



**INSTALLATION,
OPERATION AND
MAINTENANCE
MANUAL**

**Interceptor™ and
Interceptor™ Hybrid
Advantage Series
Transient Voltage
Surge Suppressors**



Liebert

A World Leader in Computer Support Systems

Environmental Control
Power Protection
Site Monitoring /
Control

Liebert Corporation designs, manufactures and markets complete systems for improvement of computer uptime and performance. The result is improved business operations, increased productivity and higher return on the computer investment. Liebert Systems provide dependable environmental control and electrical power protection, combined with centralized monitoring and control. This approach represents a single-source integrated computer support network. Based on over two decades of experience and over 80,000 installations worldwide, Liebert is committed to offering the highest quality products and services for applications requiring computer support.



Control Concepts Corporation

A Subsidiary of the Liebert Corporation
328 Water Street, P.O. Box 1380
Binghamton, NY 13902 USA

Tel: 607/724-2484

800/288-6169

Fax: 607-722-8713

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LIEBERT INTERCEPTOR AND INTERCEPTOR HYBRID ADVANTAGE SERIES SURGE PROTECTIVE DEVICE INSTALLATION, OPERATION AND MAINTENANCE MANUAL

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INSTALLATION INSTRUCTIONS FOR THE LIEBERT INTERCEPTOR AND INTERCEPTOR HYBRID ADVANTAGE SERIES SURGE PROTECTIVE DEVICE

The Liebert Interceptor and Interceptor Hybrid Advantage Series Surge Protective Device (SPD) is a high quality, high energy surge current diversion system designed to protect sensitive equipment from damaging transient voltage surges. Proper installation is required for maximum system performance.

The installer should perform the following steps to assure a quality installation. The entire installation manual should be read before starting installation. These instructions do not replace national or local electrical codes. Check applicable electrical codes to ensure compliance. Installation of the Liebert SPD system should only be performed by qualified personnel.

UNPACKING AND INSTALLATION

Unpacking and Preliminary Inspection

1. Inspect the shipping crate(s) for damage or signs of mishandling before unpacking the unit.
2. Remove any securing bands and cardboard packing and inspect the unit for any obvious shipping damages.
3. If any damage as a result of shipping is observed, immediately file a claim with the shipping agency and forward a copy to your local Liebert Sales Representative.

Handling Considerations

Larger units are bolted to a shipping pallet to facilitate handling by forklift or pallet jack. Check the size and weight. Refer to the cabinet data furnished with the unit. Typical size and weights are referred to in Figure 1.

Storage

The unit should be stored in a clean, dry environment. Storage temperature range is -55°C (-67°F) to +85°C (+185°F). Care should be taken to avoid condensation. All packing and shipping materials should be left intact until the unit is ready for final installation. If the unit has been stored for an extended period of time, the unit should be cleaned and carefully inspected before placing into service.

Location Considerations

Environment – The unit is designed for operation indoors in ambient temperatures of -40°C (-40°F) to +60°C (+140°F) with a relative humidity of 0% to 95% (non-condensing).

The unit is provided in a NEMA 12 industrial use enclosure, which is dust-tight and drip-tight and should not be installed in areas with excessive dust, corrosive vapors, flammable materials or explosive atmospheres.

Audible Noise – The audible noise of the unit is less than 40 dBA at 5 feet, which allows its placement within almost any room if desired.

Service Clearances – Service clearance is needed only at the front of the unit, thirty-six inches (36 in / 914 mm) minimum is recommended.

EQUIPMENT PERFORMANCE!!

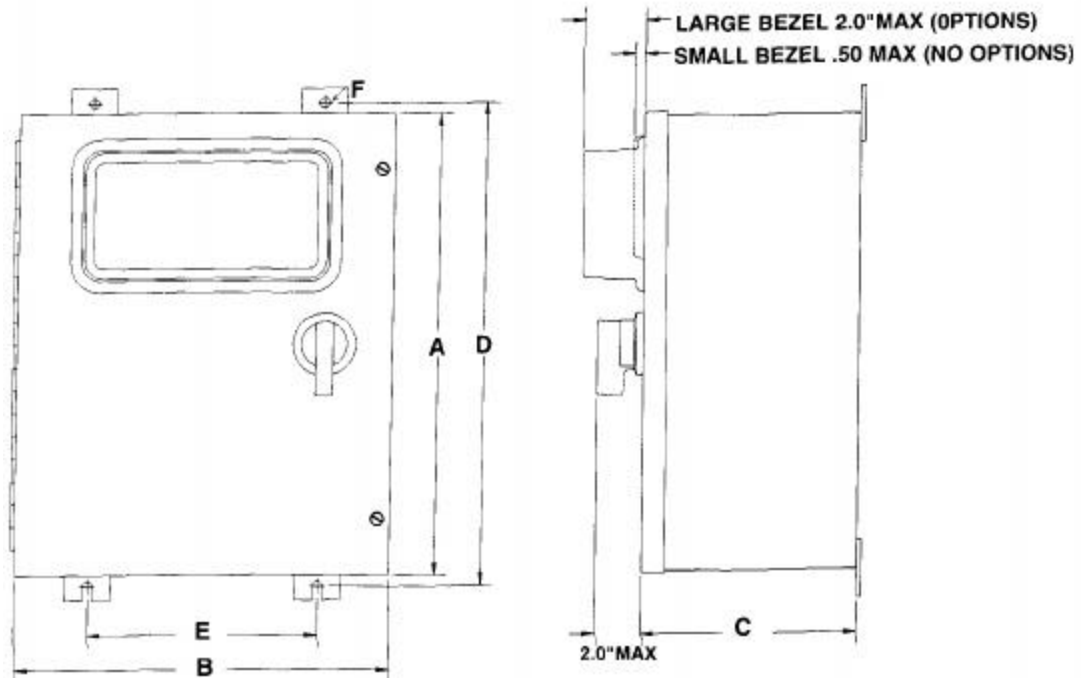
For maximum system performance, the unit must be located as close to the protected circuit as practical to minimize interconnecting wiring length.

For optimum transient surge protection, coordinated surge suppression should be applied at the service entrance and all other electrical connections to the building (telephone, CATV, etc.), at known surge generating loads within the building (large motors, arc welders, switched capacitors, etc.), as well as at sensitive electronic loads (such as computers, electronic appliances, solid state motor drives, etc.). For interconnected electronic loads (such as by way of data cabling), transient surge suppression should also be applied to the interconnecting wiring (data cables).

Mounting – Unit is intended to be wall mounted. Refer to Figure 1 or unit submittal drawings for typical mounting dimensions and weight.

Door Closing Adjustments

Single Door (Wall Mounted) – If the surface on which the enclosure is mounted is not flat, the door may not open and close properly. Also, if heavy equipment is mounted on a large door, the door may sag slightly. If the top of the door strikes the lip which extends around the body opening, place metal shims behind the mounting foot which is located at the bottom of the enclosure and closest to the door hinge. Place the shims between the mounting foot and the wall or mounting surface. Be sure all mounting screws are tightened securely.



UNITS WITH OR WITHOUT INTERNAL SERVICE DISCONNECT SWITCH

Model XXX = VOLTAGE CODE N111 = SOURCE & MODE CONFIGURATION CODE	Application	Dimensions (Inches)						Wiring Lug AWG	Disconnect Size & AWG	Weight (lbs.) *Hybrid
		A	B	C	D	E	F			
SxxxN111	Single Phase L – N	14	12	8	14.75	10	0.31	14-4	40 A 14-8	20
SxxxL110	Single Phase L – L	14	12	8	14.75	10	0.31			20
H1/ H2 or SxxxS111	Split Phase	14	12	8	14.75	10	0.31			20
H1/ H2 or SxxxY111 or 110	Three Phase Wye	16	14	8	16.75	12	0.31			50
H1/ H2 or SxxxD110	Three Phase Delta	16	14	8	16.75	12	0.31			50
SxxxH111	Three Phase Delta Hi-Leg	16	14	8	16.75	12	0.31			50
SxxxN222	Single Phase L – N	14	12	8	14.75	10	0.31	14-4	40 A 14-8	20
SxxxL220	Single Phase L – L	14	12	8	14.75	10	0.31			20
H1/ H2 or SxxxS222	Split Phase	20	16	9	21.25	10	0.44			60 *65
H1/ H2 or SxxxY222 or 220	Three Phase Wye	20	16	9	21.25	10	0.44			60 *65
H1/ H2 or SxxxD220	Three Phase Delta	20	16	9	21.25	10	0.44			60 *65
SxxxH222	Three Phase Delta Hi-Leg	20	16	9	21.25	10	0.44			60
SxxxN333	Single Phase L – N	20	20	9	21.25	14	0.44	14-1/0	80 A 14-1	60
SxxxL330	Single Phase L – L	20	20	9	21.25	14	0.44			60
H1/ H2 or SxxxS333	Split Phase	20	20	9	21.25	14	0.44			70 *75
H1/ H2 or SxxxY333 or 330	Three Phase Wye	24	20	9	25.25	14	0.44			90 *95
H1/ H2 or SxxxD330	Three Phase Delta	24	20	9	25.25	14	0.44			90 *95
SxxxH333	Three Phase Delta Hi-Leg	24	20	9	25.25	14	0.44			90
SxxxN444	Single Phase L – N	24	20	9	25.25	14	0.44	14-2/0	100 A 14-1	90
SxxxL440	Single Phase L – L	24	20	9	25.25	14	0.44			90
H1/ H2 or SxxxS444	Split Phase	24	20	9	25.25	14	0.44			90
H1/ H2 or SxxxY444 or 440	Three Phase Wye	30	24	9	31.25	18	0.44			110
H1/ H2 or SxxxD440	Three Phase Delta	30	24	9	31.25	18	0.44			110
SxxxH444	Three Phase Delta Hi-Leg	30	24	9	31.25	18	0.44			110

Figure 1. Typical Cabinet Data, Form C Contact and Wiring

ELECTRICAL CONNECTIONS

All electrical connections should be installed by a qualified (licensed) electrician only. All wiring must comply with the National Electrical Code (NEC) and applicable local codes.



VERIFY THAT ALL POWER CIRCUITS ARE DE-ENERGIZED AND LOCKED OUT BEFORE MAKING ELECTRICAL CONNECTIONS.

Voltage Ratings and Power Source Configurations

Before making connections to the unit, verify that the unit model number and nameplate voltage rating are appropriate for connection to the intended power source. See Figure 2 for voltage rating applications with typical power source configurations.

Surge Voltage Ratings – To obtain the suppression voltage ratings (SVRs), as obtained by Underwriters Laboratory, Incorporated, in accordance with the *Standard for Safety, Surge Protective Devices (SPDs), Standard 1449, Second Edition, dated August 15, 1996*, marked on this product, #8 AWG wire must be utilized to connect the unit to your facilities’ power grid. Connections made with conductors other than #8 AWG may result in different SVRs.

Circuit Ampacity Limitations – This device has been investigated by Underwriters Laboratories, Incorporated to withstand, without exposing live circuits or components on power sources, a voltage of two times (2x) the device ratings, and fault currents of up to 300,000 AIC, as described in the *Standard for Safety, Surge Protective Devices (SPDs), Standard 1449, Second Edition, dated August 15, 1996*.

Parallel Connection (see Figures 3 and 4)

With parallel connection, the length of the wiring to the surge protective device (SPD) unit must be minimized for best performance. Wires should be as short and straight as possible.

To reduce the wiring impedance to surge currents, the phase, neutral (if required), and ground conductors are recommended to be twisted together and routed in the same raceway (conduit). Avoid any sharp bends in the conductors.

Wire Sizing – With parallel connection, the size of the wiring to the SPD unit is independent of the protected circuit’s ampacity. Suggested wire size based on the unit’s transient surge current capabilities are shown in the table below.

Suggested Wire and Breaker Size

Model (xxx = Voltage Code)	Suggested Minimum Wire Size	Suggested Breaker Size (If Used)
H1/ H2 or Sxxx111	#8	40 A
H1/ H2 or Sxxx222	#8	40 A
H1/ H2 or Sxxx333	#3	80 A
H1/ H2 or Sxxx444	#1	100 A

NEC Articles 280-21 and 22 require surge arrester connecting conductors to be at least #14 copper or #12 aluminum.

Overcurrent Protection – The SPD unit conducts practically no current under normal operation and only conducts very short duration transient surge currents. The Liebert SPD units contain UL approved internal fusing to protect against device failure.

External overcurrent protection is not specifically required by NEC Article 280 nor is it desired since it impedes the performance of the surge protective device. If fusing is required, please consult factory for recommendations.

Disconnect Switch – SPD units must be connected to the load side of the main service disconnect, or load side of a protected circuit’s disconnecting means.

A disconnect switch is sometimes used to facilitate servicing the SPD unit. If a disconnect switch is used, the location and wiring of the switch and SPD unit should minimize the interconnecting wiring (see Figure 4).

Interceptor “S” Models with an “R” suffix and all Interceptor Hybrid Advantage Units are equipped with an internal disconnect switch, which can be used to de-energize the unit’s transient surge suppressing components for servicing.

Voltage Ratings & Power Source Configurations

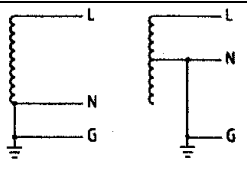
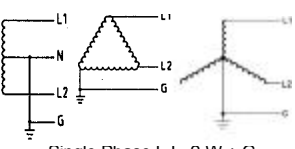
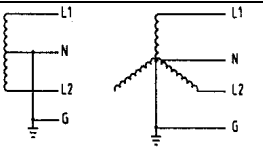
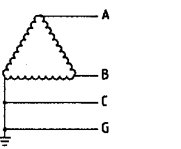
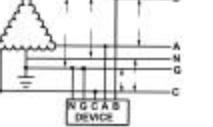
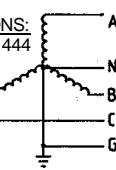
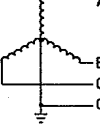
Source Configurations	Nominal Operating Voltage			Model Voltage Code	Replaceable Interceptor(s) Module Part Number				SAD Module "H" Units ONLY	
	L-N	L-L	L-G		L-N	L-L	L-G	N-G	H1	H2
 <p>Single Phase L-N, 2 W + G <u>MODE CONFIGURATIONS:</u> 111, 222, 333 & 444</p>	100	N/A	100	100N	M100130LN	N/A	M100130LG	M100130LG	N/A	N/A
	110	N/A	110	110N	M110130LN	N/A	M110130LG	M110130LG	N/A	N/A
	120	N/A	120	120N	M120150LN	N/A	M120150LG	M120150LG	N/A	N/A
	230	N/A	230	230N	M230275LN	N/A	M230275LG	M230275LG	N/A	N/A
	277	N/A	277	277N	M277320LN	N/A	M277320LG	M277320LG	N/A	N/A
346	N/A	346	346N	M346420LN	N/A	M346420LG	M346420LG	N/A	N/A	
 <p>Single Phase L-L, 2 W + G <u>MODE CONFIGURATIONS:</u> 110, 220, 330 & 440</p>	N/A	208	208	208L	N/A	M208130LN	M208250LG	N/A	N/A	N/A
	N/A	240	240	240L	N/A	M240150LN	M240275LG	N/A	N/A	N/A
	N/A	400	400	400L	N/A	M400275LN	M400575LG	N/A	N/A	N/A
	N/A	380	480	480L	N/A	M480275LN	M480575LG	N/A	N/A	N/A
	N/A	600	600	600L	N/A	M600420LN	M600680LG	N/A	N/A	N/A
 <p>Split Single Phase, 3 W + G <u>MODE CONFIGURATIONS:</u> 111, 222, 333 & 444</p>	100	173-200	100	100S	M100130LN	N/A	M100130LG	M100130LG	H1M100S	H2M100S
	110	190-220	110	110S	M110130LN	N/A	M110130LG	M110130LG	H1M110S	H2M110S
	120	208-240	120	120S	M120150LN	N/A	M120150LG	M120150LG	H1M120S	H2M120S
	230	400-460	230	230S	M230275LN	N/A	M230275LG	M230275LG	H1M230S	H2M230S
	277	480-554	277	277S	M277320LN	N/A	M277320LG	M277320LG	H1M277S	H2M277S
346	600	346	346S	M346420LN	N/A	M346420LG	M346420LG	N/A	N/A	
 <p>Three Phase Delta, 3 W + G <u>MODE CONFIGURATIONS:</u> 110, 220, 330 & 440</p>	N/A	208	208	208D	N/A	M208150LN	M208250LG	N/A	H1M208D	H2M208D
	N/A	240	240	240D	N/A	M240150LN	M240275LG	N/A	H1M240D	H2M240D
	N/A	400	400	400D	N/A	M400275LN	M400575LG	N/A	N/A	N/A
	N/A	480	480	480D	N/A	M480275LN	M480575LG	N/A	N/A	N/A
	N/A	600	600	600D	N/A	M600420LN	M600680LG	N/A	N/A	N/A
 <p>Three Phase Delta Hi Leg, 4 W + G <u>MODE CONFIGURATION:</u> 111, 222, 333 & 444</p>	120	240	120	240H	M120150LN	N/A	M120150LG	M120150LG	H1M240H	H2M240H
<p>Three Phase Wye 4 W + G <u>MODE CONFIGURATIONS:</u> 111, 222, 333 & 444</p> 	100	173	100	100Y	M110130LN	N/A	M100130LG	M100130LG	H1M100Y	H2M100Y
	110	190	110	110Y	M100130LN	N/A	M110130LG	M110130LG	H1M110Y	H2M110Y
	120	208	120	120Y	M120150LN	N/A	M120150LG	M120150LG	H1M120Y	H2M120Y
	230	400	230	230Y	M230275LN	N/A	M230275LG	M230275LG	H1M230Y	H2M230Y
	277	480	277	277Y	M277320LN	N/A	M277320LG	M277320LG	H1M277Y	H2M277Y
346	600	346	346Y	M346420LN	N/A	M346420LG	M346420LG	N/A	N/A	
<p>Three Phase Wye, 3 W + G <u>MODE CONFIGURATIONS:</u> 110, 220, 330 & 440</p> 	N/A	208	120	120Y	N/A	M208150LN	M208150LG	N/A	H1M208D	H2M208D
	N/A	400	230	230Y	N/A	M400275LN	M400275LG	N/A	H1M240D	H2M240D
	N/A	480	277	277Y	N/A	M480275LN	M480275LG	N/A	N/A	N/A
	N/A	600	346	346Y	N/A	M600420LN	M600420LG	N/A	N/A	N/A

