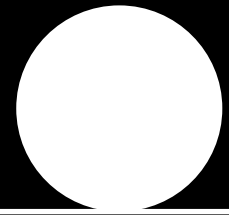


# LPU - Lightning Protection Unit

## SPECIALTY CONCEPTS, INC.

### SYSTEM PROTECTION DEVICE



#### DESCRIPTION

The Specialty Concepts Lightning Protection Unit (LPU) is a rugged, high capacity system component designed to reduce the damage to photovoltaic systems caused by lightning induced transients. It is designed to be installed in series between the solar array and the rest of the system, close to the system control electronics, to allow it to dissipate the surges in the array and the array wiring induced by nearby strikes. The LPU is most effective when used in conjunction with Specialty Concepts designed control electronics, which include lightning protection features that compliment the action of the LPU. This unit is suitable for use in DC systems up to 48 volts nominal and is available in one, three or four channel configurations with 50 amp capacity per channel. The LPU is housed in a NEMA 13 waterproof wall mount enclosure and has terminal blocks for up to 4 gauge wire.

#### FEATURES

##### SYSTEM LIGHTNING PROTECTION

- 50 amp, up to 48 volt nominal capacity per channel
- Two stage protection
  - High capacity gas discharge tube
  - Fast response MOV

##### DESIGN FEATURES

- 4 gauge terminal block connection
- Earth and chassis ground connections
- Higher capacity available by paralleling channels
- Negative ground
- Positive ground available (optional)
- Wall mount indoor enclosure
- Outdoor enclosure available (optional)

#### OPERATION

The LPU is a two stage, negative ground lightning protection unit providing primary and secondary protection against lightning induced transients. The primary protection device is a three electrode gas filled surge arrestor tube, which simultaneously grounds both sides of a pair when a surge appears on either line of the pair. The tube then restores when the surge dissipates. The secondary protection stage is a pair of metal oxide varistors connected between the array outputs (plus and minus) and ground. The secondary stage grounds any high voltage peak (spike) which might be passed by the primary stage. A high power inductor placed between the primary and secondary stages exhibits a high impedance for most lightning induced voltage transients, insuring that the primary stage will operate first and the secondary stage will not be exposed to the full surge.

#### OPTION DESCRIPTION

##### OPTION M - OUTDOOR ENCLOSURE (NEMA 4X):

This enclosure is intended for use indoors or outdoors for watertight, dust-tight and corrosion-resistant applications.



LPU (50 amp unit)



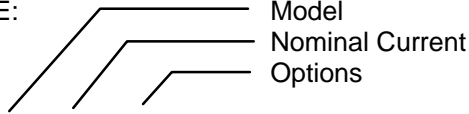
LPU-50 Negative Ground Block Diagram

# LIGHTNING PROTECTION UNIT

PARAMETERS	UNITS	VALUE
Nominal Voltage	(Volts)	
Array Voc., Max.	(Volts)	95
Array Current, Continuous / Channel	(Amps)	50
Array Current, Max / Channel (60 seconds)	(Amps)	65
<u>Primary Stage</u>		
Single Impulse Discharge Current, 8/20 $\mu$ sec waveform, Max.	(Amps)	20,000
Impulse Life - 1000A, 10/1000 $\mu$ sec waveform, Min.	(Surges)	400
	(Surges)	600
DC Breakdown Voltage Line to Ground	(Volts)	150-300
Impulse Breakdown Voltage Line to Ground		
@ 100 V / $\mu$ sec, Typ.	(Volts)	500
Max.	(Volts)	750
@ 10 KV / $\mu$ sec, Typ.	(Volts)	750
Max.	(Volts)	1000
DC Holdover @ 200mA, Min.	(Volts)	150
<u>Secondary Stage</u>		
Peak Surge Capacity 8/20 $\mu$ sec, Max.	(Amps)	1500
Peak Voltage Clamping @1mA, Min.	(Volts)	85
Max.	(Volts)	115
Response Time, Typ.	(Nanosec.)	50

## PART NUMBERING KEY

EXAMPLE:



**LPU - 50 - M**

## DIMENSIONS

In Inches (cm)

STANDARD ENCLOSURE (NEMA 13)

MODEL	NOMINAL CURRENT	OPTIONS
LPU	50 150 200	M - Outdoor enclosure with clear door (NEMA 4X)

Specifications and product availability subject to change without notice.

Shipping weight: 10 lbs. ( 4.5 Kgs.)

# SPECIALTY CONCEPTS, INC.

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