a283 FC

Wireless AC/DC Current Clamp

Calibration Information

Introduction

⚠⚠ Warning

To prevent possible electrical shock, fire, or personal injury, read all safety information before you use the Product.

The a283 FC Wireless AC/DC Current Clamp (the Product or Clamp) is a wireless True-rms current clamp with a thin jaw to fit into tight spaces.

This document has the verification and calibration adjustment procedures for the Product. For complete operating instructions, and routine maintenance procedures, see the *a283 FC Instructions* at www.fluke.com.

Contact Fluke

Fluke Corporation operates worldwide. For local contact information, go to our website: www.fluke.com.

To register your product, or to view, print, or download the latest manual or manual supplement, go to our website: www.fluke.com/productinfo.

Safety Information

General Safety Information is in the printed Instructions that ship with the Product and at www.fluke.com. More specific safety information is listed in this document where applicable.

A **Warning** identifies hazardous conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

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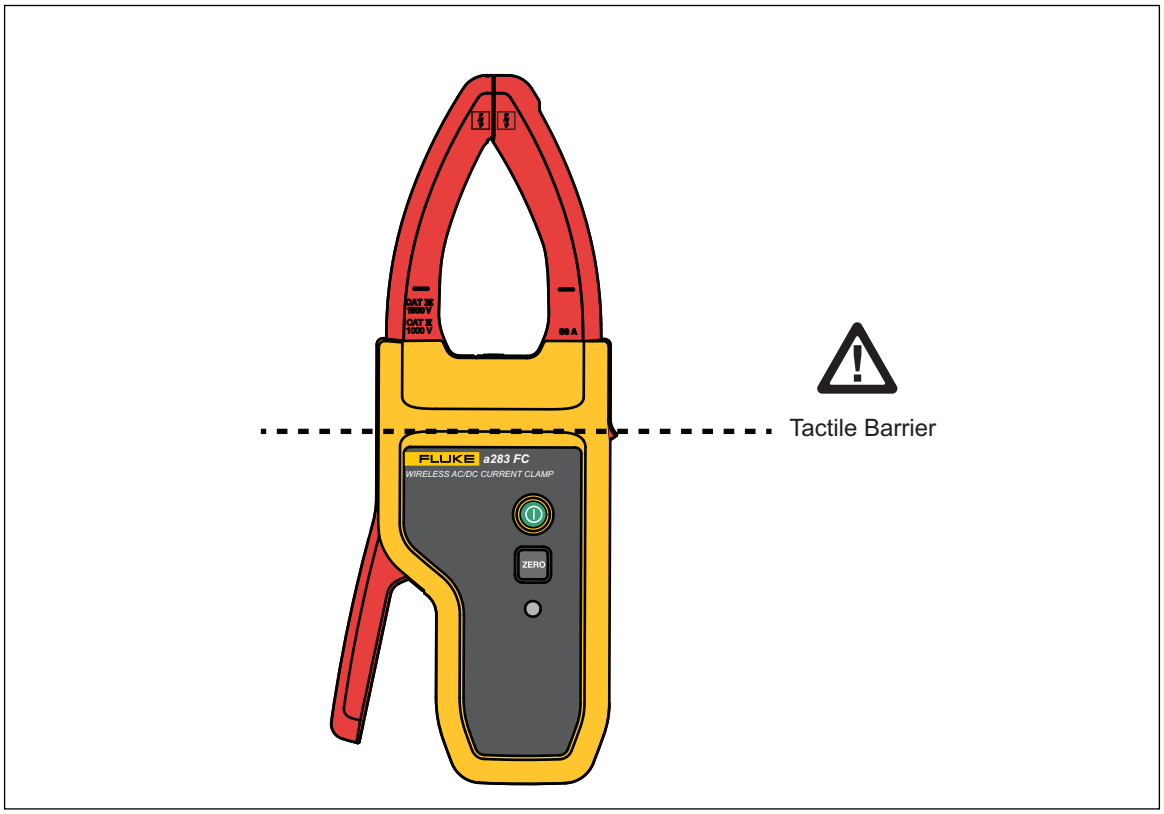
⚠⚠ Warning

To prevent possible electrical shock, fire, or personal injury, keep fingers behind the tactile barrier when you take measurements. See Figure 1.

Figure 1. Tactile Barrier



Specifications

For complete specifications, refer to the *Users Manual* at www.fluke.com.

Performance Tests

⚠⚠ Warning

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

The performance tests verify the full operation of the Product and measure the accuracy of each function against Product specifications. If the Product fails a part of the test and/or calibration adjustment, repair is necessary. See *Calibration Adjustment*.

The performance tests and calibration adjustment require the equipment in Table 1.

⚠⚠ Warning

To prevent possible electrical shock, fire, or personal injury, see the Safety Information document for the 5560A Calibrator available at www.fluke.com.

Table 1. Required Equipment

Equipment	Required Characteristics	Recommended Model
Calibrator	4.5-digit resolution AC Current Accuracy: 600 µA to 30 A ±0.25 %	Fluke 5560A Calibrator (or equivalent)
Wired coil	10 turns	55XXA/COIL 10
Wireless DMM	Display current value	Fluke 283 FC
TTBLE dongle	Write Serial Number for Device Under Test (DUT) and adjust	-

Wireless Connection with Fluke 283 FC

Use the 283 FC to pair and connect to the Device Under Test (DUT). Check the current output value with the 283 FC. See the *283 FC Users Manual* for more detailed information.

AC/DC Current Test

Before this test:

1. Make sure that you have the necessary equipment. See Table 1.
2. Make sure the Product battery is good and replace if necessary.
3. Warm up the Calibrator as necessary. Refer to its specifications.
4. Let the temperature of the DUT become stable to room temperature.

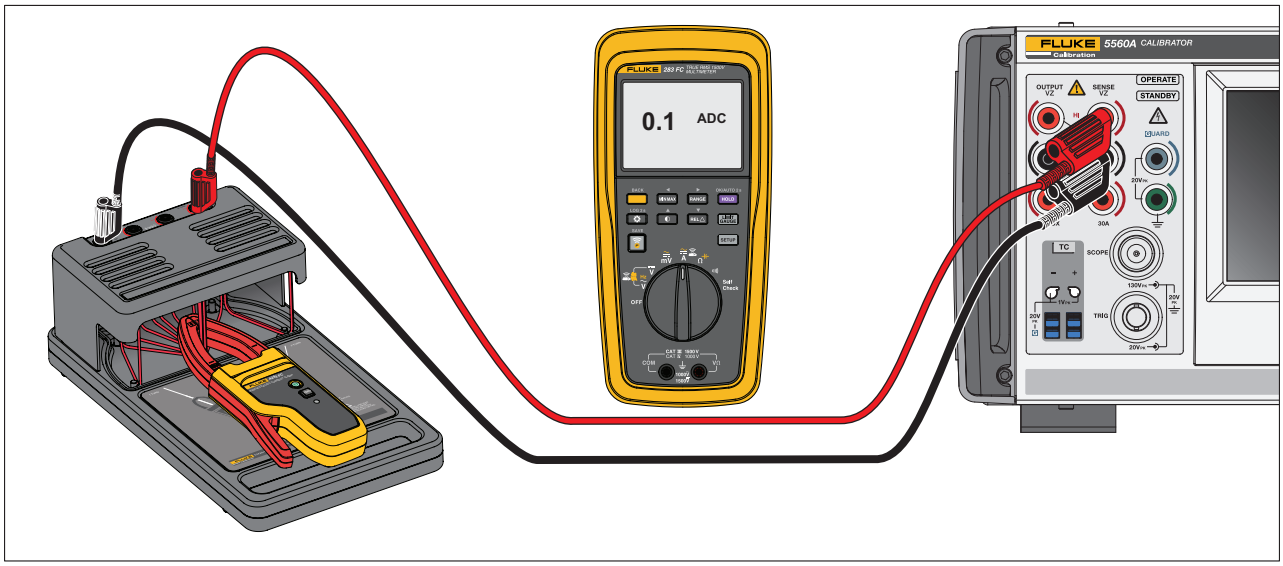
To do the ac/dc current test:

1. Place the Product on the 10-turn Coil. See Figure 2.
2. Connect the Calibrator amp output HI and LO to the 10-Turn Coil. See Figure 2.
3. Apply the input current for each step shown in Table 2.
4. Compare the indication on the 283 FC with the DUT reading limits in Table 2.
5. If the display indication falls outside of the range shown, adjustment or repair of the Product is necessary. See *Calibration Adjustment*.

Table 2. Performance Tests

Test	Calibrator Output	Resolution	Specification	DUT Reading Limit	
				Low	High
AC Amps (with 10-Turn Coil)	0.1 A,60 Hz	0.01	1.5 %+0.15	0.83	1.17
	1 A,60 Hz			9.70	10.30
	6 A,60 Hz			58.95	61.05
	2 A,45 Hz			19.55	20.45
	2 A,100 Hz			19.55	20.45
	2 A,400 Hz			19.55	20.45
DC Amps (with 10-Turn Coil)	0 A after zero			-0.15	0.15
	0.1 A			0.83	1.17
	1 A			9.70	10.30
	6 A			58.95	61.05
	-0.1 A			-1.17	-0.83
	-2 A			-20.45	-19.55
	-6 A			-61.05	-58.95

Figure 2. Calibration Adjustment Connections



Before Calibration Adjustment

Before you adjust Product calibration, you must turn on the DUT and use the TTBLE dongle to pair and connect to the DUT with the command below.

Use the serial communication tool or METCAL to send the command to TTBLE dongle with the serial port set: 115200,8,1,N:

```
AT...
AT+BLEMODE=1
AT+RESET
AT...
AT+CLRCONADD
AT+SAVE
AT+RESET
AT...
AT+SCAN=ON                          // wait for the scanned MAC
AT+CONADD=scanned MAC
AT+SAVE
AT+RESET
```

When the PC gets the current value from the DUT, this designates a successful connection.

Calibration Adjustment

The Product features closed-case calibration adjustment and uses known reference sources. The Product measures the applied reference source, calculates correction factors, and stores the correction factors in nonvolatile memory. If the Product fails any of the performance tests, do the calibration adjustment procedure.

Connect the Calibrator to the10-turn coil. Clamp the DUT to the coil and then turn on the DUT. See Figure 2.

Send the command below to check, adjust and change MAC according to serial number of DUT.

```
CAL START                       // enter calibration mode.
LED GREEN                       // check LEDs color
LED NULL                        // turn off LED
LED ORANGE
LED NULL
LED RED
LED NULL
LED BLUE
LED NULL
BALANCE WRITE  124                  // step1 Balance, default: 124
GET VALUE
//Write and find the value between 32~223 to make the reading difference to be //within ±0.03A at top and bottom of clamp, use GET VALUE to get reading and //compare.
RAW ADCL DATA     //step2, ADC zero
RAW ADCH DATA     //step3, ADC gain
RAW AAC0 DATA//step4, AAC zero
RAW AACL DATA//step5, AAC gain
RAW AACM DATA//step6, AAC gain
RAW AACH DATA//step7, AAC gain
RAW AACMAX DATA//step8, AAC gain
IDN WRITE 123456789WS
//write in the serial number, example: 123456789WS or 123456789NU
// WS: shifu, NU: FPM in Norwich
TEMP CAL                            // temperature calibration
DATE WRITE 20250131             // calibration date, year/month/day
CAL EXIT        // exit the calibration mode.
```

Restart the DUT and check the new MAC (serial number) and performance with Fluke 283 FC.

For each step in Table 3, output the listed current, and then send the command.

Table 3. Calibration Adjustment

Adjustment Points					
Steps	**Function**		**Points**	**Unit**	**5522 Output**
1	Balance	Balance up:10 turns down:10 turns	60	A,60H z	6 A, 60 Hz
2	ADC	zero Middle:10 turns	0	A,0 Hz	0 A
3		Gain Middle:10 turns	30	A,0 Hz	3 A
4	AAC	zero Middle:10 turns	0	A,60 Hz	0 A
5		Gain Middle:10 turns	0.6	A,60 Hz	0.06 A,60 Hz
6		Gain Middle:10 turns	2	A,60 Hz	0.2 A,60 Hz
7		Gain Middle:10 turns	30	A,60 Hz	3 A,60 Hz
8		Gain Middle:10 turns	60	A,60 Hz	6 A,60 Hz

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 (red LED under the power button) shows to prevent incorrect measurements.

⚠ Caution

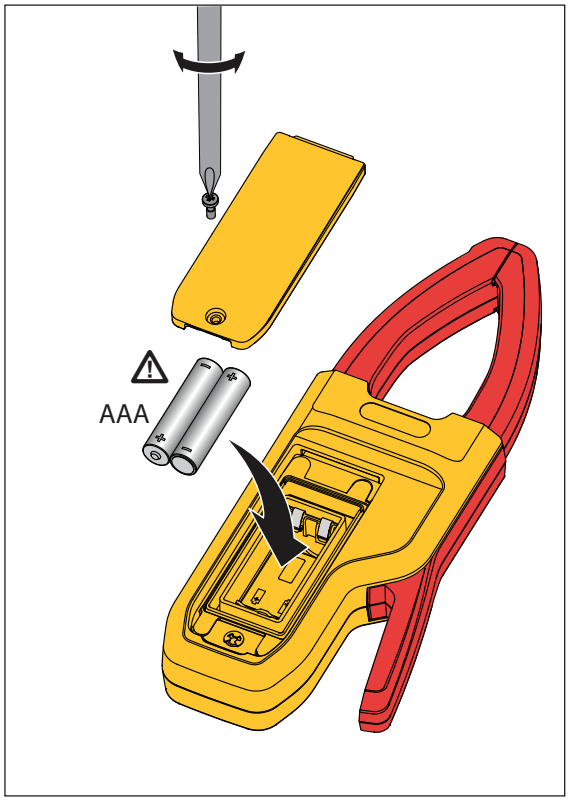
To prevent possible damage to the Product or to equipment under test:

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

To change the batteries, see Figure 3.

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 AAA batteries. Make sure to observe the correct polarity before you put the batteries into the battery compartment door.
5. Reattach the battery compartment door.
6. Tighten the battery compartment door screw.

Figure 3. Replace the Batteries



User-Replaceable Parts

User-replaceable parts are shown in Table 4.

Table 4. User-Replaceable Parts

Fluke Part Number	Description	Qty
2687457	BATTERY PAD,URETHANE,ADHESIVE-BACK,20.0MM L,20.0MM W,5.0MM THK	1
2838018	Battery, AAA, IEC LR03	2
5591547	a283 FC CLAMP-2023,RUBBER,SEAL,BATTERY DOOR	1
5009651	SCREW,CAPTIVE,M3-0.5X8MM,PAN,PHILLIPS,#2,STEEL,BLACK	1
4941124	SPRING WASHER,M2.5,CARBON STEEL,NICKEL PL	1
6007834 6007847	a283 FCCLAMP-8002 STICKER,TTBLE,CLAMP,APAC,-01 a283 FC CLAMP-8003 STICKER,TTBLE,CLAMP,EMEA&AME&S.AFRICA,-02	1