

## Model 412300A Current Calibrator



## Introduction

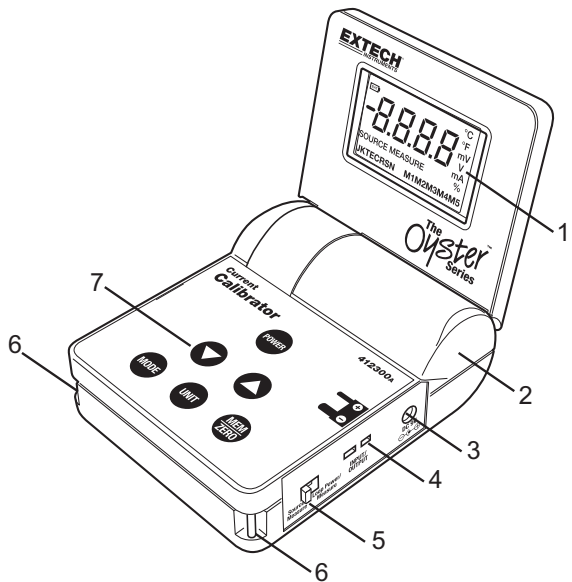
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Congratulations on your purchase of the Extech Current Calibrator Model 412300A. The 412300A can measure/source current and can also power a current loop. A built-in five location memory can store customized calibration current output steps. The Oyster Series meters have a convenient flip up display with neck-strap for hands-free operation. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

## Meter Description

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1. LCD display
2. Battery Compartment
3. AC adaptor jack
4. Calibration Cable input
5. Function switch
6. Neck-strap posts
7. Keypad



# Keypad and Switch Descriptions

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## POWER BUTTON and AUTO POWER OFF FEATURE

1. Use the POWER button to turn the unit ON or OFF. When the unit is powered up, a short self-test will ensue after which the display will stabilize.
2. This meter can either be powered by one 9V battery or an AC adapter.
3. When the battery symbol appears on the LCD display, replace the battery as soon as possible. Low battery power may cause inaccurate readings and erratic meter operation.
4. This instrument is equipped with Auto Power OFF which turns the meter off after 10 minutes of inactivity. To override this feature; press and hold the MODE button until the display shows **oAPF** (auto power off de-activated) or **APF** (auto power off activated).

## FUNCTION SLIDE SWITCH

1. Slide the Function switch on the side of the meter to the desired function (Source/Measure or Power/Measure).
2. In the Source/Measure position the meter can be used to generate current or measure current (MODE button is used to choose Source or Measure).
3. In the Power/Measure position, the meter can power a current loop with 24Vdc and, at the same time, measure the current.

## MODE BUTTON

Press the MODE button to select either SOURCE (output) or MEASURE (input). This applies when the Function switch is set to Source/Measure.

## UNIT BUTTON

Press the UNIT button to select mA or % units.

## ▲ ▼ INCREASE / DECREASE BUTTONS

Use the ▲ ▼ buttons to increase or decrease the output current value in the source mode.

1. Press the ▲ button once to increase the value in one digit steps.
2. Press and hold the ▲ button to increase the value in 10 digit steps.
3. Press and hold the ▲ button >2 sec and then press the ▼ to increase the value in 100 digit steps
4. To decrease the value, use the ▼ button as described above.

## ZERO BUTTON

The ZERO button manually zeros the display in the MEASURE mode.

1. Set the meter to the MEASURE mode
2. Short the input jack
3. Press and release the ZERO button

## MEM BUTTON

The memory feature provides the user with five (5) user programmable source values for stepped calibration outputs. The feature is available for **mA** and **%** units in the SOURCE mode. The stored values are kept in non-volatile memory (memory that is retained even after power is removed from the calibrator).

### Source from the stored memory values:

1. Select the Source mode as described earlier
2. Press the MEM button. The M1 icon (memory location 1) will appear in the display and the value stored in that location will be displayed and sourced.
3. Repeated pressing of the MEM button will step through the 5 memory locations.

**NOTE:** The “SOURCE” icon will blink when the output value has not reached a stable level. The common cause for the “SOURCE” icon to remain blinking is that the load impedance is too high in the current mode.

### Storing values into memory:

1. As described above, select and display a memory location (M1, 2, 3, 4, or 5)
2. Use the ▲ ▼ buttons to adjust the display to the desired source value.
3. Press and hold the MEM button for > 2 seconds. The displayed value will be stored in the displayed memory location.

### Default memory values.

Five common source values are permanently programmed in memory as the default values. These values can be replaced by user selected values.

To reset the meter to the default memory values:

1. Turn the meter on and select the SOURCE mode.
2. Press and hold the POWER button until *dflt* appears in the display and then release the POWER button. The memory locations will revert to the default values.

Default Memory Values					
	M1	M2	M3	M4	M5
mA	4mA	8mA	12mA	16mA	20mA
%	0%	25%	50%	75%	100%

# Modes of Operation

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## MEASURE (Input) Mode of Operation

In this mode, the unit will measure up to 50mADC.

1. Slide the function switch to the SOURCE/MEASURE position.
2. Turn the meter ON
3. Press the MODE button to select MEASURE
4. Connect the Calibration Cable to the meter.
5. Connect the Calibration Cable to the device or circuit under test.
6. Read the measurement on the LCD display.

## SOURCE (Output) Mode of Operation

In this mode, the unit can source current up to 24mADC at 1000 ohms

1. Slide the Mode switch to the SOURCE/MEASURE position
2. Turn the meter ON
3. Press the MODE button to select SOURCE
4. Use the UNIT button to select % or mA units of measure
5. Connect the Calibration Cable to the meter
6. Connect the Calibration Cable to the device or circuit under test
7. Use the ▲ ▼ buttons to select the desired output value. Use the LCD display to verify the output level. Alternatively, use the stored calibration values in memory as described in the MEM button section.
8. **Note** that while the SOURCE display icon is blinking the calibrator is preparing to provide an output but only after the icon stops blinking will the current actually be sourced.
9. For the -25% to 125% output range the output is 0 to 24mA. Refer to the Table below.

Display	25%	0%	25%	50%	75%	100%	125%
mA output	0mA	4mA	8mA	12mA	16mA	20mA	24mA

## POWER/MEASURE Mode of Operation

In this mode the unit can measure current up to 24mA and power a 2-wire current loop. The loop voltage is 24V.

1. Slide the function switch to the POWER/MEASURE position.
2. Turn the meter ON
3. Connect the Calibration Cable to the meter.
4. Connect the Calibration Cable to the loop. Open the current loop at any convenient location along the signal path.
5. Read the measurement on the LCD display.
6. Use the UNIT button to select % or mA units of measure. In “%” mode the display will read from -25.0 to +230.0% representing 0.00 to 50.00mA.

# Specifications

## General Specifications

Display	9999 count LCD
Meter Power	9 volt battery or AC adaptor
Auto Power OFF	Meter automatically powers off after 10 minutes of inactivity
Current output capability	24mADC at 1000 ohms
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-20°C to 60°C (- 4°F to 140°F)
Operating Humidity	Max 80% up to 31°C (87°F) decreasing linearly to 50% at 40°C (104°F)
Storage Humidity	<80%
Operating Altitude	2000meters (7000ft.) maximum
Dimensions	96 x 118 x 45mm (3.8 x 4.7 x 1.8") folded
Weight	340g (12 oz.)
Accessories Supplied	9V battery, AC Adaptor and calibration cable with spade lugs

## Range Specifications

Mode	Function	Range (Resolution)	Accuracy (% of reading)
Measure	Current	0 to 50mA (0.01mA)	± (0.075% + 1 digit) or ± 3 digits (whichever is greater)
	Percent (%)	-25% to +230% (0.1%)	
Source	Current	0 to 24mA (0.01mA)	
	Percent (%)	-25% to +125% (0.1%)	
Power	Loop Power	24VDC, <50mA	

## Battery Replacement

When the battery symbol appears on the LCD, replace the 9V battery as soon as possible.

1. Open the calibrator's lid as far as possible.
2. With a coin or wide blade screwdriver, open the battery compartment moving in the direction of the arrow embossed on the compartment cover (location of compartment is identified in the meter description section).
3. Replace the battery and close the battery compartment cover.



You, as the end user, are legally bound (**Battery ordinance**) to return all used batteries and accumulators; **disposal in the household garbage is prohibited!**

You can hand over your used batteries / accumulators at collection points in your community or wherever batteries / accumulators are sold!

**Disposal:** Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle