

## M590 Explosive Fire and Test Set



### Battery Powered Failsafe Igniter Tester and Fire Set

The M590 Explosive Safety Igniter Tester and Fire Set is designed for use in harsh environments. It is portable and used on Firing/Test ranges on a variety of ordnance, such as electrical primers, EEDs and squibs. Not only representing the latest in ultra-safe resistance testing of explosive devices the M590 internal packaging and impact resistant case is constructed to a water and dust tight standard. The polypropylene case is water proof to a depth of three feet. It also floats in water and can be operated outside in direct rain as it has silicon boots seals fitted over all the switches.

The SuperBright LEDs are five times brighter (25,000 lumens) than normal high intensity LEDs. The unit features a wide viewing angle (tilted) ergonomic display that is readable in direct sunlight. The M590 also features a shielded Faraday cage designed to provide protection from noise, EMP and ESD.

The M590 Explosive Safety Igniter Tester and Fire Set is designed for use in harsh environments from -10°C to +50°C. The heart of the unit's failsafe resistance measurement circuitry is the field proven U.S. Department of Energy approved 630ES Explosive Safety Igniter Tester that is used on all types of explosive ordnance.

The multi-channel M590 comes ready to use and ready to connect to a squib or primer and includes two blank mating connectors with short 48" hook-up lines. Custom length "Fire and Test Set" measurement test lines are also available (e.g. 30 meters, 50 meters, etc).

The M590 is supplied with a laminated Instruction/Operation card in the lid of the unit so that it is easy for test personnel to understand and use.

### Key Locked Main Power Switch



Remove the key and the M590 is locked in "Safe Mode". It cannot be accidentally switched to Fire or Measurement "Armed" mode. The battery powered M590 Fire and Test Set can only have its Main Power Key switch enabled when the units battery charger power cord is removed. The only way to get a "Fire" state from the units 5.0 ampere supply output across the EED or "Squib under Fire" is for the operator to:

- Remove the battery charger power cord.
- Insert the key in the keyswitch.
- Set the keyswitch to the "Armed" position.
- Lift the protective cover over the flashing LED "Fire" button.
- Press the "Fire" button.

The operator also has the flexibility to select either 24V (5 amp to 20 amp short bursts) or 12VDC to output "Fire" modes.

### Lift Safety Cover to Access Armed Flashing LED Fire Mode Switch



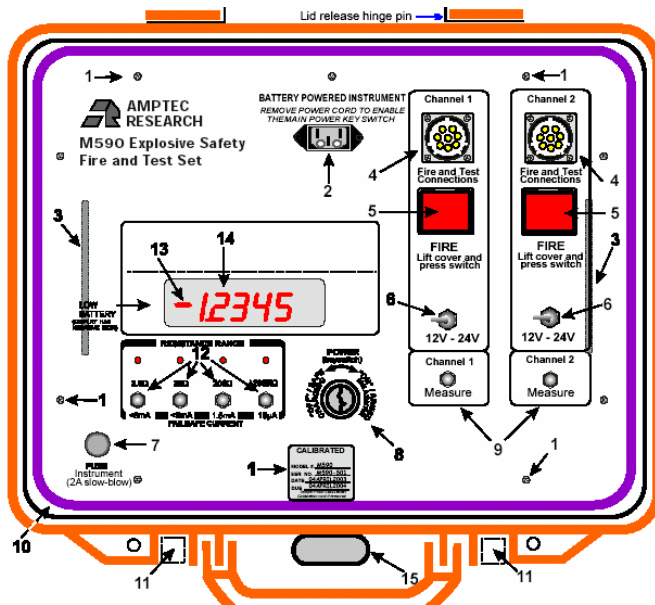
Flashing LEDs underneath the protective safety covers for the "Fire" switches inform the user when the M590 is in the "Armed" and ready to fire mode.

Multi-channel measurement and "Fire" capability (12V or 24VDC modes) provides for a pre-fire squib resistance test, then allows for firing the squib and then checking for an "open" resistance state after firing.

The M590 uses a four-terminal or four-wire Kelvin output (2 wires output a constant DC current and 2 wires sense the voltage drop across the resistance being measured) to ensure test lead length and test lead contact resistance are eliminated as sources of measurement error.

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## M590 Features

1. **Access Screws:** Calibration /Maintenance – Sealed with a tamper resistant foil calibration sticker.
2. **AC Battery Charger Power Plug:** Spring loaded plunger rods (dual paddle switch based) detect when power cord is connected and automatically disable all operational power and enable charging circuit. The M590 will not operate or output (fire) any current until the power cord is removed.
3. **Handles** – see Item 1 the lift for calibration access.
4. **Test & Fire Connecto:** Polarised and notched connector for Test and Fire leads – Dustcap protected (not shown).
5. **Fire Switch:** Lift Safety/Protective access cover and press switch to activate (Battery charger Power Cord must be removed and Main Power Safety Keyswitch set to the ON armed position before the FIRE switch will operate (ARMED mode flashes).
6. **Battery Powered Fire Voltage Selection Switch:** Choice of 12V or 24V output modes.
7. **Instrument Fuse Access:** Seal in the cap of holder.
8. **Keylocked Main Power Switch:** Locks the M590 in Safe Mode – turns all power OFF, disconnects all power from the measurement and Firing electronics and places it in the ready to recharge battery mode when the power cord idplugged in.
9. **Measure Switch:** Press either Channel 1 or 2 to measure electrical resistance (using proven Explosive Safety Ohmmeter circuitry) of electrical primers or squibs under test.
10. **Water Resistant O-Ring Seals:** Fitted inlid and under front plate.
11. **Tight Squeeze Flip Latch** – waterproof seal when closed.
12. **Resistance Ranges:** 2Ω, 20Ω, 200Ω, 200kΩ – silicone rubber boots provide water resistant switch covers. The 2Ω range has 100u Ω resolution.
13. **Low Battery Indicator:** Minus sign indicates battery charge is low.
14. **Bevelled Display Hood and SuperBright LED Display** readable in direct sunlight.
15. **Purge Valve:** Provides air pressure equalisation to open the case.

## M590 Versatile and Flexible

The battery powered M590 includes its own internal battery charging system, both 12V and 24VDC Fire Modes, operator / maintenance manual and calibration certificate. The M590 has the safety integrity for the most demanding explosive safety requirements. A shielded Faraday cage (all to chassis ground) lines the entire M590 case and all the test wiring is shielded.. All shielding is connected to chassis ground to provide additional electronic noise immunity, as well as ESD and EMP protection. The battery operated M590 Fire and Test Set can only be operated when the battery charger power cord is removed (two paddle switches detect the presence of the power cord plug – two switches in case one switch should ever fail) and the locking keyswitch must be in the “On” Armed position before the cover protected “Fire” switch starts flashing to indicate the M590 is armed. The safety access cover additionally prevents any accidental pressing of the flashing red “Armed” Fire switch.

## Specifications

**Measurement Accuracy:** (180 days 25°C ±10°C)  
±0.02% of reading ±0.05% of range for the 2Ω range, ±0.02% of reading and range for 20Ω through 200KΩ ranges.

**Failsafe Current:** <8mA on 2Ω and 20Ω ranges, <1.5mA on 200Ω range and <15uA on 200kΩ range

**Display:** 4 1/2 digit LCD (20,000 counts) with backlight for use in low ambient light conditions.

**Terminal Configuration:** Four-wire Kelvin.

**Maximum Input:** 250VDC or peak AC without damage.

**Operating Temperature Range:** 0°C to 50°C.

**Measurement Power:** Rechargeable Ni-Cad batteries (5.0Ahr) and built-in internal charger (115VAC 50-60Hz or 220VAC 50Hz).

**Firing System:** 12VDC or 24VDC @ 1.6Ahr (high capacity rechargeable LiMH battery packs).

**Humidity:** 5% to 95%, waterproof to three feet depth when closed.

**Size:** 295mm (11.5”) D , 335mm (13.5”) W, 155mm (6”) H.

**Weight:** 10kg (22lbs) Net, 11.36kg (25lbs) Shipping.

**Drop/Impact:** Designed and tested to survive a three foot fall.

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