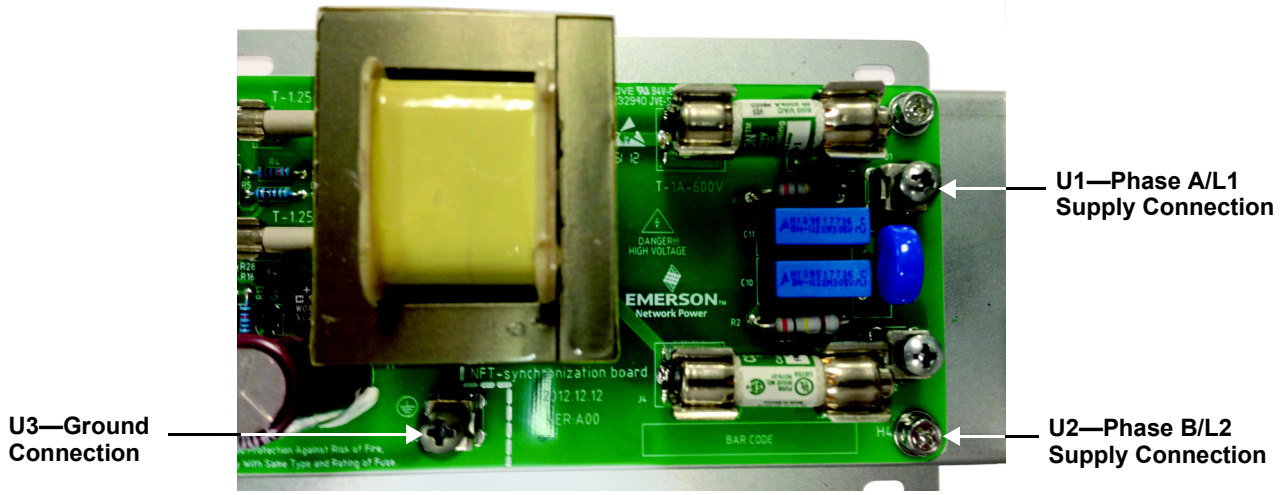
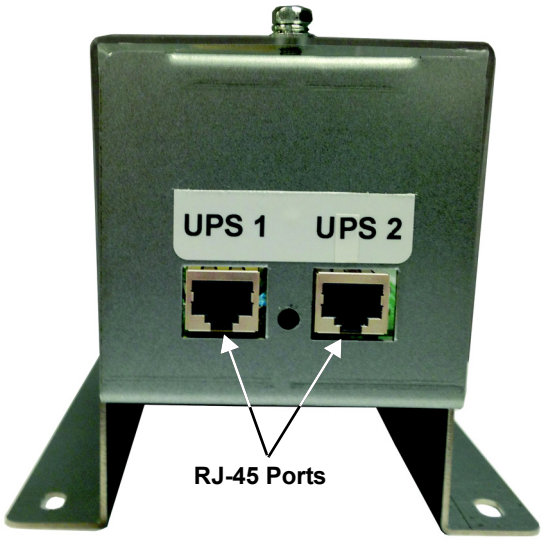


Figure 2 Front panel UPS synchronization outputs

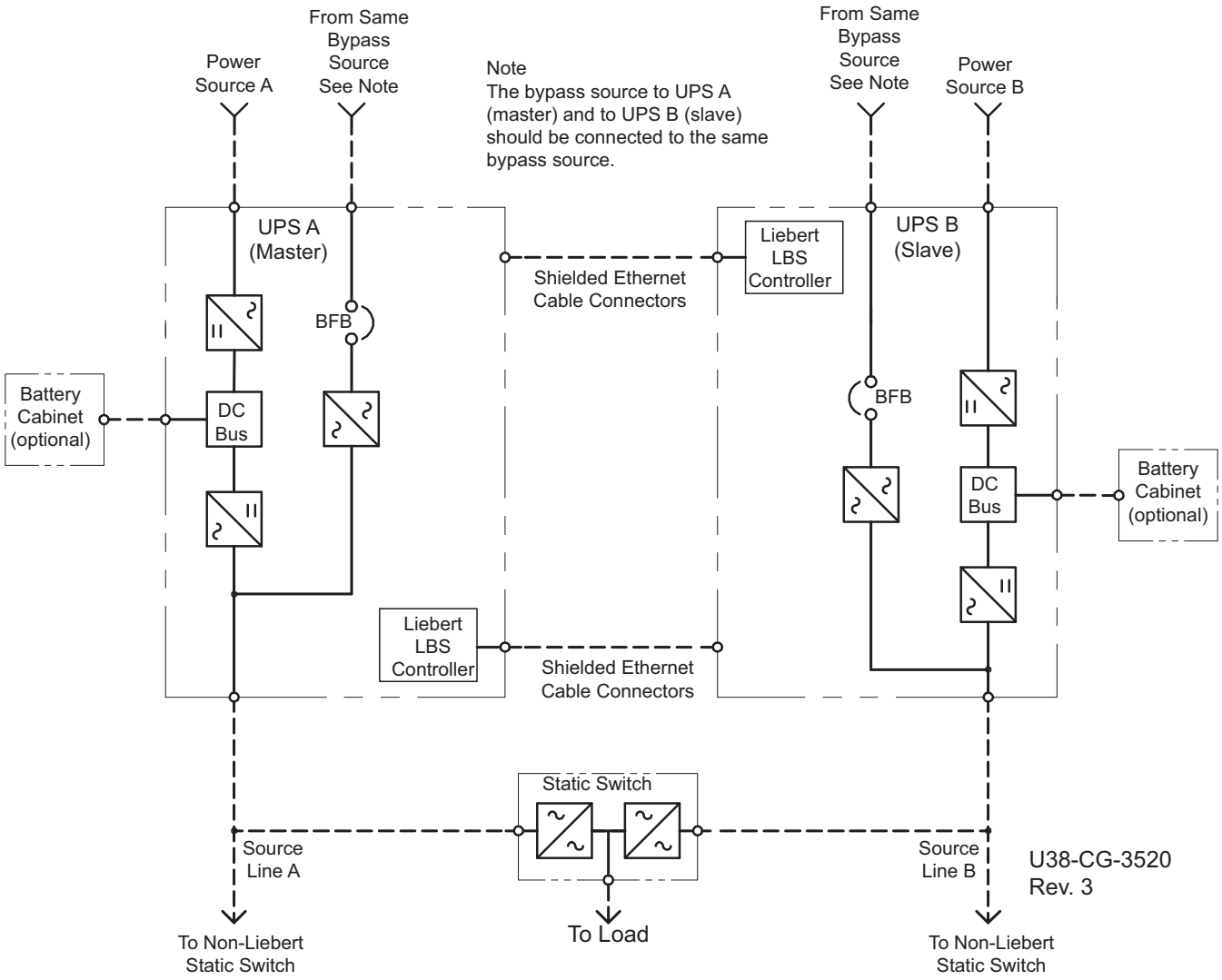


2.0 TYPICAL CONFIGURATION—TWO UPS UNITS WITH COMMON BYPASS LINE

When two Liebert NX 225-600 UPS's are operating in a common bypass line configuration, where the UPS bypass inputs are derived from the same source, the UPS inverters will be synchronized. If the bypass source becomes unavailable or out of tolerance on either UPS, such as during a utility failure or the opening of a feeder breaker, the Liebert LBS Controllers will maintain inverter synchronization.

NOTE
This application requires two Liebert LBS Controllers as shown below.

Figure 3 Common bypass line



NOTE
UPS A and UPS B should be configured with main synchronization source to bypass. Otherwise the UPS's won't be capable of synchronous transfer to bypass.

Notes

Ensuring The High Availability Of Mission-Critical Data And Applications.

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