

TECHNICAL DATA

# Fluke 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex



**The world's only CAT III 1500 V current clamp**

The 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex is designed for technicians who work in dc environments up to 1500 V: solar arrays, wind power, electric railways, data centers battery banks for uninterruptible power supplies. The clamp will measure up to 1500 V dc, 1000 V ac, and up to 999.9 A dc or ac through the clamp jaw. The included iFlex flexible current probe extended ac current measurements up to 2500 amps.

This clamp has a thin jaw, giving you access to cables in crowded combiner boxes. Test leads are designed with your work in mind, and are also rated to CAT III 1500 V.

**Other key functions:**

- IP54 rated, ideal for work outdoors on solar arrays and wind power systems
- DC power measurement, showing readings in kVA
- Audio Polarity indicator helps prevent accidental miswires
- Visual Continuity turns provide a bright green light in the display, ideal when working in dark and noisy environments
- Logging and reporting of test results via Fluke Connect software

When measuring ac current the included iFlex flexible current probe gives you unparalleled access to cable in tight spaces. The iFlex probe can be twisted through extremely small spaces and provide accurate current measurements.



**MEASURE SAFELY**  
CAT III 1500 V rated clamp meter

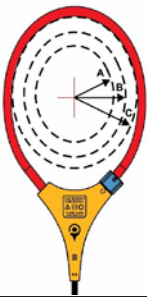
**VERSATILE CLAMP JAW**  
Thin jaw for access to cables in crowded combiner boxes, able to clamp around multiple cables

**IP54 RATED**  
Work outdoors in dusty or damp conditions

**MORE FUNCTIONS, AUTOMATIC SAFEGUARDS**  
Work efficiently with dc power measurement, audio polarity and visual continuity



## Specifications

General specifications																	
Maximum voltage between any terminal and earth ground	1000 V AC 1500 V DC																
Batteries	2 AA IEC LR6 alkaline																
Display	Dual display with backlight																
Automatic power off	20 minutes																
Electrical specifications																	
Accuracy	Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, relative humidity at 0 % to 75 %. Accuracy specifications take the form of: ±[% of Reading] + [Number of Least Significant Digits].																
Temperature coefficients	Add 0.1 x specified accuracy for each °C > 28 °C or < 18 °C																
AC current: jaw																	
Range	999.9 A																
Resolution	0.1 A																
Accuracy	2 % + 5 digits (10 Hz to 100 Hz) 2.5 % + 5 digits (100 Hz to 500 Hz)																
Crest Factor (50/60 Hz)	2.5 @ 600.0 A 3.0 @ 500.0 A 1.42 @ 999.9 A Add 2 % for C.F. >2																
AC current: flexible current probe																	
Range	999.9 A 2500 A																
Resolution	0.1 A (≤999.9 A) 1 A (≤2500 A)																
Accuracy	3 % RD + 5 digits (10 Hz to 500 Hz)																
Crest Factor (50/60Hz)	2.5 @ 1400 A 3.0 @ 1100 A 1.42 @ 2500 A Add 2 % for C.F. >2																
Position sensitivity	<table border="1"> <thead> <tr> <th>Distance from Optimum</th> <th>i2500-10 Flex</th> <th>i2500-18 Flex</th> <th>Error</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>0.5 in (12.7 mm)</td> <td>1.4 in (35.6 mm)</td> <td>± 0.5 %</td> </tr> <tr> <td>B</td> <td>0.8 in (20.3 mm)</td> <td>2.0 in (50.8 mm)</td> <td>± 1.0 %</td> </tr> <tr> <td>C</td> <td>1.4 in (35.6 mm)</td> <td>2.5 in (63.5 mm)</td> <td>± 2.0 %</td> </tr> </tbody> </table> <p>Measurement uncertainty assumes centralized primary conductor at optimum position, no external electrical or magnetic field, and within operating temperature range.</p>	Distance from Optimum	i2500-10 Flex	i2500-18 Flex	Error	A	0.5 in (12.7 mm)	1.4 in (35.6 mm)	± 0.5 %	B	0.8 in (20.3 mm)	2.0 in (50.8 mm)	± 1.0 %	C	1.4 in (35.6 mm)	2.5 in (63.5 mm)	± 2.0 %
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DC current																	
Range	999.9 A																
Resolution	0.1 A																
Accuracy	2 % RD + 5 digits <sup>[1]</sup> <sup>[1]</sup> When using the <b>ZERO</b> function to compensate for offsets.																
AC voltage																	
Range	600.0 V 1000 V																
Resolution	0.1 V (≤600.0 V) 1 V (≤1000 V)																
Accuracy	1 % RD + 5 digits (20 Hz to 500 Hz)																

## Specifications (continued)

DC voltage	
Range	600.0 V 1500 V
Resolution	0.1 V ( $\leq 600.0$ V) 1 V ( $\leq 1500$ V)
Accuracy	1 % RD + 5 digits
mV dc	
Range	500.0 mV
Resolution	0.1 mV
Accuracy	1 % RD + 5 digits
Amps frequency: jaw	
Range	5.0 Hz to 500.0 Hz
Resolution	0.1 Hz
Accuracy	0.5 % RD + 5 digits
Trigger level	5 Hz to 10 Hz, $\geq 10$ A 10 Hz to 100 Hz, $\geq 5$ A 100 Hz to 500 Hz, $\geq 10$ A
Amps frequency: flexible current probe	
Range	5.0 Hz to 500.0 Hz
Resolution	0.1 Hz
Accuracy	0.5 % RD + 5 digits
Trigger level	5 Hz to 20 Hz, $\geq 25$ A 20 Hz to 100 Hz, $\geq 20$ A 100 Hz to 500 Hz, $\geq 25$ A
Voltage frequency	
Range	5.0 Hz to 500.0 Hz
Resolution	0.1 Hz
Accuracy	0.5 % RD + 5 digits
Trigger level	5 Hz to 20 Hz, $\geq 5$ V 20 Hz to 100 Hz, $\geq 5$ V 100 Hz to 500 Hz, $\geq 10$ V
DC power	
Range	600.0 kVA (600.0 V dc range) 1500 kVA (1500 V dc range)
Resolution	0.1 kVA 1 kVA
Accuracy	2 % RD + 2.0 kVA 2 % RD + 20 kVA
Resistance	
Range	600.0 $\Omega$ 6000 $\Omega$ 60.00 k $\Omega$
Resolution	0.1 $\Omega$ ( $\leq 600.0$ $\Omega$ ) 1 $\Omega$ ( $\leq 6000$ $\Omega$ ) 0.01 k $\Omega$ ( $\leq 60.00$ k $\Omega$ )
Accuracy	1 % RD + 5 digits
Capacitance	
Range	100.0 $\mu$ F 1000 $\mu$ F
Resolution	0.1 $\mu$ F ( $\leq 100.0$ $\mu$ F) 1 $\mu$ F ( $\leq 1000$ $\mu$ F)
Accuracy	1 % RD + 5 digits
Inrush trigger level	5 A

## Specifications (continued)

<b>Mechanical specifications</b>	
Size (L x W x H)	281 mm x 84 mm x 49 mm
Weight (with batteries)	520 g
Jaw opening	34 mm
Flexible current probe diameter	7.5 mm
Flexible current probe cable length (head to electronics connector)	1.8 m
<b>Environmental specifications</b>	
Operating temperature	-10 °C to 50 °C
Storage temperature	-40 °C to 60 °C
Operating humidity	Non-condensing (<10°C) ≤90 % RH (at 10 °C to 30 °C) ≤75 % RH (at 30 °C to 40 °C) ≤45 % RH (at 40 °C to 50 °C)
Operating altitude	2000 m
Storage altitude	12,000 m
Ingress Protection (IP) Rating	
<b>Electromagnetic Compatibility (EMC)</b>	
International	IEC 61326-1: Portable, Electromagnetic Environment, IEC 61326-2-2 CISPR 11: Group 1, Class A  Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself.  <i>Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.</i>  <i>Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.</i>
Korea (KCC)	Class A equipment (Industrial Broadcast and Communications Equipment)  <i>Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.</i>
USA (FCC)	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.
<b>Safety</b>	
General	IEC 61010-1, Pollution Degree 2
Measurement	IEC 61010-2-032: CAT III 1500 V / CAT IV 600 V IEC 61010-2-033: CAT III 1500 V / CAT IV 600 V
<b>Wireless radio</b>	
Radio frequency certification	FCC ID: T68-FBLE, IC: 6627A-FBLE
Wireless radio frequency range	2400 MHz to 2483.5 MHz
Output power	<100 mW

**Ordering information**

**Fluke 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex**

**Included**

- Fluke 393 FC CAT III 1500 V True-rms Clamp Meter with iFlex
- Test leads, CAT III 1500 V rated, right angle plugs, with safety caps
- iFlex 18 inch flexible current probe
- TPAK magnetic hanging strap
- Premium carrying case
- 3-year warranty



Save all measurements, including dc power, to a smartphone and the cloud using Fluke Connect software.

**Preventive maintenance simplified. Rework eliminated.**

Save time and improve the reliability of your maintenance data by wirelessly syncing measurements using the Fluke Connect system.

- Eliminate data-entry errors by saving measurements directly from the tool and associating them with the work order, report or asset record.
- Maximize uptime and make confident maintenance decisions with data you can trust and trace.
- Move away from clipboards, notebooks and multiple spreadsheets with a wireless one-step measurement transfer.
- Access baseline, historical and current measurements by asset.
- Share your measurement data using ShareLive™ video calls and emails.
- The Fluke 1587 FC Insulation Multimeter is part of a growing system of connected test tools and equipment maintenance software. Visit the Fluke website to learn more about the Fluke Connect system.



All trademarks are the property of their respective owners. WiFi or cellular service required to share data. Smartphone, wireless service and data plan not included with purchase. First 5GB of storage is free.

Smartphone wireless service and data plan not included with purchase. Fluke Connect is not available in all countries.

**Fluke.** *Keeping your world*

# TLPV1 MC4 to 4mm Test Lead Set



Ensures safe measurements on PV modules

Compatible with 4 mm sheathed banana plugs

Ideal for Staubli MC4-connected solar panels

Set of black and red MC4 to 4 mm banana plug test leads for solar applications, designed for reliable and safe measurements in photovoltaic systems.

## Key Features:

- **Safety and Reliability:** Ensures safe current and voltage measurements on photovoltaic (PV) modules and systems.
- **Versatile Connections:** Compatible with test tools accepting 4 mm sheathed banana plugs.
- **Measurement and Troubleshooting:**
  - Connects measuring devices to PV power plants.
  - Ideal for regular tests, measurements, and troubleshooting on solar PV panels that use Staubli MC4 connections.
- **Nickel Plated Contacts:** Ensures robust and reliable connections with minimal resistance and corrosion.
- **Lead Specifications:**
  - **Length:** The test leads are 150 cm (59 inches) long, providing ample reach for testing and measurements.
  - **Color Coding:** Includes a set of black (female) and red (male) MC4 test leads for easy identification and usage.
- **Official Staubli MC4 connectors used:** Ensuring high-quality and reliable connections.
- **Includes the Fluke TLPV-UTOOL solar PV unlocking tool:** For convenient disconnect of Staubli MC4 connectors.
- **Includes the Fluke LeadWrap:** For test lead management and storage.
- **Warranty:** One-year warranty.

**Applications:**

- **Photovoltaic (PV) Module and System Testing:** Ideal for performing safe and accurate current and voltage measurements on PV modules and systems.
- **PV Power Plant Connections:** Facilitates the connection of measuring devices to PV power plants, aiding in regular testing, maintenance, and troubleshooting.
- **Solar PV Panel Analysis:** Used in various diagnostic and maintenance tasks on solar PV panels that accept Staubli MC4 connections, ensuring efficient and reliable performance.
- **Test Equipment Compatibility:** Connects to a range of test tools that accept 4 mm sheathed banana plugs, making it versatile for different testing environments and requirements.
- **Field and Lab Testing:** Suitable for both on-site field testing and laboratory analysis, offering flexibility for different testing scenarios.

**Ratings**

<b>Voltage:</b>	Complies to IEC / EN 61010-031 CAT III 1500 V Do Not Disconnect Under Load Not Intended for Permanent Installation
<b>Current:</b>	30 A
<b>Temperature Range:</b>	+5 °C to +30 °C (+41 °F to +86 °F), < 80 % RH +31 °C to +40 °C (+88 °F to +104 °F), < 50 % RH



**Ordering Information**

TLPV1, MC4 TO 4mm TEST LEAD SET, BLACK/RED

**Fluke.** Keeping your world up and running.™

TECHNICAL DATA

# Fluke TLPV2 Solar Clamp Test Lead Set, Black/Red



## Key features

- Black and red MC4 test leads for accurate solar DC measurements.
- Designed for safe and precise DC measurements on PV systems.
- Nickel-plated contacts ensure long-lasting, reliable performance.
- Includes PV unlocking tool for easy connector disconnection.

## Product overview: Fluke TLPV2 Solar Clamp Test Lead Set, Black/Red

The TLPV2 Solar Clamp Test Lead Set is designed for professionals in solar energy, providing accurate and reliable DC power measurements for photovoltaic systems. Equipped with official Staubli MC4 connectors, the TLPV2 test leads ensure secure connections and optimal performance during testing, maintenance, and troubleshooting of solar installations.

This set includes black and red test leads specifically tailored for PV applications. The black lead features an MC4 (male) breakout to a 12-inch PV connector (female) and a 36-inch 4mm sheathed banana plug. The red lead complements this with an MC4 (female) breakout to a 12-inch PV connector (male) and a 36-inch 4mm sheathed banana plug. These leads are compatible with Solar Clamp Meters that accept 4mm sheathed banana plugs, such as the Fluke 393 FC Solar Clamp Meter, making them ideal for seamless integration with professional tools.

The TLPV2 set is essential for solar panel installation, inverter testing, and PV system diagnostics. It allows users to monitor and assess PV circuits accurately during operation, supporting energy audits and efficiency evaluations. With nickel-plated contacts, the leads offer durability and long insertion life, maintaining performance over time. A PV

unlocking tool is also included, providing a convenient solution for disconnecting Staubli MC4 connectors safely.

Rated for CAT III 1500V, the TLPV2 ensures safe and compliant measurements, enhancing user confidence in demanding solar environments. It is specifically engineered for non-permanent installations and not intended for use under load disconnection.

For solar professionals, the TLPV2 Solar Clamp Test Lead Set offers precision, safety, and compatibility, making it an indispensable addition to any solar technician's toolkit.

## Specifications: Fluke TLPV2 Solar Clamp Test Lead Set, Black/Red

Ratings	
Voltage	Complies to IEC/EN61010-031 CAT III 1500V Do Not Disconnect Under Load Not intended to use for Permanent Installation
Current	30A
Temperature Range	+5 °C to +30 °C (+41 °F to +86 °F), <80 % RH +31 °C to +40 °C (+88 °F to +104 °F), <50 % RH

## Ordering information



### TLPV2

Fluke TLPV2 Solar Clamp Test Lead Set, Black/Red

Part#: 5590605

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MC4 Solar Power Clamp Set, Black/Red

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**FLUKE®**