# FLUKE ®

EBC290
External Battery Charger

Instruction Sheet

Introducing the EBC290

EBC290 is an External Battery Charger for compatible Li-ion batteries as used in Fluke Test Tools.
EBC290 is powered by Power Adapter BC190 as supplied with Test Tool Fluke 190 Series II. Instead of Power Adapter Model BC190 you can also use Model BC430.
EBC290 is provided with a microprocessor controlled charging circuit to optimally charge the battery.
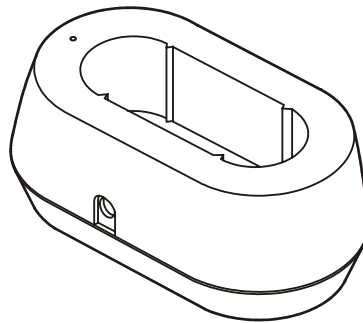
Unpacking

Following items must be included in the shipment:

• EBC290 External Battery Charger.

• Instruction Sheet (this document).

Check the contents of the shipping box for completeness. If something in the box has been damaged or is missing, contact your distributor or the nearest FLUKE sales or service office immediately.

Safety Information

⚠	**Read First: Safety Information.** **To ensure safe operation of the charger, follow these instructions:**

• Read the operating instructions before use and follow all applicable safety instructions.

• Use the Product only as specified in the operating instructions; otherwise the device's safety features may become inoperative.

• Use the Product only with the Li-ion batteries as specified for use with Fluke Test Tools. Use Power Adapter BC190 or BC430 to supply the Battery Charger, otherwise the device's safety features may become inoperative or the charger may become defective.

• Read the instructions for safe use and handling of Li-ion batteries as indicated in the Battery's Instruction Sheet.

• Before each use, inspect Battery Charger, Battery and Power Adapter for any damage. Do not use parts that are cracked or damaged.

• Adhere to local and national safety codes concerning the use and disposal of Charger and Li-ion Batteries.

Symbols

⚠	Risk of Danger. Important information. See Instruction Sheet.
♻	Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.
CE	Conforms to relevant European standards.

Specifications

Electrical Specifications

Power connection	BC190 or BC430	
Adapter requirement	17.8 V / 0.84 A	
Input current limitter	714 mA ±5%	
Input voltage range	15 to 23 V	
Battery type	BP291	BP290
Capacity	52 Wh	26 Wh
Charge time	5.5 hours	< 3 hours
Charge operating range	0 to 45°C (determined by battery)	
Charge disable protection (smbus controlled)	54°C ±3°C battery temp (determined by battery)	
Charge disable protection (hardware controlled)	58°C ±3°C battery temp (determined by battery)	

General Specifications

Temperature: Operating Non-Operating (Storage)	0 °C to +45 °C (determined by battery) -20°C to +60 °C
Maximum Relative Humidity Non-Operating (Storage): Operating: 　　0 ... 10 °C 　　10 ... 30 °C 　　30 ... 40 °C 　　40 ... 45 °C	No precipitating (noncondensing) Recovery time two hours No precipitation (noncondensing) 95 ± 5 % 75 ± 5 % 45 ± 5 %
Emission and Immunity	EN-IEC-61326-1 (first edition 2005).
Height x Width x Depth (excluding battery)	44 x 65 x 100 mm
Weight	85 g

Using the EBC290

To use the EBC290, follow these instructions (Refer to Figure 1):
1. Connect the Power Adapter BC190 (or BC430) to a mains outlet and insert the DC plug of the Power Adapter into the External Charger.
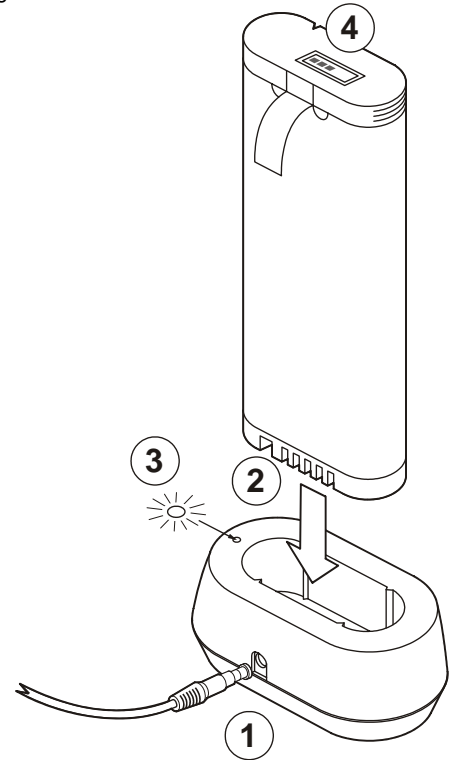

