

## HARDWARE

The LPS is packaged in a compact 3 RU high 19 inch rack mount case. Models are available for either horizontal or vertical mounting. The drawout construction of the case allows for all of the printed circuit boards to be with-

drawn from the front of the relay with only the highly reliable magnetics remaining in the case. The magnetics module can easily be removed from the case if necessary. The front faceplate is reversible and designed for a quick

change between vertical and horizontal orientations. Optional vertical mounting flanges are available for L2 or KD panel cutout mounting.

## LPS TECHNICAL SPECIFICATIONS

PROTECTION		
	$I_n = 1$	$I_n = 5$
Positive Sequence Angle:	45 - 90°	45 - 90°
Zero Sequence Angle:	45 - 90°	45 - 90°
Zero Sequence Current:		
Compensation (K0):	1.00 - 7.00	1.00 - 7.00
Zone 1, 2, 3 & 4 Reach:	0.05 - 250 Ω	0.01 - 50 Ω
Zone 4 Offset Reach:	0.00 - 0.40	0.00 - 0.40
	(Zone 4 is reversible)	
Zone 2 Timer:	0.10 - 3.00 sec	0.10 - 3.00 sec
Zone 3 & 4 Timers:	0.10 - 10.0 sec	0.10 - 10.0 sec
Phase Instantaneous OC:	0.4 - 32 A	2.0 - 160.0 A
Ground Instantaneous OC:	0.1 - 16.0 A	0.5 - 80.0 A
Ground TOC:	0.04 - 3.00 A	0.20 - 15.00 A
TOC Curves:	Inverse, Very Inverse, Extremely Inverse, Definite and Custom	
<b>RECLOSER (OPTIONAL)</b>		
Reclose Attempts:	4	
Synchronism Check:	Optional	

METERING	
Frequency:	50 or 60 Hz
Voltage (ph-ph):	100 - 120 VAC
Current ( $I_n$ ):	1 or 5 A
Maximum Permissible Current:	
Continuous:	3 A for $I_n = 1$ A 15 A for $I_n = 5$ A
Three Sec:	50 x $I_n$
One Sec:	100 x $I_n$
Maximum Permissible AC Voltage:	
Continuous:	138 VAC (ph-n)
One Minute:	3.5 x Rated

MONITORING	
Records:	6 - 36
Record Length:	72 - 12 cycles
Pre-fault Cycles:	1 - 8
Samples Per Cycle:	64

INPUTS	
Contact Converter Inputs:	5 - 300 VDC (jumper selectable)
<b>BURDENS</b>	
<b>Current Circuits:</b>	
	$I_n = 1$ 0.02 Ω at 5°
	$I_n = 5$ 0.12 Ω at 30°
<b>Voltage Circuits:</b>	
	50 Hz      0.20 VA
	60 Hz      0.15 VA
<b>DC Battery:</b>	
Power Supply:	<20 W
Contact Converters:	2.5 mA each

OUTPUTS	
<b>CONTACT RATINGS</b>	
Trip Contact (T1 - T6):	Continuous = 5 A Make & Carry = 30 A per ANSI C37.90 Interrupting: 25 VA Pickup < 4 ms
Trip SCR (T1 - T6):	Continuous = 5 A Make & Carry = 30 A per ANSI C37.90
<b>Auxiliary</b>	
(A1 - A12):	Continuous = 5 A
(C1, C2):	Make & Carry = 30 A Interrupting: 25 VA Pickup < 8 ms
High Speed (KT1 - KT4):	Continuous = 0.5 A Max. Voltage = 280 VDC = Pickup < 0.5 ms

POWER SUPPLY	
Control Voltage:	Range:
48 VDC	38.5 - 60.0 VDC
110/125 VDC	88 - 150 VDC
220/250 VDC	176 - 300 VDC

COMMUNICATIONS	
Protocol:	ASCII, GE modem, ModBus® RTU (opt. card)
Ports:	Front: 1 DB9, RS232
Rear:	1 DB25, RS232 and 4 pin Phoenix, RS485 (Standard); 1 DB25, RS232 or RS485 optional
Display:	4 line liquid crystal display standard
Keypad:	Full numeric keypad standard

INSTRUCTION BOOK	
1 Pole GEK 106202	LPS-D
3 Pole GEK 106159	GEK 106159

ENVIRONMENTAL	
<b>Ambient Temperature Range:</b>	
Storage:	-30°C to +75°C
Operation:	-20°C to +65°C
Humidity:	95% without condensation

TYPE TESTS	
Insulation Test Voltage:	2 kV, 50/60 Hz, 1 minute (High-Pot) ANSI C37.90 IEC 255-5
Impulse Voltage Withstand Fast Transient:	5 kV peak, 1.2/50 μs, 0.5 J IEC 255-4 ANSI C37.90.1
Surge Withstand Capability (SWC):	ANSI C37.90.1 IEC 255-22-1
Radio Frequency Interference Withstand (RFI):	ANSI C37.90.2 IEC 255-22-3
Electrostatic Discharge (ESD):	IEC 255-22-2

\*Specifications subject to change without notice.

## ORDERING

To order select the basic model and the desired features from the Selection Guide below.

LPS	*****--*	
LPS		Line protection system
D		Phase & ground distance relay
O		Phase distance relay with out-of-step tripping (system phase backup)
A		Revision level A (LPS-D only)
B		Revision level B
1		Single phase tripping logic (LPS-D only)
3		Three phase tripping logic
1		1 A rated current
5		5 A rated current
U		For applications without series capacitors
0		48 VDC battery voltage
1		110/125 VDC battery voltage
2		220/250 VDC battery voltage
1		SCR trip outputs and contact channel interface
2		Contact trip outputs and contact channel interface
3		SCR trip outputs and 5 V/20 mA channel interface (LPS-D only)
4		Contact trip outputs and 5 V/20 mA channel interface (LPS-D only)
2		Front RS232 com port and 1 selectable RS232/RS485 rear port † (LPS-DA only)
3		Front RS232 com port and 2 selectable RS232/RS485 rear port (GE-modem/ASCII)
H		Horizontal mounting
V		Vertical mounting
E		Extended oscillography memory
0		Use for LPS-D (no out-of step tripping)
1		Use for LPS-O (with out of step tripping)
N		No recloser
R		Recloser without sync-check (LPS-D only)
S		Recloser with sync-check (LPS-D only)
AC		ModBus® communications option (LPS-DA only)

### Accessories:

- 252B3523G1
- ModBus® RTU Protocol Card (LPS-D models only)
- 158D7358P1
- L2 Flange for Vertical Mounting
- 158D7359P1
- KD Flange for Vertical Mounting

**NOTE:** For dimensions see ALPS brochure.

† available for rev A only.

Ensure order accuracy –  
**order on the web**  
<http://www.GEindustrial.com/pm>