Figure 2. Voltage Ratings and Power Source Configurations

Note 1: For other voltages or source configurations, consult factory.

Note 2: Not all configurations are available in the Interceptor Hybrid Advantage line. Consult factory for availability of Interceptor Hybrid Advantage units where replaceable SAD modules are not listed above.

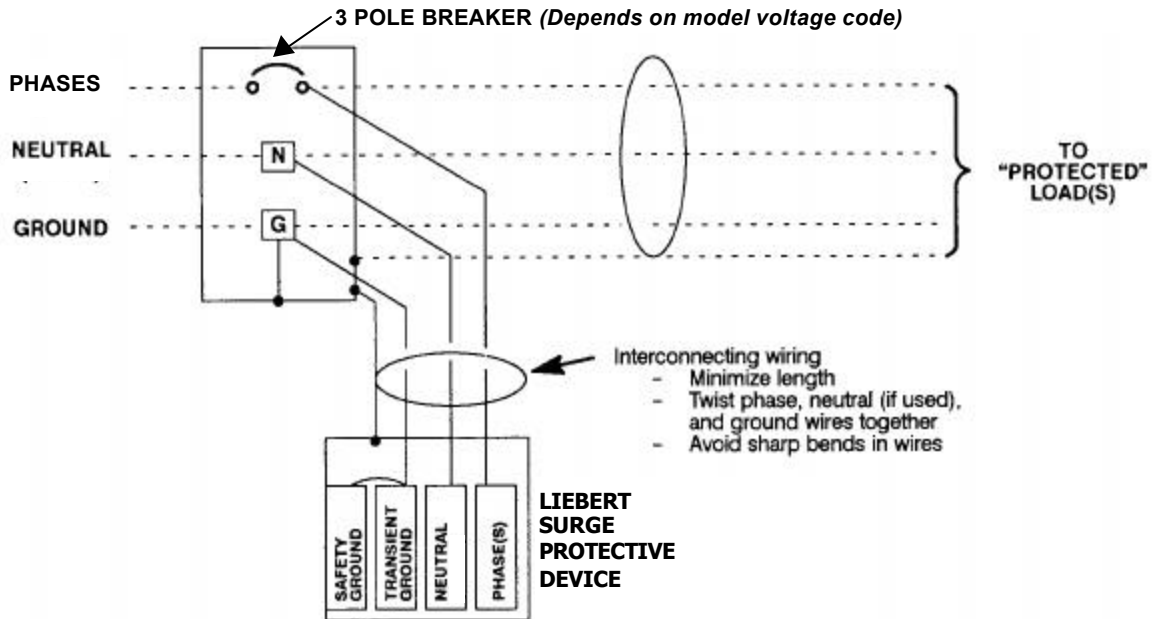


Figure 3. Typical Parallel Connections (without External Disconnect Switch)

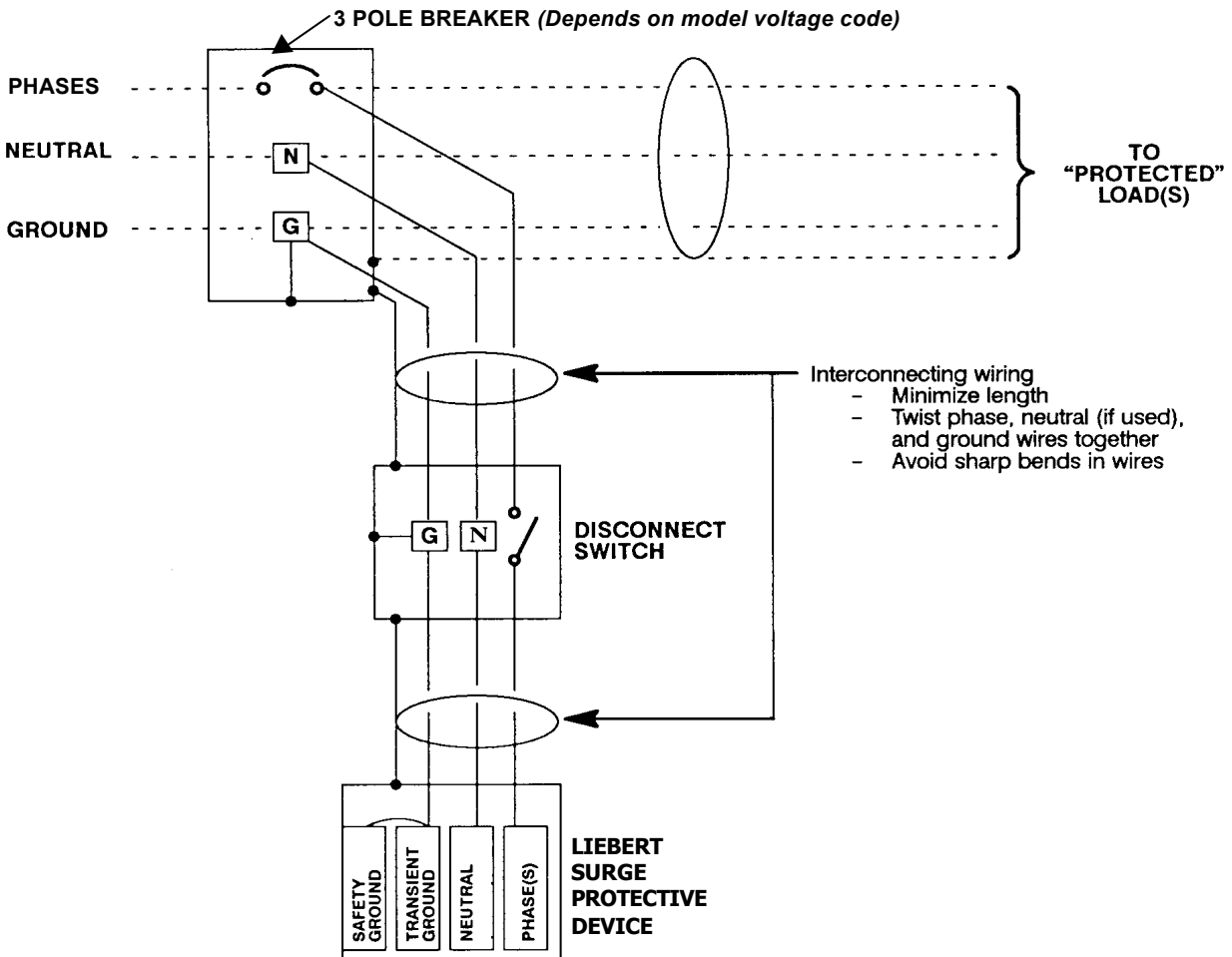


Figure 4. Typical Parallel Connections (with External Disconnect Switch)

System Grounding and Bonding

The performance and safety of any SPD system is dependent on proper grounding and bonding. Grounding is required primarily for safety. Correct implementation also enhances equipment performance. Incorrect grounding can reduce or impede the SPD's operation.

All electrical circuits to or from the SPD must include an equipment grounding conductor as required by the NEC and local codes.

An insulated grounding conductor is recommended in addition to any metallic raceway, which may be used as a grounding conductor. For parallel-connected SPD, the grounding conductor should be the same wire size as the associated power conductors. Grounding conductors must be routed with the associated power conductors in the same raceway (conduit).

When metallic raceways are used, adequate electrical continuity must be maintained at all raceway connections, particularly raceway terminations to the electrical enclosures.

The use of isolating bushings or other means to interrupt a metallic conduit run is a potential safety hazard and is not recommended.

Grounding Electrode – Surge protective devices do not discharge all surges to ground (earth). Surge protective devices divert the surge current back to its source to complete the electrical circuit.

In the case of lightning whose potential is developed with respect to the earth, the SPD diverts the surge current to the

grounding electrode (earth connection). However, for most transient surges which are developed by switching loads, the SPD diverts the surge current back to its source without involving the grounding electrode.

For proper SPD performance, the service entrance grounding electrode system must comply with the NEC by having all available electrodes (building steel, metal water pipe, driven rods, concrete encased electrodes, etc.) properly bonded together and connected to the power system grounding.

The use of a separate grounding electrode to ground the SPD defeats the effectiveness of the SPD, is a potential safety hazard, may cause equipment damage, is an NEC violation (reference NEC 250-51 and 250-54), and is not recommended.



FOR PROPER AND SAFE OPERATION, THE NEUTRAL, (IF PROVIDED), MUST BE RELIABLY CONNECTED TO THE NEUTRAL OF THE SOURCE. FAILURE TO PROVIDE A RELIABLE NEUTRAL CONNECTION MAY RESULT IN MODULE FAILURE!

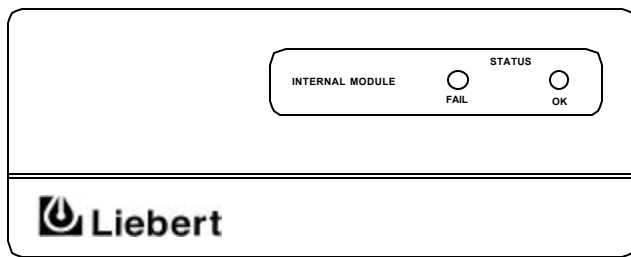
OPERATION

Liebert SPD System requires little or no operator intervention after installation.