Fig. 1

2. Insert the battery to be charged into the External charger. Take careful notice of the correct placement of the battery.
3. Observe the green LED indicator:
   - Slow flashing indicates that the battery is charging.
   - Continuously on indicates that the battery is fully charged.
   - Fast flashing indicates a battery error.
4. During the charging process the number of segments to turn on in the battery display will increase over time. All segments on indicates that the battery is charged to 100 % of its present capacity.

Cleaning

Before cleaning, separate the product from Power Adapter and Battery.
Clean the EBC290 with a damp cloth and a mild detergent. Do not use abrasives, solvents, or alcohol.

Troubleshooting

In case of an error, the green LED in the Charger will flash at a high rate which indicates a possible battery problem. When available, insert another battery to determine is the error is caused by the battery or by a defective charger.

Instrument Security Procedures

Model:

190-062, 190-102, 190-104, 190-202,190-204, 190-502, 190-504

Product Name:

190 Series II ScopeMeter®

Instrument Description:

ScopeMeter® Test Tool

Memory Description:

The 190 Series II ScopeMeter® test tool has these memory devices:

1. D4000 Controller "Spider". Contains a mask ROM 4k x 32 with the initial program that holds the operating code for the product and a RAM 1k x 32 to temporarily store stack values for computing actions.

2. D4001: 1x 4 Mb SRAM. Memory is used to store the actual screen and instrument setup.

3. D5000, D5002, 2x 64 Mb Flash EEPROM
   Non-volatile memory used to store:
   - operating code (instrument firmware) for the product
   - calibration constants
   - user-saved screens and instrument setup information

4. D5001, D5003: 2x 8 Mb SRAM memory used to store the actual screen and instrument setup.

Memory Cleaning Instructions:

The operating code (instrument firmware) stored in D5000, D5002 can be read with dedicated remote interface commands (only available for use by Product Development).

The instrument firmware can be loaded selectively with firmware downloads that are distributed through the Fluke website. Fluke Service Centers can load firmware and configure the instrument with Service tools.

⚠ **Caution**

The upgrade tool will erase all saved screens and instruments setups.

Calibration constants stored in D5000, D5002 can be read with special remote interface commands (only available for use by Fluke Product Development or Fluke Service Centers). The calibration constants are generated when the test tool is sent through its calibration process and are fundamental to the test tool operation.

If the test tool is not powered through its power adapter, remove the battery for 10 minutes to clear all data held in SRAM.

To remove the battery:

1. Disconnect the test tool from all voltage sources.

2. Open the battery door on the back of the Product.

3. Lift the battery out of the instrument.

Note

Battery removal does not affect screen copies and setup information that the user has stored with the **SAVE** > **Save to internal** *menu steps described in chapter 5 of the user manual.*

To clear screens and instrument setups saved by the user:

1. Push the SAVE button.

2. Press F4 (FILE OPTIONS).

- If you see the screen shown Figure 1, no screens and setups are stored. Press F4 (CLOSE) to exit.

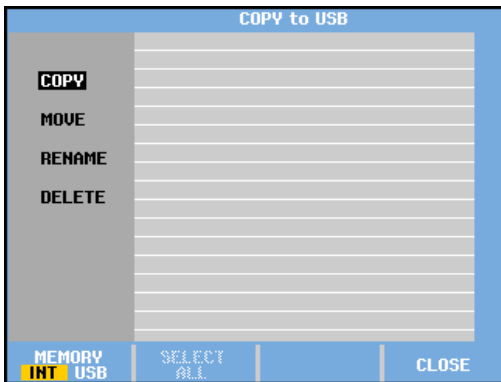- If you see the screen shown in Figure 2, continue at step 3.
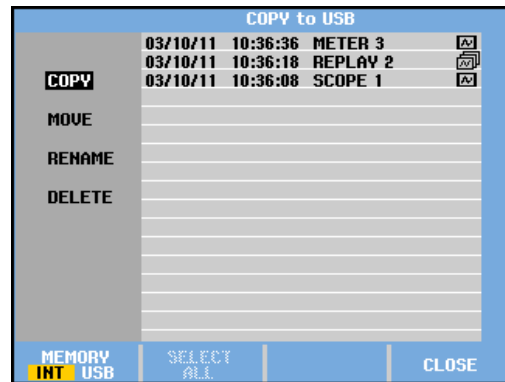
Figure 1.	**Figure 2.**

3. Select DELETE with the up/down arrow keys.

4. Press ENTER.

5. Press F2 (SELECT ALL).

6. Press ENTER.

7. Press F4 (YES) to confirm the Clear action.

This menu also is used to clear individual waveforms and setups.

Alternatively, you can use a single control that erases all user-specific settings and stored data including the stored waveforms and setup information:
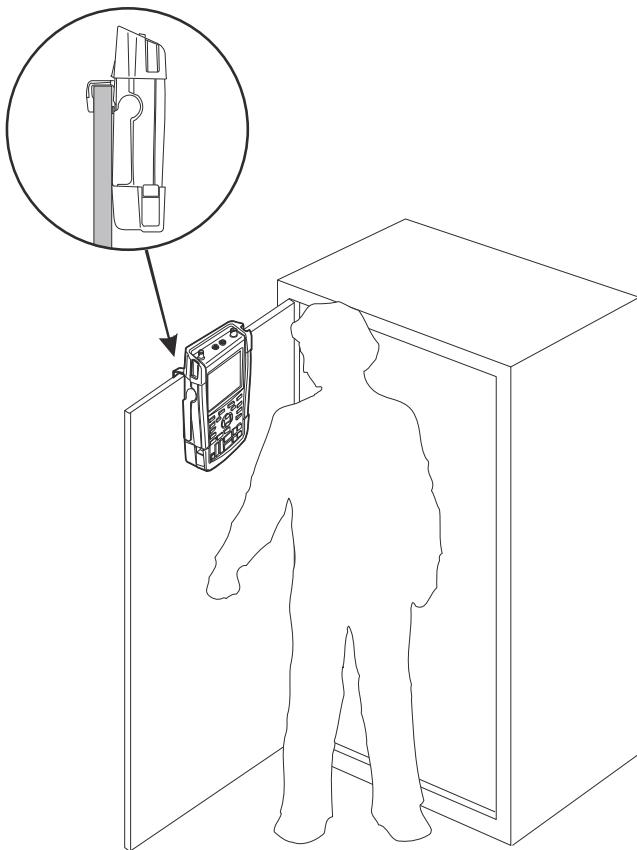
1. Select the USER key.

2. Press F1 (OPTIONS).

3. Use the cursor keys to select FACTORY DEFAULT.

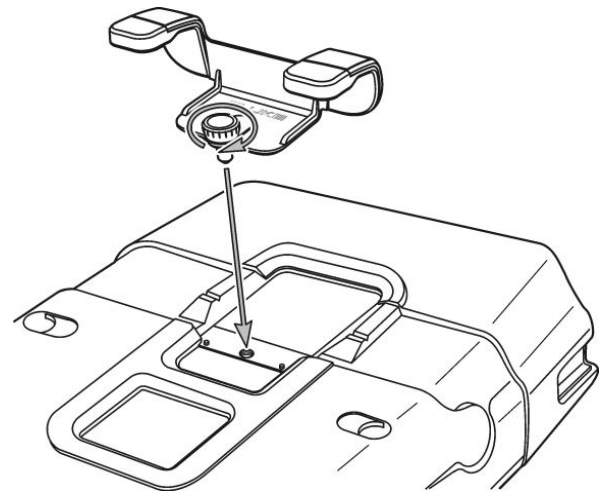4. Press ENTER.

5. Press F4 (YES) to confirm the selection.

HH290

Hanging Hook for ScopeMeter 190 Series II

Instruction Sheet

User example

Assembly

On our website you can discover more about electrical testing.