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TECHNICAL DATA

Fluke 283 FC/PV True-RMS CAT III 1500 V Solar Digital Multimeter and Wireless Current Clamp



Unmatched safety and convenience for solar professionals

The CAT III 1500 V/CAT IV 1000 V True-RMS Fluke 283 FC Digital Multimeter and a283 FC True-RMS Wireless Current Clamp set the new standard for technicians in DC environments up to 1500 V. Whether you're working with a utility-scale solar photovoltaic (PV) array, wind power, an electric railway, or a data center, the Fluke 283 FC has been engineered to enhance safety and increase productivity while giving you accurate, reliable, and repeatable results.

The 283 FC/PV includes CAT III 1500 V DC safety-rated accessories so you can work confidently in higher voltage environments without compromising safety. Staubli MC4 test leads allow you to quickly make reliable, secure connections to modules or strings to test DC voltage up to 1500 V DC. TL175-HV CAT III 1500 V/CAT IV 1000 V rated silicone TwistGuard™ test leads give you more flexibility when testing voltage, millivoltage, resistance, continuity, or capacitance on inverters, combiner boxes, PV arrays, or individual PV modules. A bright backlit LCD screen and illuminated keypad make it easier to work in both direct and low light conditions. The included magnetic hanging kit frees up your hands and the custom hard carrying case protects your investment while you transport it.

MEASURE SAFELY

CAT III 1500 V/CAT IV 1000 V rated 283 FC Digital Multimeter, a283 FC Wireless Current Clamp, TL175-HV Silicone Test Leads, and CAT III 1500 V rated Staubli MC4 Test Leads

TRUE-RMS WIRELESS CURRENT CLAMP

Measures both AC and DC current up to 60 A with a thin jaw design making it easy access to combiner boxes and tight spaces

MORE FUNCTIONS, MORE SAFEGUARDS

AC/DC volts, AC/DC mV, AC/DC VA, Continuity, Resistance, Capacitance, AC/DC amps, Hz, visual and audio polarity, user-defined limit gauge, and meter readiness self-check

Additional features:

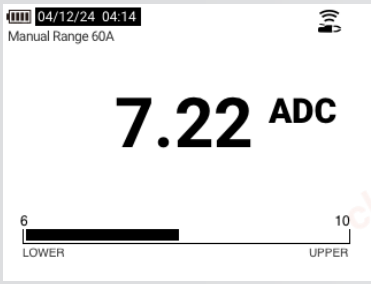
- Highly accurate voltage measurements for precise frontline troubleshooting
- Current measurements up to 60 A AC/DC for safely troubleshooting individual strings with of modules with greater accuracy (when using a283 FC wireless current clamp)
- Visual and audio polarity indicators with on/off function help prevent accidental module wiring issues
- User-defined limit gauge helps you make quick go/no-go troubleshooting decisions
- Unique multimeter readiness self-check helps ensure your meter is ready to test
- Save and log measurements to internal memory and view them on your mobile device via Fluke Connect™

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CAT III 1500 V/CAT IV 1000 V Safety Rated

CAT III 1500 V DC systems are now a standard in utility scale PV systems, offering significant cost savings and efficiency improvements to facility owners. These systems operate at higher voltage levels, allowing each inverter to handle more energy, enable longer strings of connected panels, and reduce the need for additional wiring and inverters. Consequently, standard CAT IV inverter outputs of 800 V AC or higher are more prevalent, making it crucial to prioritize safety and accuracy in measurements.

The CAT III 1500 V/CAT IV 1000 V rated 283 FC multimeter and a283 FC wireless current clamp meet the safety requirements for test equipment (IEC 61010-2-032) corresponding to the overvoltage category level of the PV array electrical installation (IEC 61730-1). Combine these with CAT III 1500 V/CAT IV 1000 V rated TL175-HV Premium Silicone Test Leads, CAT III 1500 V MC4 connectors and you've got a comprehensive frontline troubleshooting solution that offers safe and accurate voltage measurement for troubleshooting everything from the inverters, combiners, strings of modules, or individual modules.



