M. C. Miller Co., Inc.
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SURGISTOR 20

3-Terminal Surge Protection Device

(Cat # SURG20)

Operating Instructions

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MAN370

Applications
The Surgistor 20 surge protector is designed for use on both AC and DC systems. Primary applications would be the protection of sensitive electronic equipment used in remote monitoring or interruption of rectifier systems and the protection of the rectifier unit itself. The three-lead Surgistor 20 is designed for connection to the DC output (anode and cathode) terminals of a rectifier unit, as well as to the ground terminal. Also, the Surgistor 20 can be used to protect a rectifier on the input AC side and two Surgistor 20 units offer affordable protection for both the input and output of a rectifier system.

Method of Operation
When a surge or transient exceeds the threshold voltage (clamping voltage) of the Surgistor 20 unit (275VDC or 275VAC), the surge is bypassed to ground. The protection continues until the surge voltage reduces below the threshold voltage of the device. The Surgistor 20 protection system resumes normal operation after the surge passes without interruption to either the input or the output power. The symmetrical design of the Surgistor 20 unit clamps surges equally between any two leads which maintains all potentials at a safe level.

Installation
Installation is made easy due to the symmetrical design of the Surgistor 20 and the three leads need only be connected to the appropriate terminals, depending on the application (please see below), and any of the leads can be connected to any of the terminals, in question. For the most effective operation, the lead lengths should be trimmed as short as is reasonable for the installation. *In other words, there should be no excess wire!* ***Do not coil excess wire, remove it instead.*** Coiled wire acts as an inductor and lowers the effective clamping action of the Surgistor 20 unit. Before installation, determine a suitable location for placement of the unit within the system to be protected. The installed location should not be subject to temperatures in excess of 65^{o}C. A standard one-inch threaded fitting with nut is provided as a means of mounting, if desirable. The best installed location is the one that requires the shortest lead lengths
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Connections for Rectifier DC Output Protection (see wiring diagram overleaf)
Observe the rectifier's output DC current level and then switch off the rectifier. With the rectifier turned off and the Surgistor 20 positioned in what has been determined to be a suitable location, take one of the three leads and position it near the ground terminal on the rectifier. Allow about two to three inches of slack in the lead and cut the remainder off. Trim the insulation back about one-half inch, select a crimp connector and crimp. Bolt the lead to the ground terminal. Repeat this procedure for the Anode connection and then the Cathode connection. When all three connections are secure, switch the rectifier back on and observe the rectifier DC current level. If the current level is not the same as that observed prior to connecting the Surgistor 20, switch off the rectifier immediately and re-check all connections. Turn the power back on again. If the current is too high, remove the Anode and Cathode connections and try again. If the current returns to normal, the Surgistor 20 unit may be defective. If so, return it for a replacement. If the current remains high after removal of the Anode and Cathode connections, check for other causes and reinstall the Anode and Cathode connections after determining the problem. Check the rectifier output DC current once again.

Connections for Rectifier Protection on the Input AC Side (see wiring diagram overleaf)
Switch off the AC power to the rectifier. Follow the connection procedure outlined above, but in this application the leads connect to the ground, Hot and Neutral terminals. Check that all three connections are secure and that no shorts are present. Switch the AC power back on and after about a minute, feel the Surgistor 20 unit to make sure that the unit is not warm to the touch. If the unit feels warm, switch the AC power back off, remove the Surgistor 20 unit and return it to the M. C. Miller Company as it may be defective.

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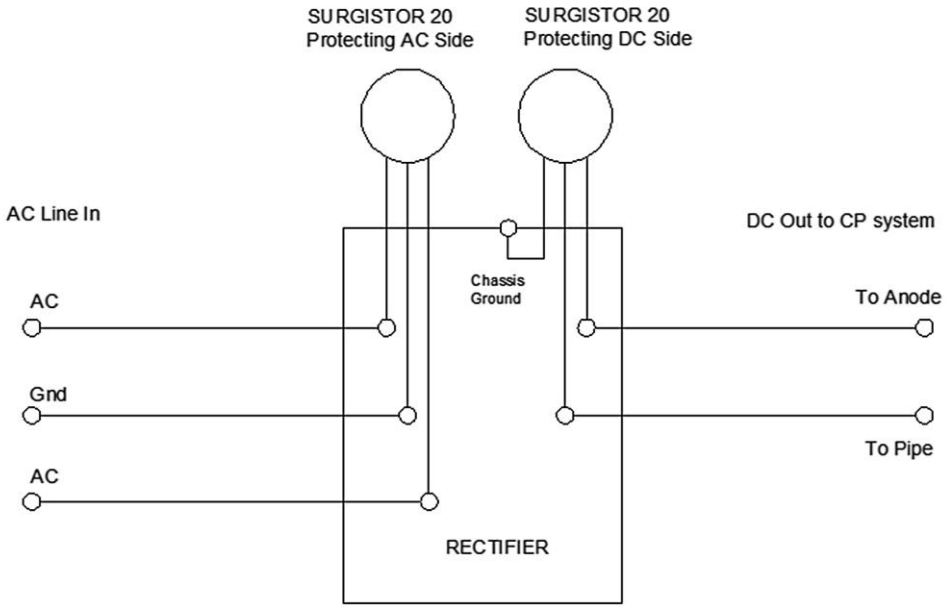

Surgistor 20 Wiring Diagram

Electrical Specifications	
	SURG20
Clamp Voltage:	275VAC; 275VDC
Surge Current:	64,000 Amps (8/20µS wave)
Energy Absorption:	1208 Joule (Watt Seconds)
Tolerance:	+/- 10%
Temperature Range:	-40°C to +65°C

Physical Specifications	
	SURG20
Height:	3.5"
Diameter:	3.75"
Weight:	8.0 oz.
Leads:	3 feet each X 3, 10 gauge stranded, 600V insulation