

# Surgelogic<sup>®</sup> Surge Protective Devices (SPDs)



## Surge Endurance Repetitive Impulse Testing

Test performance values contained within this document are representative of the Square D<sup>®</sup> branded Surgelogic Surge Protective Devices (SPDs) when tested in accordance with the waveforms as defined in the ANSI/IEEE C62.41.2 – 2002 standard, Table 4.

The testing was conducted inside the Schneider Electric industry certified surge laboratory. Standard testing processes and procedures were followed.

Endurance testing was completed for both the IMA and HWA product lines and is representative of the entire Surgelogic Type 2 product offering.

## TEST SETUP AND INFORMATION

### Surge Waveform

Endurance testing was done at the 20 kV, 10 kA level as defined by industry standards, also referred to as the C3 waveform as defined in earlier versions of the standards (Table 1 and Figures 1 and 2).

### Products Tested

- Endurance Testing was completed on both the IMA and HWA product lines.
- There was 90 seconds of elapsed time between each repetitive surge.
- Each device was subjected to repetitive surges in a single mode:
  - o IMA – 20,000 repetitive 20 kV, 10 kA surge events.
  - o HWA – 10,000 repetitive 20 kV, 10 kA surge events.

### Measurements / Monitoring

- Each repetitive hit was logged to a data file containing its count, time stamp, date stamp and representative voltage and current through the Haefely surge generator.
- Product under test was continuously monitored via external equipment to validate actual voltage and current performance.
- The clamping performance graphs of the device under test were recorded. The pre and post performance graphs are included in this document (Figures 3-6).

Table 1: Waveforms as defined in IEEE C62.41.2 - 2002 Table 4

Exposure	1.2/50 $\mu$ s Voltage Generator	8/20 $\mu$ s Current Generator
Category C	Peak Voltage (kV)	Peak Current (kA)
C (High)*	10 (Minimum)	10 (Actual)

\*C (High) impulse testing was conducted at 20 kV, 10 kA - Equivalent to older C3

Figure 1: Voltage

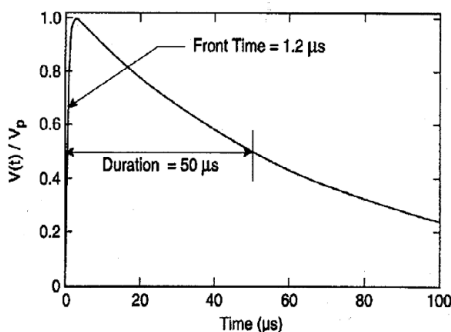


Figure 2: Current

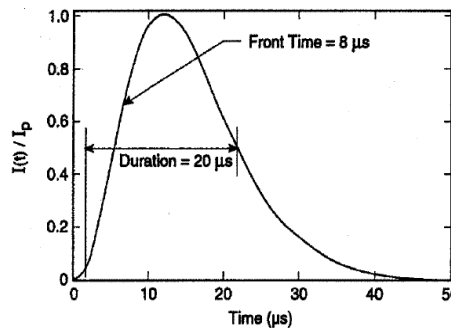


Table 2: Test Equipment

Manufacturer	Description	Model	Serial #	Last Cal.	Cal. Due
Tektronix	Oscilloscope	TDS3054B	B010034	3-24-2010	3-24-2011
Tektronix	High Voltage Probe	P0615A	B050063	3-24-2010	3-24-2011
Tektronix	High Voltage Probe	P0615A	B050064	3-23-2010	3-23-2011
Pearson	Current Transformer	101	108855	6-22-2010	6-22-2011
Pearson	Current Transformer	101	108856	7-19-2010	7-19-2011
Fluke	Digital Multi-meter	175	78590012	4-25-2010	4-25-2011
Haefley	Surge Generator	20430	Calibrated before each use		

### TEST RESULTS

Surgelogic products were subjected to a repetitive hit at the 20 kV, 10 kA level as described previously. The performance of the SPDs from their first shot (Pre) to their last shot (Post) shows acceptable degradation of less than 5%.

### CONTACT INFORMATION

For additional information or supporting documentation regarding these tests please contact the Surgelogic Technical Assistance Group.

Telephone: (800) 577-7353  
 Email: tvsstag@us.schneider-electric.com

Figure 3: IMA Pre (Surge #1)

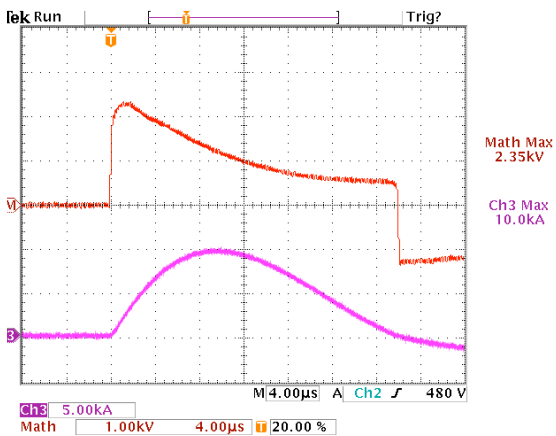


Figure 4: IMA Post (Surge #20,001)

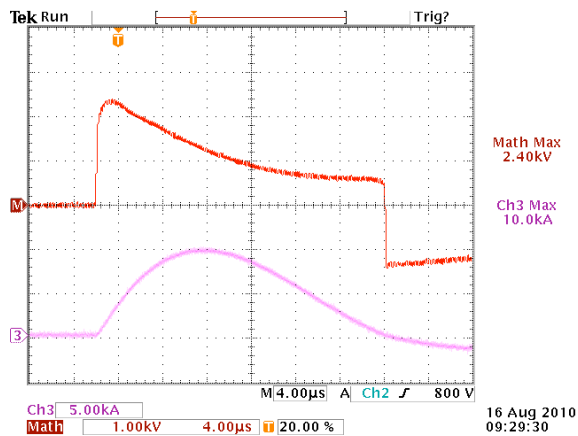


Figure 5: HWA Pre (Surge #1)

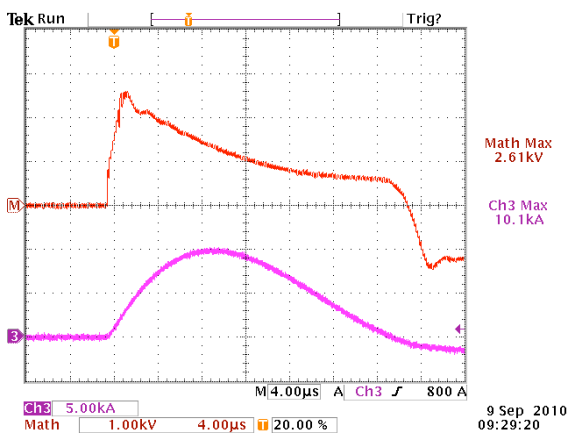


Figure 6: HWA Post (Surge #10,001)

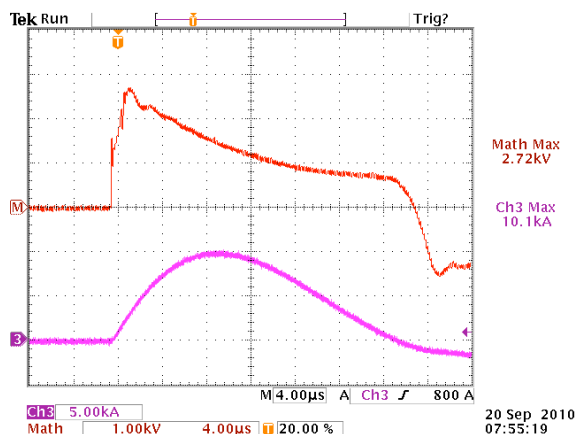


Table 3

Product	1.2/50µs x 8/20µs Repetitive surges	Deviation Pre vs. Post Surge
IMA Product Line	20,000	2%
HWA Product Line	10,000	4%