TECHNICAL SPECIFICATION

MODEL	LS-231C (SDL5-20kA)	LS-231C-ENCL (Enclosure)	LS-431C (SDL5-40kA)	LS-431C-ENCL (Enclosure)
ELECTRICAL SYSTEM	Three phase (3 wire + neutral+ earth)			
NOMINAL VOLTAGE	380 V or 415 V			
APPLICATION RANGE (MCOV)	310 - 480 V			
FREQUENCY RANGE	45 - 65 Hz			
LET THROUGH VOLTAGE	600 V			
SURGE ENERGY DISSIPATION	3x1560 joules		3x3080 joules	
SURGE CAPABILITY (Imax)(8/20 μs)	20 kA/phase		40 kA/phase	
LEAKAGE CURRENT (phase to earth)	<200 μA		<400 μA	
TVSS PROTECTION MODE	L-L, L-N, L-E, N-E			
LOCATION CATEGORY	A1, A2, A3, B1, B2, B3, C1, C2			
AMBIENT TEMPERATURE	- 40 to 60 ℃			
DIMENSIONS (W x H x D)(mm.)	120 x 270 x 120	250 x 350 x 160	120 x 270 x 120	250 x 350 x 160

Continuous product development is our commitment. In that manner, the above specifications may be changed without prior notice.

Authorized Distributor

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LEN.MAN.SUR.135 Rev.1.00/2008

USER'S GUIDE

LEONICS®

TVSS

SURGE DIVERTER

LS-x31C series (SDL5-series)

Three Phase Power Line Surge Protector

062
LEONICS CO.,LTD A5043 ISO 9001
ISO 14001
EMS 010071045

Surge Diverter
LS-x31C series (SDL5-series)
Power Line Surge Protector

SAFETY INSTRUCTIONS

Please read carefully and follow this LEONICS Surge Diverter (Three phase) guide.

Important: Please keep this manual for reference in order to use the Surge Diverter (Three phase) properly and safely. This user's guide contains instructions for installation and operation and technical specification.

If there are any symptoms of problems which are not mentioned in this guide or any queries, please contact your LEONICS local distributions, LEONICS Service Center, send e-mail to support@leonics.com or visit www.leonics.com.

For your convenience and quick reference for LEONICS Surge Diverter (Three phase) service, please fill the requested information in the blanks below.

LEONICS Surge Diverter model : _____

Serial number : _____

Purchase date : _____

Purchase from : _____

1.1 Read all of Surge Diverter user's guide carefully before installation and operation.

1.2 The Surge Diverter, which is mentioned in this user's guide, is designed for Three phase electricity system only.

1.3 To reduce risk from electric shock, use insulated tools during installation.

1.4 Remove all jewelry such as rings, bracelets, etc, while installing the system.

1.5 For your safety, turn off the main breaker before connecting LEONICS Surge Diverter to AC source.

1.6 Correctly connect Line, Neutral and ground/Earth cables from AC source to Surge Diverter.

1.7 Proper wiring is required otherwise Surge Diverter works inefficiently.

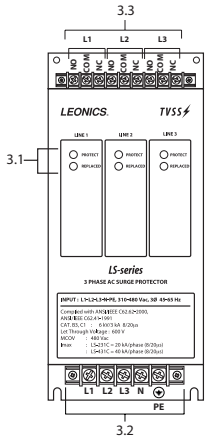
INTRODUCTION

Natural phenomena such as thunderstorm, lightning and the START-STOP of the high power motorized equipment such as air conditioner, washing machine, printer, all are the common causes of transient voltage or surge. It can be considered a transient with voltage levels greater than 2,000 V and current levels greater than 100 A within 1 - 10 microseconds. The effects of surge cause electronic equipments and telecommunication equipments damage, operate incorrectly, shorten their equipment lifes or lose data.

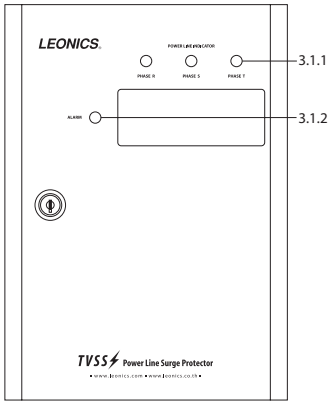
LEONICS Surge Diverter is a transient voltage surge suppressor (TVSS) or surge protector which create a much lower resistance when voltage is too high and divert extra current into MOV and to ground in order to protect the equipment down stream and reduce loss from surge.

Feature - Installed in parallel, no effect to any present equipments in the system.
- LED protected status and replaced indicator
- Remote indicator port for alarm dry contact.
- Tested in accordance with ANSI/IEEE C62.41-1999, ANSI/IEEE C62.42-2000 by Center of Excellence in Electronical Power Technology, Chulalongkorn University.
- Suits for places or equipments that are sensitive to surge.
- Compact, light weight and easy to install

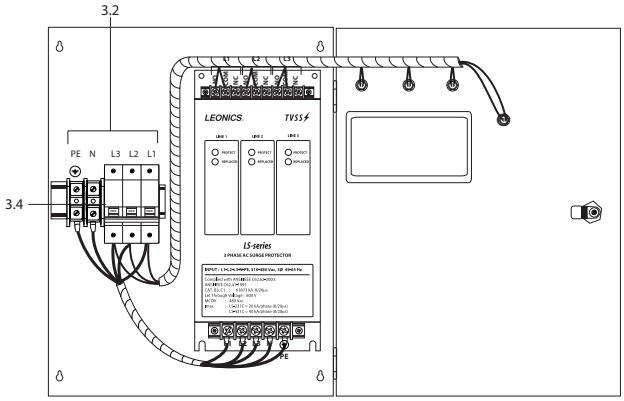
FRONT PANEL AND COMPONENTS



Surge Diverter 3 Phase



Surge Diverter 3 Phase Enclosure Model



Inside Enclosure Model

3.1 LED indicators

3.1.1 PROTECT/POWER LINE INDICATOR: Indicates that the Surge Diverter is operating normally.

3.1.2 REPLACED/ALARM: Indicates that the Surge Diverter is deteriorating. The protection system operates inefficiently. Recommend to replace the new diverter.

3.2 L1,L2,L3,N,G/PE terminals: The terminals for connecting to three phase electricity system.

3.3 Remote alarm contact terminal: Alarm dry contact (NO, COM, NC) for connecting to remote alarm devices such as PLC or buzzer.

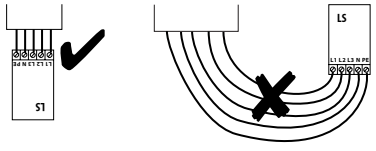
3.4 Fuse breaker/Circuit breaker : The circuit breaker to isolate Surge Diverter from electrical system during maintenance (available in Enclosure model only).

INSTALLATION

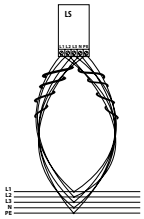
4.1 Before installation, check voltage and environment as following

- The ground system is properly installed and the earth resistance is less than 10 ohms.
- The Line-Neutral and Line-Earth voltages are less than 280 Vac (application range).
- The Neutral-Earth voltage must be less than 60 Vac.

4.2 Use 10 mm^2 stranded cable or looped 2 sets of 4 mm^2 cables for connecting to electricity system. The cables are recommended to be as short as possible and not longer than 25 cm. or 10 inches.

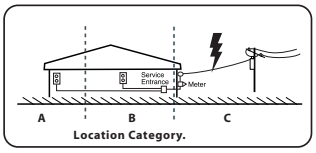


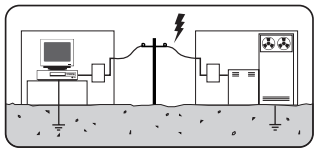
4.3 In case that it is not possible to wire the system with 25 cm. cable length, use 2 sets of 4 mm^2 cables which each length is shorter than 50 cm. Split them into 2 sets (L1,L2,L3, N and G/PE) with minimum space 10 cm. or 4 inches. Tie the cables with cable tie or spiral wrap for the whole length.

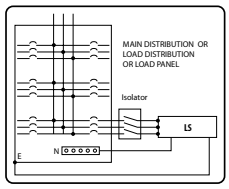


4.4 There are 2 types of installation

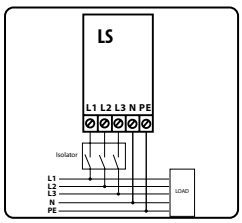
4.4.1 Service entrance installation: Install Surge Diverter at main distribution boards (MDB). It can be installed as shown.







4.4.2 Surge source installation: Install Surge Diverter at load distribution or load panel to protect surge from the START-STOP equipment or in the special protection areas such as signal control room and server room.



4.5 Recommend to install a circuit breaker to separate Surge Diverter from electricity system for maintenance and protection of the cables from the surge diverter to the electricity system.

4.5.1 For the electricity system rated current 100 A or lower, use HRC Fuse rating 63 A, $I_C \geq 20$ kA.

4.5.2 For the electricity system rated current higher than 100 A, use HRC Fuse rating 63 A or 100 A or MCCB rating 63 A, $I_C \geq 20$ kA.

4.6 Connect ground cable of the Surge Diverter directly to the ground system of the electricity system. If it has to be connect to the other ground systems, the resistance between the ground of the diverter and the earth should be less than 10 ohms.

OPERATION

5.1 After the installation, starts the Surge Diverter, check the operation status from two indicator lamps at the front panel. The meaning of the indicators are as follow

Operation status	Indicator lamps of each phase	
	PROTECT	REPLACED
The diverter operates normally.	ON	OFF
The protection system operates inefficiently, Recommend to replace the new diverter.	ON	ON
The protection system does not operate. The diverter is deteriorating. Replace the new diverter.	OFF	ON
No electricity supplies to the diverter or blackout.	OFF	OFF

5.2 User can connect to remote alarm devices such as PLC or buzzer by connecting to dry contact (NO, COM, NC). Maximum rating power of remote alarm devices are 250 Vac, 6 A or 30 Vdc, 5 A.