

365

Detachable Jaw True-rms Clamp Meter

Calibration Manual

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Introduction

Warning

Read "Safety Information" before you use the Product.

This manual explains the Calibration Adjustment for the 365 Detachable Jaw True-rms Clamp Meter (the Product). Please see the *365 Users Manual* for usage information. The Product is a true-rms hand-held, battery-operated product that features a detachable Jaw.

Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-3-3434-0181
- Singapore: +65-738-5655
- China: +86-400-810-3435
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at www.fluke.com.

To register your product, visit <http://register.fluke.com>.

To see, print, or download the latest manual supplement, visit <http://us.fluke.com/usen/support/manuals>.


Safety Information

A **Warning** identifies conditions and actions that pose hazard(s) to the user. A **Caution** identifies conditions and procedures that could cause Meter damage, equipment under test damage, or permanent loss of data.

Symbols used on the Product and in this manual are explained in Table 1.

Warning

To prevent possible electrical shock, fire, or personal injury:

- Use the product only as specified, or the protection supplied by the Product can be compromised.
- Examine the case before you use the Product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.
- Do not measure current while the test leads are in the input jacks.
- The battery door must be closed and locked before you operate the Product.
- Remove all probes, test leads, and accessories before the battery door is opened.
- Do not use test leads if they are damaged. Examine the test leads for damaged insulation, exposed metal, or if the wear indicator shows. Check test lead continuity.
- Do not use the Product if it operates incorrectly.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Use only type AA batteries, properly installed in the Product case, to power the Product.
- Hold the Product behind the tactile barrier. See Figure 1, ①.
- Replace the batteries when the low battery indicator () shows to prevent incorrect measurements.
- Use only specified replacement parts.
- Have an approved technician repair the product.
- Do not touch voltages >30 V ac rms, 42 V ac peak, or 60 V dc.
- Do not apply more than the rated voltage, between the terminals or between each terminal and earth ground.
- Keep fingers behind the finger guards on the probes.
- Connect the common test lead before the live test lead and remove the live test lead before the common test lead.
- Do not work alone.















- Use caution around bare conductors or bus bars. To prevent electrical shock, do not touch the conductor.
- Comply with local and national safety codes. Use personal protective equipment (approved rubber gloves, face protection, and flame-resistant clothes) to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Disconnect power and discharge all high-voltage capacitors before you measure resistance or continuity.
- Do not measure ac/dc current in circuits carrying more than 600 V or 200 A with the Product Jaw.
- Do not operate the product with covers removed or the case open. Hazardous voltage exposure is possible.
- When white wear indicator insulation shows through the clamp cable jacket, replace the clamp cable.
- When batteries are changed, ensure that the calibration seal in the battery compartment is not damaged. If damaged, the Product may not be safe for use. Return the Product to Fluke for replacement of the seal.
- Do not exceed the Measurement Category (CAT) rating of the lowest rated individual component of a product, probe, or accessory.
- Measure a known voltage first to make sure that the product operates correctly.

⚠ Caution

To prevent possible damage to the product or to equipment under test:

- Use the correct terminals, function, and range for measurements.
- Clean the case and accessories with a damp cloth and mild detergent only. Do not use abrasives or solvents.

Table 1. Symbols

Symbol	Meaning	Symbol	Meaning
	AC (Alternating Current)		Earth ground
	DC (Direct Current)		AC and dc current.
	Hazardous voltage		Risk of Danger. Important information. See Manual.
	Battery. Low battery when shown. The Meter shuts down when the battery reaches 2.0 V.		Double insulated
	Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.		Conforms to relevant North American Safety Standards.
CAT III	IEC Measurement Category III CAT III equipment has protection against transients in equipment in fixed-equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings.		Application around and removal from HAZARDOUS LIVE conductors is permitted.
	Conforms to European Union directives.		Examined and licensed by TÜV Product Services.
	Conforms to relevant Australian standards.		

Note

The Measurement Category (CAT) and voltage rating of any combination of test probe, test probe accessory, current clamp accessory, and the Meter is the LOWEST rating of any individual component.

The Meter

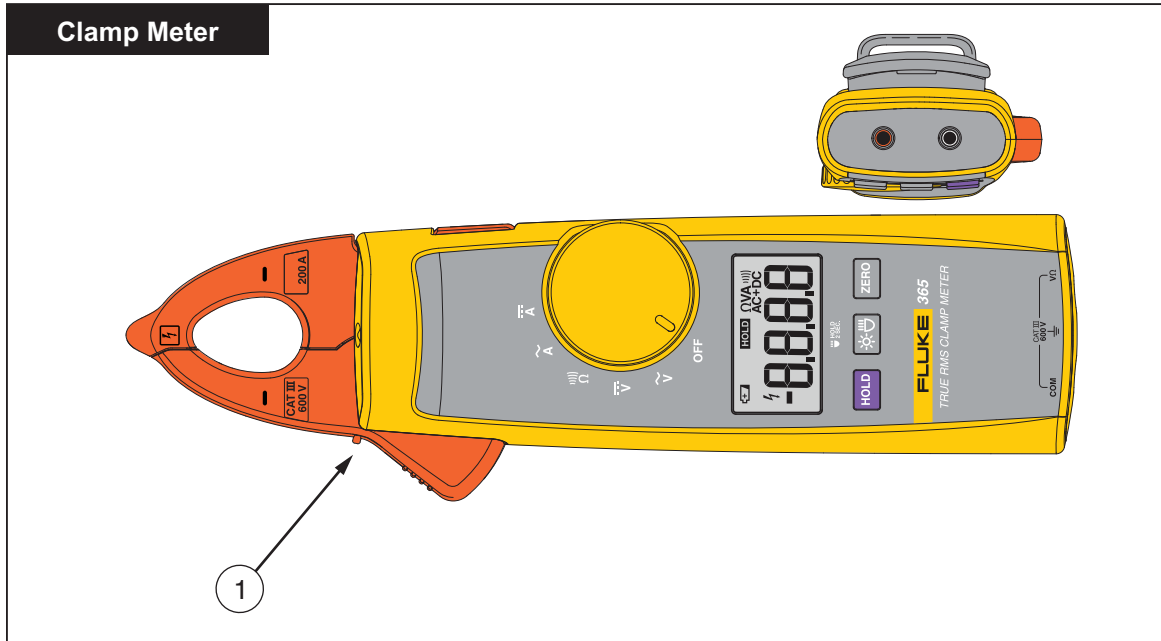


Figure 1. The Meter

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Specifications

Electrical Specifications

AC Current

Range	200.0 A
Resolution	0.1 A
Accuracy	2 % ±5 digits (45 – 65 Hz)
	2.5 % ±5 digits (65 – 400 Hz)
Crest Factor	2.5 @ 125 A
	1.55 @ 200 A
	Add 2 % for C.F. >2

DC Current

Range	200.0 A
Resolution	0.1 A
Accuracy	2 % ±5 digits

AC Voltage

Range	600.0 V
Resolution	0.1 V
Accuracy	1.5 % ±5 digits (45 – 400 Hz)

DC Voltage

Range	600.0 V
Resolution	0.1 V
Accuracy	1 % ±5 digits

Resistance

Range	600.0 Ω/6000 Ω
Resolution	0.1 Ω/1 Ω

Accuracy 1 % \pm 5 digits

Mechanical Specifications

Size (L x W x H) 225 x 65 x 46 mm

Weight..... 275 g (including batteries)

Jaw Opening 18 mm

Detachable Jaw Cable Length 900 mm

Environmental Specifications

Operating Temperature..... -10 °C to +50 °C

Storage Temp -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)

(Without Condensation)

Operating Altitude 2000 meters

Storage Altitude 12,000 meters

Temperature Coefficients..... 0.1 x(specified accuracy)/ °C (<18 °C or > 28 °C)

Safety Compliance..... ANSI/ISA S82.02.01:2004

CAN/CSA-C22.2 No. 61010-1-04




UL 61010-1:2004

EN/IEC 61010-1:2001 to 600V CAT III

Pollution Degree 2



EMC IEC/EN61326-1:2006

Agency Approvals   

Batteries..... 2 AA, NEDA 15A, IEC LR6

Performance Tests

⚠ ⚠ Warning

To prevent possible electrical shock, fire, or personal injury, do not perform the performance test procedures unless the Product is fully assembled.

The following performance tests verify the complete operation of the Product and check the accuracy of each function against the Product’s specifications. See Table 2. If the Product fails any part of the test, calibration adjustment and/or repair is indicated. See “Calibration Adjustment”.

Table 2. Performance Tests




Test (Switch Position)	Calibrator Output	UUT Meter Reading Limit	
		Low	High
 AC Volts	30 V @ 50 HZ	29.5 V	30.5 V
	300 V @ 50 HZ	297.5 V	302.5 V
	570 V @ 50 HZ	565.5 V	574.5 V
	30 V @ 400 HZ	29.5 V	30.5 V
	300 V @ 400 HZ	297.5 V	302.5 V
	570 V @ 400 HZ	565.5 V	574.5 V
 DC Volts	0 V	-0.3 V	0.3 V
	30 V	29.6 V	30.4 V
	300 V	298.2 V	301.8 V
	570 V	566.9 V	573.1 V
	-30 V	-30.4 V	-29.6 V
	-300 V	-301.8 V	-298.2 V
	-570 V	-573.1 V	-566.9 V
 Ohms	0 Ω	0 Ω	0.3 Ω
	30 Ω	29.6 Ω	30.4 Ω
	300 Ω	298.2 Ω	301.8 Ω
	570 Ω	566.9 Ω	573.1 Ω
	900 Ω	894 Ω	907 Ω
	3000 Ω	2982 Ω	3018 Ω
	5700 Ω	5669 Ω	5731 Ω

Table 2. Performance Tests (cont.)

Test (Switch Position)	Calibrator Output	UUT Meter Reading Limit	
		Low	High
\tilde{A} AC Amps with 20 Turn Coil	.5A @ 50 HZ	9.6 A	10.4 A
	5 A @ 50 HZ	98.7 A	101.3 A
	9.5 A @ 50 HZ	187.5 A	192.5 A
	.5 A @ 400 HZ	9.6 A	10.4 A
	5 A @ 400 HZ	98.5 A	101.5 A
	9.5 A @ 400 HZ	187.4 A	192.6 A
\overline{A} DC Amps with 20 turn coil	.5 A	9.6 A	10.4 A
	5 A	98.7 A	101.3 A
	9.5 A	187.5 A	192.5 A
	-.5 A	-10.4 A	-9.6 A
	-5 A	-101.3 A	-98.7 A
	-9.5 A	-192.5 A	-187.5 A

Calibration Adjustment

Required Equipment

The equipment listed in Table 3 is required for calibration adjustment.

Table 3. Required Equipment

Equipment	Required Characteristics	Recommended Model
Calibrator	4.5 digit resolution	Fluke 55xxA Calibrator
Wired coil	20 turns	
Power Supply	+3.0 V	Common power supply or a 2 x AA battery container

Adjustment Procedure

To adjust Product calibration:

1. Turn the Product over to access the battery compartment door screw.
2. Use a flat-head screwdriver to loosen the battery compartment door screw and lift off the battery compartment door.
3. Remove the batteries from the Product.
4. Connect the Power Supply to the battery terminals.
5. Turn the Product ON.
6. The calibration button is under the calibration seal. Use small probe to press the calibration button (through the calibration seal) to put the Product into calibration mode.
7. Turn the Rotary Switch to select the function to be adjusted.

8. See Table 4 and apply each required output from the Calibrator to the Product.
9. Wait for the reading to become stable.
10. Push **(HOLD)** to confirm and advance to each next step.
11. When the adjustment is complete, disconnect the Power Supply, replace the batteries and reattach the battery compartment door and tighten the screw.

Table 4. Adjustment Procedure






Test (Switch Position)	Product LCD Reading	Action
 AC Volts	C000	Calibrator output 600 V @ 50 HZ, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C001	Calibrator output 300 V @ 50 HZ, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C002	Calibrator output 300 V @ 100 HZ, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C003	Calibrator output 300 V @ 200 HZ, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C004	Calibrator output 300 V @ 300 HZ, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C005	Calibrator output 300 V @ 400 HZ, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	Save	Push (HOLD)
 DC Volts	C006	Calibrator output 0 V, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C007	Calibrator output 600 V, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	Save	Push (HOLD)
 Ohms	C008	Calibrator output 0 Ω, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C009	Calibrator output 600 Ω, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C010	Calibrator output 660 Ω, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	C011	Calibrator output 6000 Ω, allow the reading to stabilize, wait 4 seconds, Push (HOLD)
	Save	Push (HOLD)

Table 4. Adjustment Procedure (cont.)

Test (Switch Position)	Product LCD Reading	Action
 AC Amps	C012	Calibrator output 10A @ 50 HZ, allow the reading to stabilize, wait 4 seconds, Push HOLD
	C013	Calibrator output 2.5A @ 50 HZ, allow the reading to stabilize, wait 4 seconds, Push HOLD
	C014	Calibrator output 2.5A @ 100 HZ, allow the reading to stabilize, wait 4 seconds, Push HOLD
	C015	Calibrator output 2.5A @ 200 HZ, allow the reading to stabilize, wait 4 seconds, Push HOLD
	C016	Calibrator output 2.5A @ 300 HZ, allow the reading to stabilize, wait 4 seconds, Push HOLD
	C017	Calibrator output 2.5A @ 400 HZ, allow the reading to stabilize, wait 4 seconds, Push HOLD
	Save	Push HOLD
 DC Amps	C018	Calibrator output 0A, allow the reading to stabilize, wait 4 seconds, Push HOLD
	C019	Calibrator output 10 A, allow the reading to stabilize, wait 4 seconds, Push HOLD
	Save	Push HOLD

Maintenance

Clean the Product


Caution

To prevent possible damage to the Product or to equipment under test, do not use abrasive cleaners. They will damage the case.

To clean the Product, use a cloth with a mild cleaning solution.

Battery Replacement

Warning

To prevent possible explosion, fire, or personal injury, replace the batteries when the low battery indicator () shows to prevent incorrect measurements.

Caution

To prevent possible damage to the Product or to equipment under test:

- Remove batteries to prevent battery leakage and damage to the Product if it is not used for an extended period.
- Be sure that the battery polarity is correct to prevent battery leakage.

To change the batteries, see Figure 2:

1. Make sure the Product is OFF.
2. Turn the Product over to access the battery compartment door screw.
3. Use a flat-head screwdriver to loosen the battery compartment door screw and lift off the battery compartment door.
4. Replace the two AA batteries.
5. Reattach the battery compartment door.
6. Tighten the battery compartment door screw.

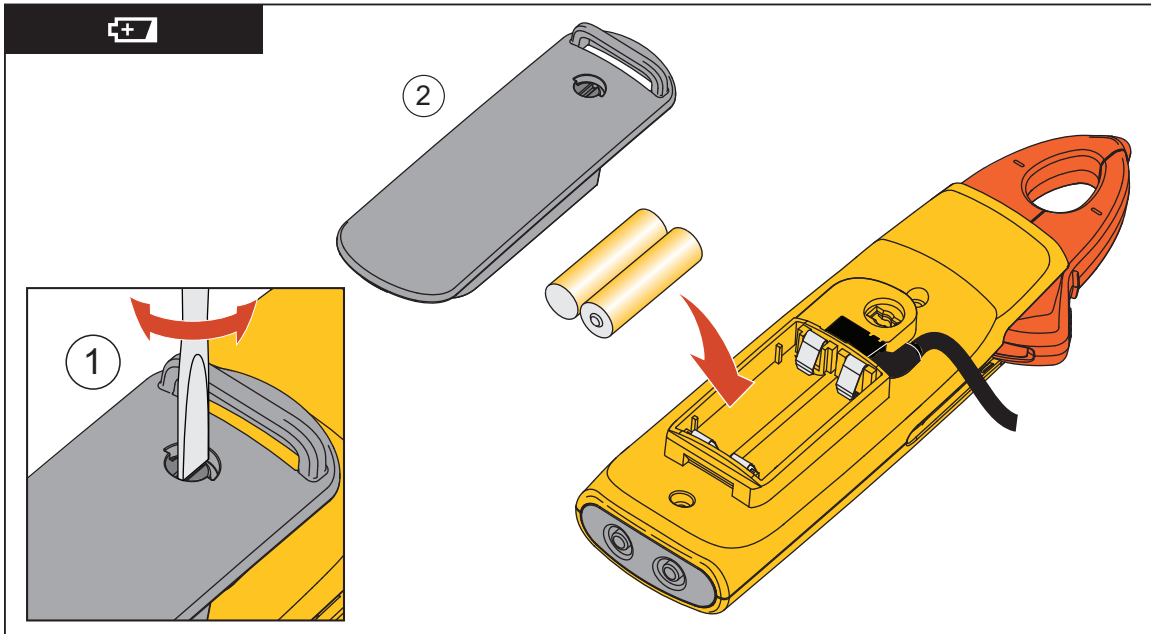


fig11_365.eps

Figure 2. Changing the Batteries

User Replaceable Parts

User replaceable parts are listed in Table 5.

Table 5. User Replaceable Parts

Fluke Part Number	Description	Qty
376756	BATTERY,PRIMARY,ZN-MNO ₂ ,1.5V,2.24AH,15A,LR6,ALKALINE,AA,14X50MM,BULK	2
3837209	FLUKE-365-2008,BATT DOOR	1
3858245	SOFT CASE,BLACK/YELLOW,FLUKE-365	1
3622684	MANUAL,USER MANUAL, FLUKE-365	1
855742	TL75-4201,TEST LEADS	1
3890706	LABEL,CALIBRATION SEAL,F362/365	1