Limit gauge – within range



Limit gauge – outside of range

User-Defined Limit Gauge

On large-scale PV projects where you're taking repetitive measurements and expect consistent results, the user-defined limit gauge becomes a vital time-saving tool. The adjustable limit gauge can trigger audio and visual indications whenever a measurement falls outside your expected range. This saves you time letting you quickly evaluate measurement results, increasing your confidence in the system's performance, and helping to identify potential issues that need to be addressed.

With the dedicated limit gauge button, you can easily turn the limit gauge warnings on and off, set up new measurement parameters, or select from previously used parameter profiles. This customization streamlines troubleshooting, allowing you to quickly identify measurement deviations or errors, and helps maintain optimum solar installation performance.

Unique Multimeter Readiness Self-Check

The size and location of utility-scale solar sites can present unique challenges whether they're logistical, environmental, or testing related. Because of that, you want to have confidence that your meter is fully functional, capturing the right data every time so you don't have to do the same job twice. The 283 FC features a unique integrated multimeter readiness self-check, that ensures your meter is in proper working order before you take your next reading. This quick self-check is an additional readiness test that gives you valuable insight to the status of your meter's calibration, battery life availability, test lead functionality, and AC/DC voltage measurement functionality so you can be confident that your meter is ready to work when you are.



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FLUKE®



True-RMS measurements

Large, Bright **Backlit Display** and **Illuminated Keypad**

Log data to internal memory

Wireless connection to **Fluke Connect** and a283 FC Wireless Current Clamp

Measure voltage and current at the same time and **automatically calculate VA Power** when used with the a283 FC

User-defined measurement **Limit Gauge**

Multimeter readiness **Self-Check**

Measure Voltage, Current and VA (w/clamp), Millivoltage, Capacitance, Resistance, Continuity

CAT III 1500 V/CAT IV 1000 V Safety rated



True-RMS measurements

CAT III 1500 V/CAT IV 1000 V Safety Rated

AC and DC **Current** up to 60A

Smooth single-hand operation for heavy use throughout the day

Thin jaw with large 34mm opening

Wirelessly connect to the 283 FC and save data into Fluke Connect

DC Amps **Zero function**

2-Meter Drop Tested and IP52 rated

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Wireless Current Clamp

The a283 FC True-RMS wireless current clamp is designed to simplify the troubleshooting process without compromising on safety and reliability. It can measure both AC and DC current up to 60 A, ensuring precise and reliable readings for a wide range of applications including solar installations, electrical systems, and industrial equipment.

With its non-contact design, the clamp allows for safe connections without the need to touch live wires, enabling you to close the clamp in a cabinet and take measurements from a safe distance. It carries a CAT III 1500 V, CAT IV 1000 V rating that matches the safety rating of the 283 FC.

Wireless connectivity allows for convenient transmission of measurements, eliminating the hassle of tangled wires and allowing you to install the current clamp in an enclosure so you can safely measure at a distance. The clamp has a thin jaw design to ensure easy access to combiner boxes and tight spaces, enhancing overall efficiency in your measurement process.

Voltage and Current at the same time

With the 283 FC digital multimeter and a283 FC wireless current clamp, you can measure voltage and current at the same time and automatically calculate VA power. This eliminates the hassle of having to change your measurement setup to capture both measurements and eliminates the need to manually calculate power in the field. Voltage and current are time-stamped, eliminating any concerns about potential disparities being caused by environmental factors. You can also view more than one measurement at a time allowing you to monitor additional parameters like DC amperage or voltage, giving you even more insights into system performance.

Logging/Saving

The 283 FC offers convenient logging and saving features that set it apart from other digital multimeters. With a built-in real-time clock, each measurement can be time- and date-stamped for accurate recordkeeping. The multimeter has internal memory to save and log measurements, which can then be easily transferred to Fluke Connect for further analysis. Additionally, you have the flexibility to customize logging durations and intervals, ensuring the logging process matches the specific needs of the system you are testing.

Fluke Connect™ with Fluke Cloud™ Storage

Fluke Connect™ compatibility provides convenient features to enhance your troubleshooting experience. As part of the Fluke Connect family, the 283 FC can transmit measurements to a smartphone or tablet for later, detailed analysis. No need to write down the results. Trend and monitor measurements live on your phone screen and upload those measurements to the cloud. Combine measurement data from multiple Fluke Connect test tools to create and share reports from the job site via email and collaborate in real time with other colleagues with ShareLive™ video calls or email. The table view feature organizes measurements, notes, and images in a clear and efficient manner, making it easier to reference data, identify issues, and generate reports for customers. Fluke Connect™ with Fluke Cloud™ Storage streamlines your workflow and ensures accurate data storage and organization.



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Specifications – 283 FC Digital Multimeter

Function	Range	Resolution	Accuracy
AC volts[1]	6.000 V	0.001 V	1.0 % + 3 (45 Hz to 500 Hz)
	60.00 V	0.01 V	
	600.0 V	0.1 V	2.0 % + 3 (500 Hz to 1 kHz)
	1000 V	1 V	
DC volts	6.000 V	0.001 V	0.09 % + 3
	60.00 V	0.01 V	
	600.0 V	0.1 V	
	1500 V	1 V	0.15 % + 2
DC mV	600.0 mV	0.1 mV	0.09 % + 2
AC mV[1]	600.0 mV	0.1 mV	1.0 % + 3 (45 Hz ~ 500 Hz) 2.0 % + 3 (500 Hz ~ 1000 Hz)
Continuity	600 Ω	1 Ω	
Resistance	600.0 Ω	0.1 Ω	0.5 % + 4
	6.000 kΩ	0.001 kΩ	
	60.00 kΩ	0.01 kΩ	
	600.0 kΩ	0.1 kΩ	
	6.000 MΩ	0.001 MΩ	
	50.00 MΩ	0.01 MΩ	1.5 % + 4
Capacitance	1000 nF	1 nF	1.2 % + 2
	10.00 µF	0.01 µF	
	100.0 µF	0.1 µF	
	9999 µF	1 µF	10 % typical
Frequency	99.99 Hz	0.01 Hz	0.1 % + 2
	999.9 Hz	0.1 Hz	
	9.999 kHz	0.001 kHz	
	99.99 kHz	0.01 kHz	
AC VA (45~500Hz)[1]	360.0 VA	0.1 VA	2 % + 1.0 VA
	3.600 kVA	0.001 kVA	2 % + 0.01 kVA
	36.00 kVA	0.01 kVA	2 % + 0.1 kVA
	60.00 kVA	0.01 kVA	2 % + 0.15 kVA
DC VA[1]	360.0 VA	0.1 VA	2 % + 1.0 VA
	3.600 kVA	0.001 kVA	2 % + 0.01 kVA
	36.00 kVA	0.01 kVA	2 % + 0.1 kVA
	90.00 kVA	0.01 kVA	2 % + 0.25 kVA
Min-max avg	For DC functions, accuracy is the specified accuracy of the measurement function ± 12 counts for changes longer than 350 ms in duration. For AC functions, accuracy is the specified accuracy of the measurement function ± 40 counts for changes longer than 900 ms in duration.		

[1] (<1 % range, unspecified)

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Specification – 283 FC Digital Multimeter Continued

Environmental specifications	
Operating temperature	-10 °C to 60 °C
Storage temperature	-30 °C to +70 °C
Humidity (without condensation)	0 % to 90 %, 10 °C to 30 °C 0 % to 75 %, 30 °C to 40 °C 0 % to 45 %, 40 °C to 60 °C
Warranty and Protection	
Electromagnetic compatibility	IEC 61326-1, IEC 61326-2-2, Portable, Group 1, Class A
Overvoltage category	CAT III 1500 V, CAT IV 1000 V
Agency approvals	ETL (AMER and EMEA), CSA (APAC), CE, UK CA
Drop test	2 meter (6.5 ft) drop test
Ingress protection	IP52
Warranty	Limited lifetime
Mechanical and general spec fications	
Counts	6000
Size	22.5 cm x 10.5 cm x 5.7 cm (8.8 in x 4.1 in x 2.2 in)
Weight	0.7 kg (1.5 lb)
Battery life	> 150 hours typical, without backlight (Alkaline, 3 AA) > 100 hours typical when connected to wireless current clamp (Alkaline, 3 AA)

FLUKE CONNECT

Preventive Maintenance Simplified

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. Visit the Fluke website to learn more about the Fluke Connect system.

Find out more at **fluke.com**



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Specifications – a283 FC Wireless Current Clamp

Function	Range	Resolution	Accuracy
AC current (True-RMS)[2]	60 A	0.01 A	1.5 % + 0.15 A, 45~500 Hz
DC current[2]	60 A	0.01 A	1.5 % + 0.15 A
General specifications – Fluke a283 FC Wireless Current Clamp			
Operating temperature	-10 °C to 60 °C		
Storage temperature	-30 °C to +70 °C		
Humidity (without condensation)	0 % to 90 %, 5 °C to 30 °C 0 % to 75 %, 30 °C to 40 °C 0 % to 45 %, 40 °C to 60 °C		
Warranty and Protection			
Electromagnetic compatibility	IEC 61326-1, IEC 61326-2-2, Portable, Group 1, Class A		
Overvoltage category	CAT III 1500 V, CAT IV 1000 V		
Agency approvals	ETL (AMER and EMEA), CSA (APAC), CE, UK CA		
Drop test	2 meter (6.5 ft) drop test		
Ingress protection	IP52		
Warranty	1-year		
Mechanical and general specifications			
Size	22.6 cm x 9.1 cm x 4.2 cm (8.9 in x 3.6 in x 1.7 in)		
Jaw opening	34 mm (1.34 in)		
Weight	0.375 kg (13.2 oz)		
Battery life	> 80 hours typical (Alkaline, 2 AAA)		
Features			
LED indicator	Indicates wireless connection and data transmission status		
Battery indicator	Indicates battery status		
Power Key	Power On/Off		
Zero Key	A DC zeroing function		

[2] < 1 % range, unspecified

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Ordering information

FLUKE-283 FC/PV	Solar Kit with CAT III 1500 V, CAT IV 1000 V TRMS Wireless Multimeter and 60A AC/DC Wireless Current clamp **Includes** 283 FC TRMS Wireless Digital Multimeter, a283 FC 60A TRMS Wireless AC/DC Current Clamp, Solar MC4 test Lead set, TL175-HV TwistGuard™ Silicone test leads, Premium carrying case, TPAK magnetic hanging strap, Limited Lifetime Warranty on the Multimeter, 1-year warranty on the clamp
FLUKE-283 FC	CAT III 1500 V, CAT IV 1000 V TRMS Wireless Multimeter **Includes** 283 FC TRMS Wireless Digital Multimeter, TL175-HV TwistGuard™ Silicone test leads, Premium carrying case, TPAK magnetic hanging strap, Limited Lifetime Warranty
FLUKE-A283 FC	60A TRMS Wireless AC/DC Current Clamp **Includes** Wireless clamp for use with the Fluke 283 FC Multimeter, 1-year Warranty

Accessories and replacement parts

a283 FC	CAT III 1500 V, CAT IV 1000 V Wireless clamp for use with the Fluke 283 FC Multimeter
TL175-HV	CAT III 1500 V, CAT IV 1000 V rated TwistGuard™ Silicone test leads
PVLEAD1	CAT III 1500 V Staubli MC4 TO 4MM test lead set, Black/Red
TPAK Magnetic Hanger	Magnetic meter hanging strap

Visit **www.fluke.com** to get complete details about these products or ask your local Fluke sales representative.



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