

Voltage Step Generator Type CAL-07

The CAL-07 unit is optimised for use with UHF partial discharge (PD) sensor calibration systems and provides a fast-rising voltage step signal into a load impedance of 50 ohms.

When used with HFDE's GTEM-based calibration system, the CAL-07 generates a very short electric field transient of duration inside the GTEM cell. The electric field step wavefront occupies about 5 cm and as it passes over the UHF sensor under test at the speed of light, it excites the sensor's step response voltage signal. The corresponding frequency response is calculated from the step response and can be measured up to frequencies of 2 GHz or higher.

Specification:

- Minimum step output voltage: 7 V into a 50 ohm load.
- Voltage step risetime: < 200 ps risetime measured at the 10% - 90% levels into a 50 ohm load.
- Pulse width: > 10 ns.
- Pulse repetition frequency: 2 Hz nominal, fixed internally.
- Main output: N-type plug for attachment directly to GTEM input connector.
- Trigger output: 100 mV nominal step into 50 ohms, BNC connector.
- Power: 3 × AA 1.5 V batteries and/or 5V supply from USB power adapter.
- Mass: 600 g typical.

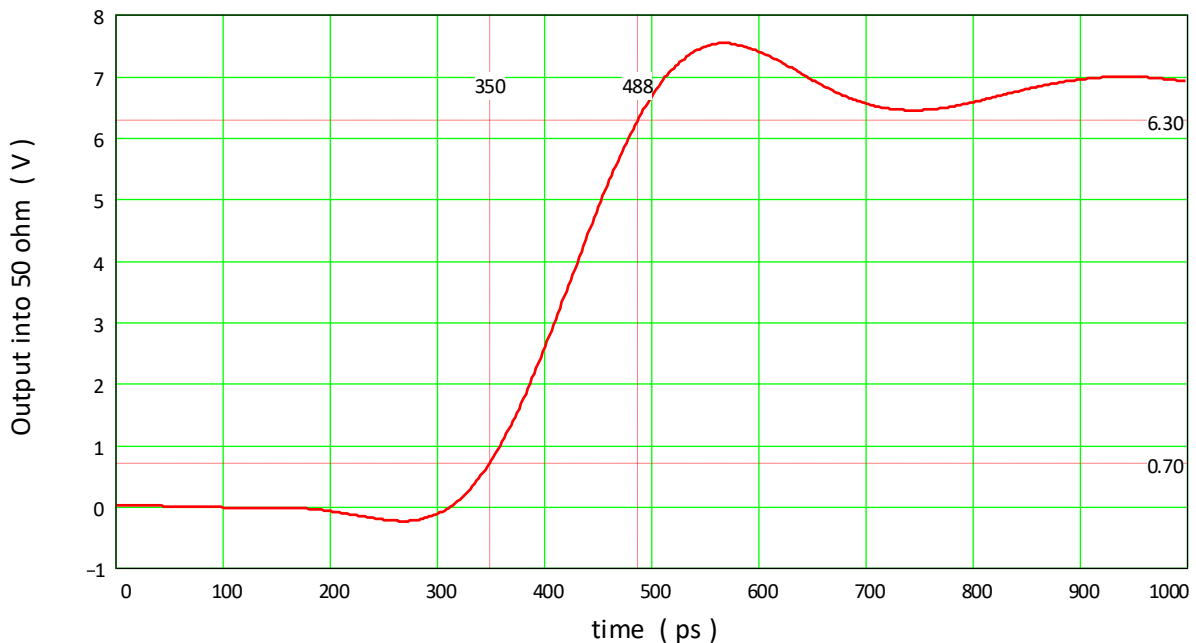
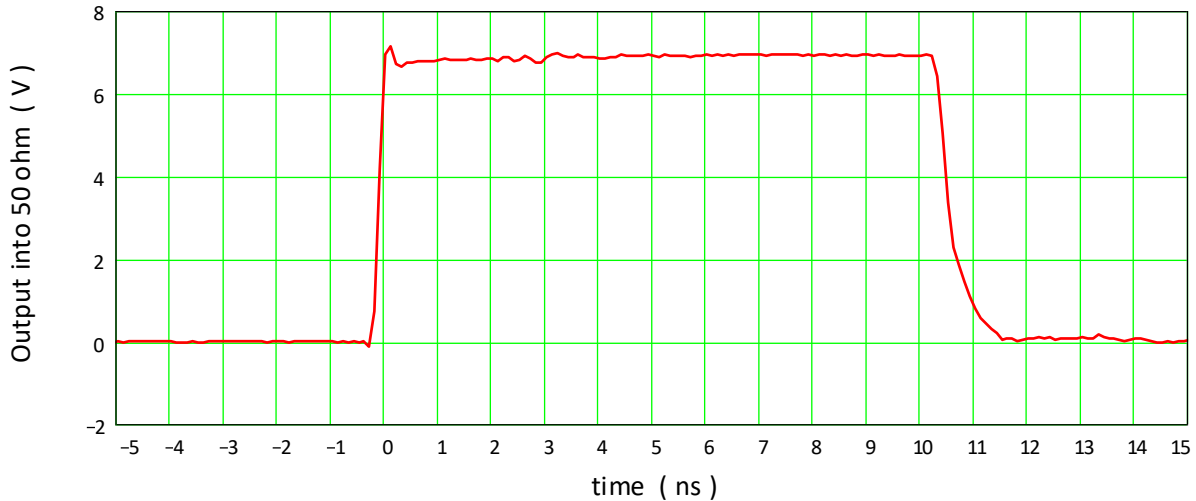
Additional Details

Typical output waveform: see page 2

Mechanical outline: see page 3

Photograph: see page 4

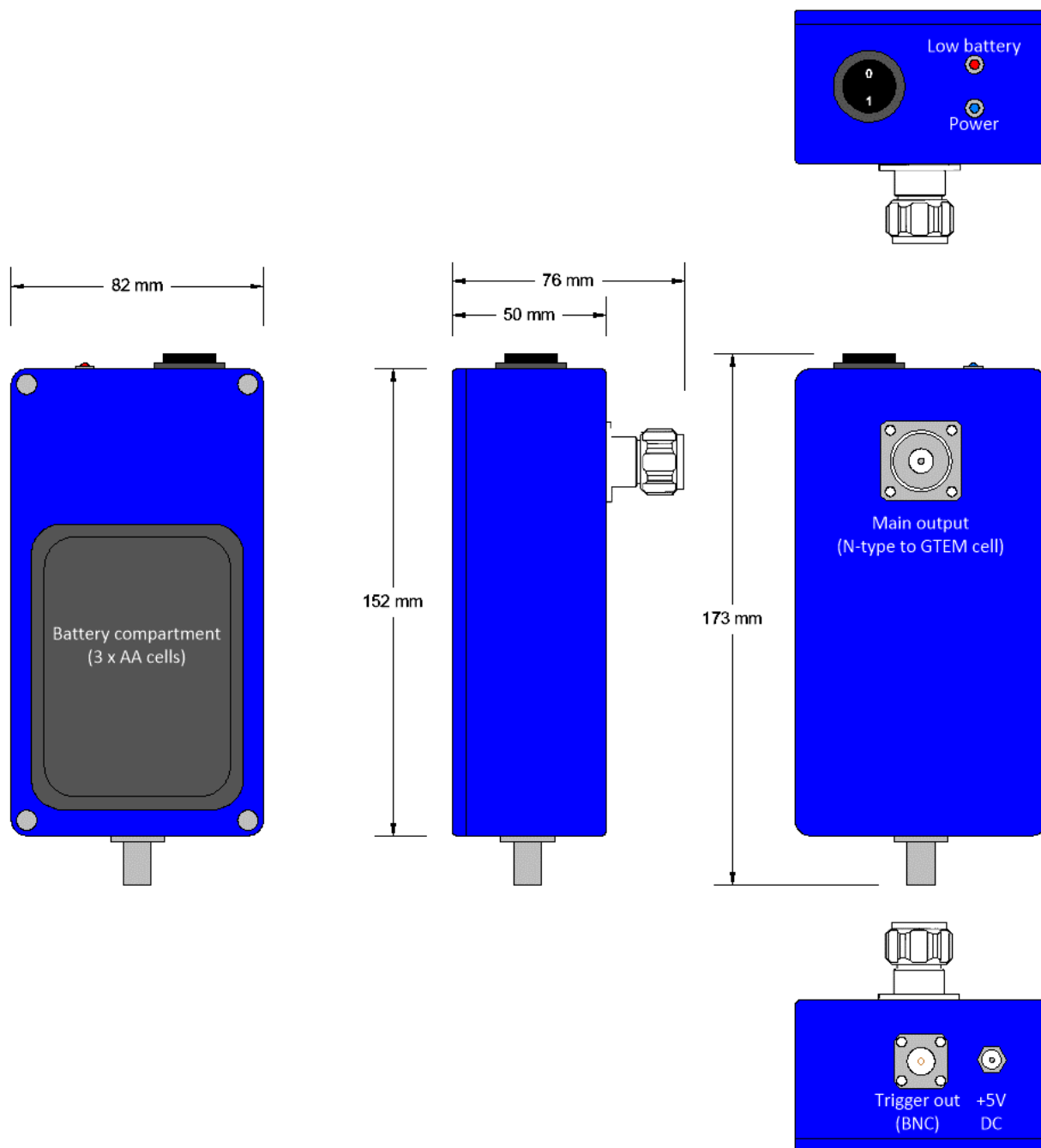
rev.3



Typical signal outputs from the CAL-07 unit measured using a 3 GHz bandwidth digital sampling oscilloscope with a sampling rate of 10 GSa/s, using $\sin(x)/x$ interpolation:

Upper: Trace showing the complete output waveform, pulse duration 10.3 ns.

Lower: Expanded view of the pulse leading edge, with the 10 % and 90% transition levels indicated by markers that show a risetime of 138 ps in this example.



Outline: CAL-07 Voltage Step Generator



CAL-07 unit attached to the input of a UHF GTEM calibration system