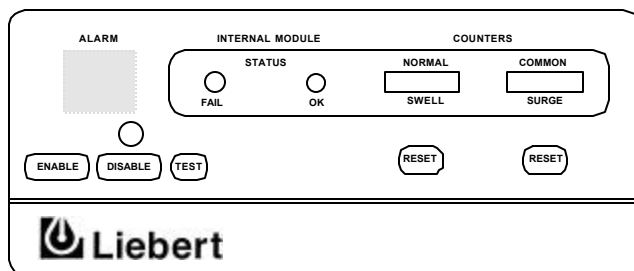
The units are provided with diagnostic indicators and optional alarms which assist in determining when the unit needs service (see Troubleshooting/Service/Maintenance Section).

Each active surge current diverter module is equipped with a green LED which indicates it is energized and functional. If unit is energized and green LED is off, the surge current diverter module may not be fully functional and requires replacement. See the maintenance section of this manual for additional information.

System Monitor Panel – The unit may be equipped with one or more status indicators or alarms; depending on the system monitor panel provided, (See Figure 5).



Standard Monitor Panel



Optional Monitor Panel

Module Status Indicators (Standard) – These indicators provide a summary of the status of all surge current diverter modules. For normal conditions, the green “OK” LED is illuminated and the red “Service” LED is extinguished. If one or more of the surge current diverter modules requires replacement, the green “OK” LED is turned off and the red “FAIL” LED illuminated.

Audible Alarm (Optional) – If one or more of the surge current diverter modules requires replacement, an audible alarm is activated to draw attention to the fact that repair service is required to restore the system to normal operation. An audible alarm disable is provided to silence the alarm. The system will automatically reset itself after repair. The audible alarm switch and “Fail” LED can be tested by depressing the “Test” switch.

Surge Counters (Optional) – One or two surge counters may be provided for transient voltage surge monitoring. The counter totalizes surges monitored since the last counter reset.

The Normal Mode Swell Counter monitors all line to line and line to neutral voltages. It is factory set to record whenever the peak voltage on any normal mode exceeds the MCOV of the SPD for more than 100µs. This allows the counter to record temporary line overvoltages that may result from utility switching, line regulation problems, etc.

The Common Mode Surge Counter monitors line to ground transient voltages. This circuit totalizes all surges that deviate from the line sine wave envelope by more than 125 volts. The counter is AC coupled and rejects transient voltages longer than 100µs.

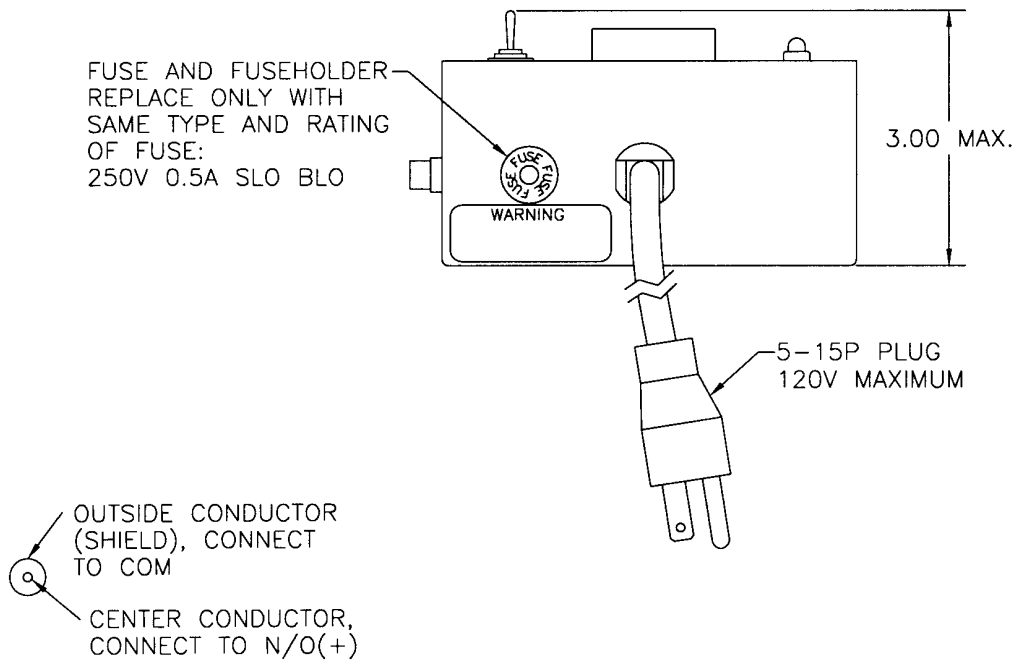
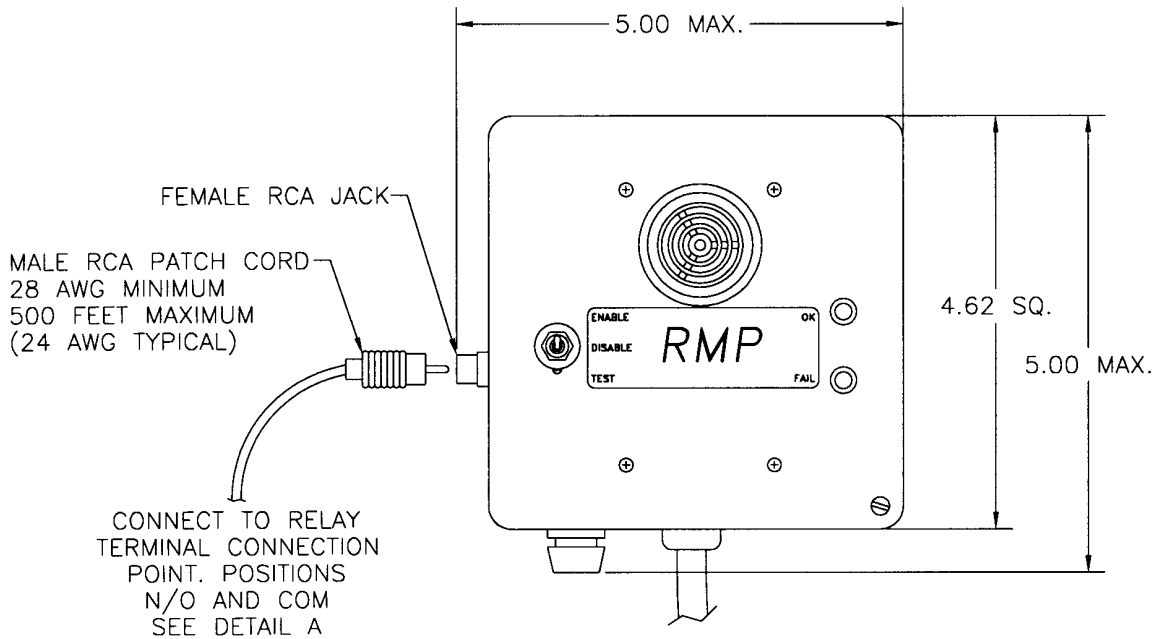
Front Panel Counter Reset Disable/Enable Switch (Provided on units with surge counter options) – The counter is resettable from the counter reset switch on the front monitor panel. The front reset may be disabled internally to provide protection against tampering. To disable the front reset, follow the procedure below:

1. Remove power from the unit, lock out and tag the disconnect or circuit breaker.
2. Open door and verify power is off with a voltmeter.
3. Throw SWXI on the power supply board to the disable position.

Summary Alarm Contact (Standard) – Dual summary alarm Form C (1 N.O. and 1 N.C.) relay contacts are provided for remote indication of each failed surge current diverter modules. The summary alarm contacts terminals are located on the PC board inside the unit. Contacts are rated for 5 amps at 277 VAC maximum.

Remote Monitor Panel (Optional) – A remote monitor panel is available to provide unit status and alarm information at a location up to 500 feet away from the Liebert SPD System. (See Figure 5.) Operation of the Remote Monitor Panel is similar to the unit system monitor panel. The “Enable” position of the switch is the normal position, which allows audible alarm operation. The “Disable” switch position silences the audible alarm. The “Test” position tests the audible alarm and indicator lights.

The remote monitor panel requires an external source of power. Standard units are furnished with a six-foot power cord with a NEMA 5-15 plug for connection to a 120 VAC source. Control connections are required from the remote monitor panel to the power supply board in the Liebert SPD System. Connections are made by way of two-conductor control cable fitted with “RCA” plug on one end (see Figure 5), which is not furnished with the remote monitor panel.



DETAIL A

Figure 5. Remote Monitor Panel

TROUBLESHOOTING / SERVICING / MAINTENANCE

Troubleshooting

If status failure indication occurs or Form C relay has changed states, a qualified electrician should first determine if the systems voltage and proper phasing exists.

If the Interceptor SPD remains in an alarm condition once the technician is satisfied that the electrical system and its connections are normal, the unit should be repaired. At this point consult the factory, having available the following information:

- Unit identification number – *(located on front of unit in lower right hand corner).*
- Nature of problem – *(including status of all status indicators and alarms).*

Servicing



ONLY QUALIFIED PERSONNEL SHOULD PERFORM MAINTENANCE ON THE SYSTEM.

HAZARDOUS VOLTAGES ARE PRESENT INSIDE THE UNIT DURING NORMAL OPERATIONS.

ELECTRICAL SAFETY PRECAUTIONS MUST BE FOLLOWED WHEN SERVICING THIS UNIT.

TO PREVENT RISK OF ELECTRICAL SHOCK, TURN OFF AND LOCK OUT ALL POWER SOURCES TO THE UNIT BEFORE SERVICING UNIT.

(For servicing assistance, contact your local Liebert Sales Representative or Control Concepts at 800-288-6169 or 607-724-2484.)

Corrective Maintenance

The Liebert Interceptor SPD is designed for years of trouble-free operation. However, even the most reliable equipment may fail under abnormal conditions.

Diagnostic indicators are provided to indicate when the unit needs replacement (see operation section of this manual for details). To ensure continuity of surge protection, failed units should be replaced at the earliest convenient service opportunity. On systems rated for 50 kAmp surge capacity and larger, parallel modules provide redundant transient surge protection such that any single module failure does not completely eliminate the SPD protection.

When replacing surge current diverter modules, other components should be inspected for damage and replaced if necessary. Standard electrical troubleshooting procedures should be used to isolate problems other than failed surge current diverter modules.

When replacing components, for continued proper operation and safety, replace only with identically rated components. Please contact factory for information on replacement parts.

Preventative Maintenance (Inspection and Cleaning)

Periodic system inspections, cleaning, and connection checks are recommended to ensure reliable system performance and continued surge transient protection.

It is difficult to establish a schedule for preventative maintenance since conditions vary from site to site. Inspections for failed surge current diverter modules using available diagnostics should be done routinely (weekly or monthly).

LIMITED WARRANTY

This Warranty is given **ONLY** to purchasers who buy for commercial or industrial use in the ordinary course of each purchaser's business.

General:

Control Concepts' products are in our opinion the finest available. We take pride in our products and are pleased that you have chosen them. Under certain circumstances, we offer with our products the following Five-Year Warranty Against Defects in Material and Workmanship. Please read your Warranty carefully. This Warranty sets forth our responsibilities in the unlikely event of defect and tells you how to obtain performance under this Warranty.

FIVE YEAR LIMITED WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP

CONTROL CONCEPTS PRODUCTS COVERED: Interceptor and Interceptor Hybrid Advantage (SAD) Series TVSS.

Terms of Warranty:

As provided herein, the Control Concepts product is warranted to be free of defects in material and workmanship for a period of five (5) years from the date of delivery of the product to User. The delivery date will be determined only from the Control Concepts bill of lading. If any of the Control Concepts products fail to conform to the warranty within the warranty period, Control Concepts, at its option, will furnish new or factory remanufactured parts for repair or replacement of that part.

Warranty Extends to First Purchaser for Use, Non-transferable:

This Warranty is extended to the first person, firm, association or corporation for whom the Control Concepts product specified herein is originally installed for use in the United States (the "User"). This Warranty is not transferable or assignable without the prior written permission of Control Concepts.

Assignment of Warranties:

Control Concepts assigns to User any warranties which are made by manufacturers and suppliers of components of the Control Concepts product and which are assignable, but Control Concepts makes **NO REPRESENTATIONS** as to the effectiveness or extent of such warranties, assumes **NO RESPONSIBILITY** for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this warranty to such components.

Descriptions:

Control Concepts warrants for the period and on the terms of the Warranty set forth herein that the Control Concepts product will conform to the descriptions contained in Control Concepts' final invoices, orders and Control Concepts' product brochures. Control Concepts does not control the installation and use of any Control Concepts product. Accordingly, it is understood that the Descriptions are **NOT WARRANTIES OF PERFORMANCE** and **NOT WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE**.

Obtaining Performance Under This Warranty:

Within a reasonable time, but in no case to exceed thirty (30) days, after User's discovery of a defect, User shall contact Control Concepts and request a return authorization number. User shall ship the product, with proof of purchase, to Control Concepts freight prepaid. Control Concepts products shipped to Control Concepts without a return authorization number will be refused and returned freight collect to User at User's expense. Control Concepts products shipped by User to Control Concepts which have incurred freight damage due to User's improper packaging of the product will not be covered by this Warranty and any repairs or replacement parts, components or products needed will be invoiced in the full current price amount and returned freight collect to User.

Subject to the limitations specified herein, Control Concepts will repair or replace, at its option, without charge for Control Concepts labor or materials, subsequent to its inspection and F.O.B. Control Concepts' facility, the Control Concepts product shipped to Control Concepts with a return authorization number and warranted hereunder which does not conform to the Warranty. Replacement parts, components or products shipped to User prior to Control Concepts' receipt and inspection of the product claimed to be defective, shall be invoiced in the full current price amount and shipped freight collect F.O.B. Control Concepts' facility. Warranty coverage will be extended only after Control Concepts' receipt of the claimed defective product within thirty (30) days of shipment of any replacement parts, components or products, if applicable, Control Concepts' inspection discloses the claimed defect and the returned product shows no signs of treatment or use which would void the coverage of this Warranty.

Items Not Covered By Warranty:

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY misuse, improper application, wrong or inadequate electrical current or connection, inadequate water or drain services, negligence, inappropriate on site operating conditions, corrosive atmosphere, repair by non-Control Concepts designated personnel, accident in transit, tampering, alterations, a change in location or operating use, exposure to the elements, Acts of God, theft or installation contrary to Control Concepts' recommendations or specifications, or in any event if the Control Concepts serial number has been altered, defaced or removed.

THIS WARRANTY DOES NOT COVER shipping costs, installation costs, circuit breaker resetting or maintenance or service items and further, except as provided herein, does **NOT** include labor costs or transportation charges arising from the replacement of the Control Concepts product or any part thereof or charges to remove same from any premises of the User.

THIS WARRANTY DOES NOT COVER DAMAGE OR DEFECT CAUSED BY use of the Control Concepts product in combination with any electrical or electronic components, circuits, systems, assemblies, or other materials not furnished by Control Concepts. Control Concepts does **NOT** warrant the suitability for use or the results of the Control Concepts product in combination with the products of others.

REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT OR PART THEREOF DOES NOT EXTEND THE ORIGINAL WARRANTY PERIOD.

Limitations:

- THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- USER'S SOLE AND EXCLUSIVE REMEDY IS REPAIR OR REPLACEMENT OF THE CONTROL CONCEPTS PRODUCT AS SET FORTH HEREIN.
- IF USER'S REMEDY IS DEEMED TO FAIL OF ITS ESSENTIAL PURPOSE BY A COURT OF COMPETENT JURISDICTION, CONTROL CONCEPTS' RESPONSIBILITY FOR PROPERTY LOSS OR DAMAGE SHALL NOT EXCEED ONE TIMES THE NET PRODUCT PURCHASE PRICE.
- IN NO EVENT SHALL CONTROL CONCEPTS ASSUME ANY LIABILITY FOR INDIRECT, SPECIAL, INCIDENTAL, OR ECONOMIC CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION, LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA, WHETHER ANY CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT OR OTHERWISE.

Miscellaneous:

- NO SALESPERSON, EMPLOYEE OR AGENT OF CONTROL CONCEPTS IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. Warranty terms may be modified, if at all, only in a writing signed by a Control Concepts' officer.
- This Warranty is effective as of the date of Control Concepts receipt of payment and supersedes all previous warranties. Control Concepts reserves the right to supplement or change the terms of this Warranty in any subsequent warranty offering to User or others.
- In the event that any provision of this Warranty should be or becomes invalid and/or unenforceable during the warranty period, the remaining terms and provisions shall continue in full force and effect.
- This Warranty is given in and is intended to be construed under the laws of the State of New York.
- This Warranty represents the entire agreement between Control Concepts and User with respect to the subject matter herein and supersedes all prior or contemporaneous oral or written communications, representations, understandings or agreements relating to this subject.