

# MDA-550/MDA-510

## Motor Drive Analyzer

### *Safety Information*



**3-Year Limited Warranty.**  
See the Users Manual for the full warranty.

Go to [www.fluke.com](http://www.fluke.com) to register your Product, read the Users Manual, and find more information.

A **Warning** identifies conditions and procedures that are dangerous to the user.

#### **⚠️⚠️ Warnings**

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

- **Read all safety Information before you use the Product.**
- **Carefully read all instructions.**
- **Do not alter the Product and use only as specified, or the protection supplied by the Product can be compromised.**
- **Use only the Fluke power supply, Model BC190 (Power Adapter).**
- **Before use, check that the selected/indicated range on the BC190 matches the local line power voltage and frequency.**
- **For the BC190 Power Adapter only use line cords that comply with the local safety regulations.**
- **Use only insulated voltage probes, test leads, and adapters supplied with the product, or indicated by Fluke as suitable for the MDA-550/MDA-510 Motor Drive Analyzer or Fluke 190 II ScopeMeter series.**



PN 5016091 September 2018

©2018 Fluke Corporation. All rights reserved.  
Specifications are subject to change without notification.  
All product names are trademarks of their respective companies.

Fluke Corporation  
P.O. Box 9090  
Everett, WA 98206-9090  
U.S.A.

Fluke Europe B.V.  
P.O. Box 1186  
5602 BD Eindhoven  
The Netherlands

ООО «Флюк СИИЭС»  
125167, г. Москва,  
Ленинградский проспект дом 37,  
корпус 9, подъезд 4, 1 этаж

- Before use, inspect voltage probes, test leads and accessories for mechanical damage and replace when damaged.
- Remove all probes, test leads and accessories that are not in use.
- Always connect the power adapter first to the ac outlet before connecting it to the product.
- Do not touch voltages >30 V ac rms, 42 V ac peak, or 60 V dc.
- Do not connect the ground spring (see Figure 1 in the *ScopeMeter Test Tool 190 Series II Users Manual*) to voltages higher than 42 V peak (30 Vrms) from earth ground.
- Do not apply more than the rated voltage, between the terminals or between each terminal and earth ground.
- Do not apply input voltages above the rating of the instrument. Use caution when using 1:1 test leads because the probe tip voltage will transmit directly to the product.
- Do not use exposed metal BNC connectors. Fluke offers cables with plastic, safety designed BNC connectors suitable for the Motor Drive Analyzer. See *Optional Accessories* in the Users Manual.
- Do not insert metal objects into connectors.
- Do not wear loose-fitting clothing or jewelry and keep long hair tied back when near rotating machinery. Use approved eye protection and approved personal-protective equipment where necessary.
- Use the product only as specified, or the protection supplied by the product can be compromised.
- Do not use the product if it operates incorrectly.
- Do not use the Product if it is altered or damaged.
- Disable the Product if it is damaged.
- Keep fingers behind the finger guards on the probes.
- Use only correct measurement category (CAT), voltage, and amperage rated probes, test leads, and adapters for the measurement.
- Do not exceed the Measurement Category (CAT) rating of the lowest rated individual component of a product, probe, or accessory.
- Do not use the product around explosive gas, vapor, or in damp or wet environments.
- Measure a known voltage first to make sure that the product operates correctly.

- **Examine the case before you use the product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.**
- **Do not work alone.**
- **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.**
- **The battery door must be closed and locked before you operate the product.**
- **Do not operate the product with covers removed or the case open. Hazardous voltage exposure is possible.**
- **Remove the input signals before you clean the product.**
- **Use only specified replacement parts.**
- **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.**

## ***Safe Use of Li-ion Battery Pack***

The battery pack Fluke model BP291 (52 Wh) has been tested in accordance with the UN Manual of Tests and Criteria Part III Subsection 38.3 (ST/SG/AC.10/11/Rev.3) – more commonly known as the UN 38.3 – tests, and have been found to comply with the stated criteria. The battery pack has additionally been tested according to IEC 62133.

### **Recommendations for safe storage of battery pack:**

- **Do not store battery packs near heat or fire. Do not store in sunlight.**
- **Do not remove a battery pack from its original packaging until required for use.**
- **When possible, remove the battery pack from the equipment when not in use.**
- **Fully charge the battery pack before storing it for an extended period to avoid a defect.**
- **After extended periods of storage, it may be necessary to charge and discharge the battery packs several times to obtain maximum performance.**
- **Keep the battery pack out of the reach of children and animals.**
- **Seek medical advice if a battery or part of it has been swallowed.**

