

Impulse Generators Cable Fault Locators



- **Maintenance-free operation**
- **Engineered to assure optimum operator safety**
- **Heavy-Duty model delivers up to 10,800 Joules — the highest impulse in the industry**
- **Simple to use, even for the infrequent operator**

DESCRIPTION

Impulse generators are designed to locate faults in power cable by the high voltage impulse method, in which a high-voltage impulse is transmitted down the cable to cause the fault to arc. The arcing fault is then pinpointed using an appropriate impulse detector.

Megger impulse generators may also be used to perform voltage versus time acceptance tests, or to burn faults that fail to break down under impulse to reduce their resistance. Megger offers four models to meet every application:

15-kV Portable Model — This 75-lb (34 kg) portable unit delivers 536 Joules for pinpointing faults on most primary distribution cable rated to 15 kV.

Dual-Voltage Model — This 80-lb (36kg) constant energy unit permits up to 450 Joules to be discharged over both the 7.5 and 15 kV ranges of the unit.

Standard Model — This unit stores up to 1250 Joules at 25 kV to meet the requirements of a majority of applications.

Heavy-Duty Model — This powerful unit, designed for van or substation use, offers the highest impulse rating in the industry. It delivers up to 5400 Joules at 30 kV (12 μ F). A 24 μ F option is available which delivers up to 10,800 Joules at 30 kv.

APPLICATIONS

Megger impulse generators pinpoint faults on primary distribution cable rated from 3.3 to 35 kV, including directed buried cable and cable in conduit or duct.

For faults that do not break down in the impulse mode, a burn mode is provided to reduce the resistance so that those faults will break down under impulse voltage.

In addition to fault locating, these units can be used as proof testers to check the quality of insulation before and after cable repair.

FEATURES AND BENEFITS

Impulse generators offer specific benefits that ensure efficient, effective and safe fault locating.

Rugged Construction

- Housed in sturdy metal cabinets using welded construction throughout to withstand the rigors of field operation.
- Impulse switches use tungsten ohmic contacts for extended life.

Simple Operation

- Modular control panels with a minimum of controls and instrumentation reduce operation complexity.
- Single lever operation mode selector eliminates the need to disconnect and manually interchange high voltage output cables.
- High voltage and return leads are combined in one coaxial cable eliminating the need to unravel the total length of test cable during operation.

Standard Safety Features

- Isolated high voltage output cable
- Zero-start voltage interlock
- High voltage ON lamp
- Automatic grounding upon shutdown
- Redundant ground connections
- Manual grounding of capacitor and cable by Mode Selector for safety.
- Viewing window to confirm internal grounding system
- Circuit breakers for overload protection
- External interlock provision
- Meters remain active even when power is off

Continuous Voltage Control

- Allows full adjustment of output voltage over the impulse and proof/burn range
- Limits the output voltage to the minimum necessary for breakdown

Maintenance-Free Operation

- Quality components and construction assure ongoing reliable operation

15-kV Portable Model (Catalog #651017)

For lightweight economy, this 75-lb (34-kg) instrument discharges 563 Joules at 15 kV.

Specific capabilities include:

- It will locate all faults on 15-kV class direct buried cable.
- Its 25-kV/30mA burn mode is handy for simple breakdown testing and fault resistance reduction on cables up to 15 kV.



15-kV Portable Model, Cat. No. 651017

Dual-Voltage Model (Catalog #651016)

For power without pounds, this lightweight constant energy unit features dual voltages to permit up to 450 Joules to be discharged over both a 7.5 and 15 kV range. On the 7.5 kV range this unit utilizes a 16 μ F capacitor which produces an extremely loud "thump" at the fault.

This model is designed primarily for direct buried cable in applications that require instrument transport without a truck or van.



Dual-voltage Model, Cat. No. 651016

Specific capabilities include:

- On the 7.5 kV range, it can be used on 5 kV class cable without a reduction in signal energy.
- On the 15 kV range, it is sufficiently powerful to locate faults on 15 kV class direct buried cable.
- The 25 kV proof mode permits maintenance testing of 5 kV class cable.
- The 25 kV/30 mA burn mode permits simple breakdown testing and fault resistance reduction to locate faults on 15 kV class cable.

Standard Model (Catalog #651028)

For a broad range of application capability in a portable instrument, this unit delivers 1250 Joules at 25 kV. Although this unit is heavier than the 15-kV and dual-voltage models, it is still portable for convenient transport to remote sites. The energy output makes this unit effective on direct buried cable and simple conduit circuits.



Standard model, cat. no. 651028

Specific capabilities include:

- With a 25 kV impulse voltage output, it finds faults on 15, 25 and 35 kV class direct buried or "in conduit" cable.
- The 30 kV proof mode permits acceptance testing of 5 kV class cable and maintenance testing of 8 kV class cable.
- The 30 kV/50 mA burn mode permits simple breakdown testing and fault resistance reduction to locate faults on 25 kV class cable.

Heavy-Duty Model (Catalog #653031)

This model offers the highest impulse rating in the industry. When using the optional 12 μ F reserve capacitor, it can deliver a discharge of 10,800 Joules at 30 kV intermittently. This option produces a louder "thump" at the fault site resulting in locating success at lower voltages.

This model features skids for standard mounting in a van, trailer or truck, and can be optionally caster-mounted for station use.

This unit is designed for heavy-duty applications such as complex network circuits and faults located in pockets of water and oil. It will find virtually all the faults in primary distribution cable.



Heavy-duty model, cat. no. 653031

Specific capabilities include:

- With its 3750 or 7500 Joule at 25 kV impulse voltage output, it can find faults on 35 kV class direct buried cable or in conduit or duct.
- The 65 kV proof mode permits acceptance testing of 15 kV class cable and maintenance testing of 25 kV class cable.
- The 65 kV/100 mA burn mode permits simple breakdown testing and fault resistance reduction to locate faults on 35 kV class cable.

This unit offers the following power output capabilities:

- It delivers 3750 Joules with 12 µF at 25 kV every 5 seconds, with an overrange that permits a maximum discharge of 5400 Joules at 30 kV intermittently.
- Optionally, it delivers 7500 Joules with 24 µF at 25 kV every 10 seconds, with an overrange that permits a maximum discharge of 10,800 Joules at 30 kV intermittently.

SPECIFICATIONS

Input Power

15-kV Portable and Dual-Voltage Models

Nominal 120 Vac, 4.5 A, 1-φ, 50/60 Hz

Standard Model

Nominal 120 Vac, 9 A, 1-φ, 60 Hz

Model	Cable Length		
	Output	Ground	Input
15-kV Portable and Dual-Voltage	25 ft (7.6 m)	15 ft (4.5 m)	15 ft (4.5 m)
Standard	50 ft (15.2 m)	25 ft (7.6 m)	25 ft (7.6 m)
Heavy-Duty	150 ft (45.6 m)	50 ft (15.2 m)	25 ft (7.6 m)

Heavy-Duty Model

Nominal 120 Vac, 25 A, 3 kVA, 60 Hz.

To order instrument with input other than noted above, add one of the following to Catalog No.:

- 43 Nominal 120 Vac, 50 Hz
- 44 Nominal 220 Vac, 60 Hz
- 45 Nominal 220 Vac, 50 Hz
- 46 Nominal 240 Vac, 60 Hz
- 47 Nominal 240 Vac, 50 Hz

Cables Supplied

One permanently connected shielded output cable for coaxial high voltage and return leads; one ground cable, and one permanently connected input cord. Lengths shown below.

Dimensions

15-kV Portable Model

27 L x 13.5 W x 13.5 H in.
(690 L x 343 W x 343 W mm)

Dual-Voltage Model

13.5 L x 13.5 W x 24 H in.
(243 L x 343 W x 610 W mm)

Standard Model

16 L x 16 W x 34 H in.
(406 L x 406 W x 364 H mm)

Heavy-Duty Model

36 L x 24 W x 40 H in.
(914 L x 610 W x 1016 H mm)

Environmental

Temperature

Operating: 14 to 113° F (-10 to +45° C)
Storage: -22 to +131° F (-30 to +55° C)

Elevation

7500 ft (2286 m) maximum. Derate voltage at higher altitudes.

Humidity

5 to 95% RH noncondensing.

Climate

Operation in direct rain or snow is prohibited.

Model	Max. Stored Cat. No.	Storage Energy	Impulse Capacitance	Interval	Output Ranges			Weight
					Impulse	Proof Test	Burn Current	
15-kV Portable	651017	563 Joules	5 µF	Variable 1 to 5 s	0 to 15 kV	0 to 25 kV	0 to 30 mA	75 lb (34 kg)
Dual-Voltage	651016	450 Joules	16 µF 4 µF	8 s	0 to 7.5 kV	0 to 25 kV	0 to 30 mA	80 lb (36 kg)
Standard	651028	1250 Joules	4 µF	6 s @ 60 Hz 7.2 s @ 50 Hz	0 to 25 kV	0 to 30 kV	0 to 50 mA	195 lb (88 kg)
Heavy-Duty	653031	3750 Joules 5400 Joules*	12 µF 12 µF	5 s @ 60 Hz 6 s @ 50 Hz	0 to 25 kV 0 to 30 kV	0 to 65 kV	0 to 100 mA	750 lb (340 kg)
	653031-32	7500 Joules 10,800 Joules*	24 µF 24 µF	10 s @ 60 Hz 12 s @ 50 Hz	0 to 25 kV 0 to 30 kV	0 to 65 kV	0 to 100 mA	770 lb (349 kg)

*Intermittent

ADDITIONAL EQUIPMENT FOR POWER FAULT LOACTING

Acoustic/Electromagnetic Surge Detector

The SD-3000 has been designed to pinpoint faults in shielded, direct buried cables by detecting both the electromagnetic and acoustic pulses emitted from an arcing fault when it is surged. Either single or dual detector configurations are available. As a single detector, the set provides detection of acoustic emission, measurement of time delay between acoustic and electromagnetic signals, and distance to the fault. If a second detector is added, the set will also display the direction to the fault.

The SD-3000 can be used with PFL Systems or with surge generators of other manufacturers.



Electromagnetic Impulse Detector

The Electromagnetic Impulse Detector has been designed to localize faults on buried cable by detecting the magnitude and polarity of current established on a cable during surging with a surge generator.

The instrument is composed of an amplifier module, sheath coil, and carrying case. It is typically used on network systems to isolate a fault between manholes. An optional earth frame and surface coil are available.



The Electromagnetic Impulse Detector can be used with PFL Systems or with surge generators of other manufacturers.

If an integrated fault locating system is required which will provide the pre-location capabilities of arc reflection or surge pulse reflection methods, consider one of the Megger Power Cable Fault Locating Systems. Any of the PFL series can be supplied complete with a DART® Cable Analysis System integrating a total fault locating system into one package.

ORDERING INFORMATION

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
15-kV Portable Impulse Generator	651017		
Dual-Voltage Impulse Generator	651016		
Standard Impulse Generator	651028		
Heavy-Duty Impulse Generator	653031		
Optional Accessories		Cat. No. 653031	
Cat. No. 651016 and 651028		Caster-mounted with handle	653031-04
Folding two-wheel hand truck	650402	Vertical control panel	653031-08
Kit of four casters (651028 only)	650403	Adjustable pulse rate timer for repetitions from 2 to 10 seconds	653031-16
Kit of two 10 in. (254 mm) wheels with leveling foot and pneumatic tires (651028 only)	650404	Additional 12 mF capacitor with adjustable timer for obtaining 25 kV output with 24 µF of capacitance	653031-32
		Digital voltmeter and ammeter	653031-48

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