## **Recommendations for safe use of the battery pack:**

- **The battery pack must be charged before use. Use only Fluke approved power adapters to charge the battery pack. Refer to Users Manual for proper charging instructions.**
- **Do not leave a battery on prolonged charge when not in use.**
- **The battery pack gives the best performance when operated at normal room temperature  $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$  ( $68\text{ }^{\circ}\text{F} \pm 9\text{ }^{\circ}\text{F}$ ).**
- **Do not put battery packs near heat or fire. Do not put in sunlight.**
- **Do not subject battery packs to severe impacts such as mechanical shock.**
- **Keep the battery pack clean and dry. Clean dirty connectors with a dry, clean cloth.**
- **Do not use any charger other than that specifically provided for use with this equipment.**
- **Do not use any battery which is not designed or recommended by Fluke for use with the Product.**
- **Take careful notice of correct placement of the battery in the product or the External Battery Charger.**
- **Do not short-circuit a battery pack. Do not keep battery packs in a place where the terminals can be shorted by metal objects (e.g. coins, paperclips, pens or other).**
- **Never use a battery pack or charger showing visible damage.**
- **Batteries contain hazardous chemicals that can cause burns or explode. If exposure to chemicals occurs, clean with water en get medical aid. Repair the product before use if the battery leaks.**
- **Alteration of battery pack: there shall be no attempt to open, modify, reform or repair a battery pack, which appears to be malfunctioning, or which has been physically damaged.**
- **Do not disassemble or crush battery packs.**
- **Use the battery only in the application for which it is intended.**
- **Retain the original product information for future reference.**

## Recommendations to safe transport of battery packs:

- The battery pack must adequately be protected against short-circuit or damage during transport.
- Always consult the IATA guidelines describing safe air transport of Li-ion batteries.
- Check-in luggage: battery packs are only allowed when installed in the Product.
- Hand carried luggage: a number of battery packs as required for normal and individual use is allowed.
- Always consult national/local guidelines that are applicable for shipment by mail or other transporters.
- A maximum of 3 battery packs may be shipped by mail. The package must be marked as follows: **PACKAGE CONTAINS LITHIUM-ION BATTERIES (NO LITHIUM METAL)**.

## Recommendations to safe disposal of a battery pack:

- You must properly dispose of a failed battery pack in accordance with local regulations.
- Do not dispose of the battery as unsorted municipal waste.
- Dispose in discharged condition and cover the battery terminals with isolation tape.

# **Safety Specifications**

## Power

Internal battery pack..... Fluke BP291, 10.8 V dc, 52 Wh  
External power Supply ..... BC190

## Temperature

Operating ..... 0 °C to 50 °C  
Operating and charging..... 0 °C to 40 °C  
Storage..... -20 °C to 60 °C  
Battery charging ..... 0 °C to 45 °C

## Altitude

Operating ..... 3000 m  
Storage..... 12 000 m

IP Rating..... IEC 60529, IP 51

## Safety

General .....	IEC 61010-1: Pollution Degree 2
Measurement	
IEC 61010-2-030	
BNC Input A, B, (C, D)	
From any terminal to	
earth ground.....	1000 V CAT III, 600 V CAT IV
Between any terminal.....	300 V CAT IV
IEC 61010-2-031	
Voltage Probe VPS410 10:1	
From any terminal to	
earth ground.....	1000 V CAT III, 600 V CAT IV
Between any terminal.....	1000 V CAT III, 600 V CAT IV
Voltage Probe VPS42x 100:1	
From any terminal to	
earth ground .....	1000 V CAT III 600 V CAT IV
Between probe tip and	
reference lead .....	2000 V

*Voltage ratings are given as “working voltage”. They should be read as Vac-rms (50-60 Hz) for AC sinewave applications and as Vdc for DC applications.*

## Electromagnetic Compatibility (EMC)

International .....	IEC 61326-1: Portable Electromagnetic Environment IEC 61326-2-2 CISPR 11: Group 1, Class A
---------------------	---

*Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself.*

*Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.*

*Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.*

*Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object.*

Korea (KCC).....	Class A Equipment (Industrial Broadcasting & Communication Equipment)
------------------	---














*Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.*

USA (FCC).....	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.
----------------	---

### Note

*For EMC immunity, see Section 8, Table 3 in the ScopeMeter Test Tool 190 Series II Users Manual.*

## Symbols

Symbol	Description
	WARNING. RISK OF DANGER.
	WARNING. HAZARDOUS VOLTAGE. Risk of electric shock.
	Consult user documentation.
	AC (Alternating Current)
	DC (Direct Current)
	Earth
	Double Insulated
	This product contains a Lithium-ion battery. Do not mix with solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler per local regulations.
	Conforms to the Appliance Efficiency Regulation (California Code of Regulations, Title 20, Sections 1601 through 1608), for small battery charging systems.
	Conforms to European Union directives.
	Certified by CSA Group to North American safety standards.
	Conforms to relevant Australian EMC standards.
<b>CAT III</b>	Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.
<b>CAT IV</b>	Measurement Category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.
	This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste.