

Oscilloscope Model OX 5042

Quick Start Guide
ENGLISH



Measure up

www.aemc.com

 **AEMC**[®]
INSTRUMENTS
CHAUVIN ARNOUX GROUP

Statement of Compliance

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments certifies that this instrument has been calibrated using standards and instruments traceable to international standards.

We guarantee that at the time of shipping your instrument has met its published specifications.

An NIST traceable certificate may be requested at the time of purchase, or obtained by returning the instrument to our repair and calibration facility, for a nominal charge.

The recommended calibration interval for this instrument is 12 months and begins on the date of receipt by the customer. For recalibration, please use our calibration services. Refer to our repair and calibration section at www.aemc.com.

Serial #: _____

Catalog #:

Model #: OX5042

Please fill in the appropriate date as indicated:

Date Received: _____

Date Calibration Due: _____



AEMC®
INSTRUMENTS

Chauvin Arnoux®, Inc.
d.b.a AEMC® Instruments
www.aemc.com

PRODUCT PACKAGING 2150.21

Shipping Contents:



Handscope Oscilloscope
Model OX5042



(1) U.S. Wall Plug 18W,
100-240V, 50/60Hz
Cat. #5000.51



(2) Probe 10:1 600V/BNC-M
Cat. #5000.50



(1) USB Drive
(software and manual)



(1) USB Cable + Driver
Cat. #2135.41



(1) Set of two, color-coded probes
Cat. #2152.23



(1) BNC Adapter
Cat. #2118.46



(1) Set of two,
color-coded leads and clips
Cat. #2140.63



(1) Black Tool Bag
Cat. #2133.72

Also Included:

- (1) Test Report
- (1) Battery Information Sheet
- (6) 1.2V NiMH rechargeable batteries 2700mA/h

USB DRIVE CONTENTS: The SX-METRO software and the Handscope's complete user manual.

PRODUCT PACKAGING 2150.22 KIT

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(1) BNC Adapter
Cat. #2118.46



(1) Set of two,
color-coded leads and clips
Cat. #2140.63



(1) Carrying Case
Cat. #2155.77



(1) Current Probe MN251T
Cat. #2132.59



(1) Current Probe MF3000-24-1-1
Cat. #2132.63

Also Included:

- (1) Test Report
- (1) Battery Information Sheet
- (6) 1.2V NiMH rechargeable batteries 2700mA/h

USB DRIVE CONTENTS: The SX-METRO software and the Handscope's complete user manual.

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(1) Set of two,
color-coded leads and clips
Cat. #2140.63



(1) Carrying Case
Cat. #2155.77



(1) Current Probe MN379T
Cat. #2153.02



(1) Current Probe MF3000-24-1-1
Cat. #2132.63

Also Included:

- (1) Test Report
- (1) Battery Information Sheet
- (6) 1.2V NiMH rechargeable batteries 2700mA/h

USB DRIVE CONTENTS: The SX-METRO software and the Handscope's complete user manual.

Precautions Before Use

The operator and/or the responsible authority must carefully read and completely understand the precautions before use. If you use this instrument in an unspecified manner, the protection it ensures can be compromised, thus putting you in danger.

- This instrument is designed for use:
 - indoors
 - in a level 2 pollution environment
 - at an altitude below 2000 m
 - at a temperature between 0° C and 40° C
 - with a relative humidity of less than 80% up to 35° C.
- The safety of all systems, including the instrument, is the responsibility of the operator.
- It can be used for measurements on 600V CAT III circuits, relative to the ground/earth.
- Before each use, check the condition of the insulation on the cables, boxes, sensors and accessories. Any element on which the insulation is damaged (even partially) must be taken out of service for repair or disposal.
- Respect the environmental and storage conditions.
- The external power supply must be connected to the instrument and to the network (98 to 264 VAC).
- The power supply to the instrument is fitted with an automatically resettable electrical protection after disappearance of the fault.
- As a safety measure, only use factory supplied parts and accessories.
- It is advised to use individual safety protection whenever the environmental situations in which the instrument is used require it.
- When handling the sensors or test probes, do not place your fingers beyond the physical guard.
- If the battery housing cover is absent, damaged or incorrectly positioned, the instrument must not be used other than to adjust the sensors.

Definition of Measurement Categories (CAT)

CAT IV Measurement category IV corresponds to measurements taken at the source of low-voltage installations.

Example: power feeders, counters and protection devices.

CAT III Measurement category III corresponds to measurements on building installations.

Example: distribution panel, circuit-breakers, machines or fixed industrial devices.

CAT II Measurement category II corresponds to measurements taken on circuits directly connected to low-voltage installations.

Example: power supply to domestic electrical appliances and portable tools.

Symbols Used



CAUTION! Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.



Warning: Risk of danger. Refer to the operating manual to find out the nature of the potential hazards and the action necessary to avoid such hazards.



Earth/Ground



Dual insulation



The trash can with a line through it means that in the European Union, the product must undergo selective disposal for the recycling of electric and electronic material, in compliance with Directive WEEE 2002/96/EC.



The CE marking guarantees conformity with European directives and with regulations covering EMC.



Application or withdrawal not authorized for non-insulated conductors carrying dangerous voltage levels

Power Supply

The oscilloscope is supplied with one external power supply and set of 6 x 1.2V NiMH rechargeable batteries 2700mA/h.

When the supplied wall plug is connected from the instrument to an external power source, battery power is not needed. The batteries are only used when there is no external power supply available.

Before the first use, start by fully charging the battery.



NOTE: The batteries automatically begin recharging when the Oscilloscope is powered off, but connected to an external power supply.

When the batteries are recharging, the Battery Charge LED on the front panel will turn on steady.

The LED will blink in the following situations:

- pre-charge of very low batteries
- temperature is too low or too high
- batteries are damaged

When the charge is complete, the LED will turn off.

If the batteries need to be replaced, they must be replaced with NiMH rechargeable batteries. Battery charge life is guaranteed for same-capacity batteries (in mAh) as those shipped with the oscilloscope.

To remove the battery cover, use a coin to turn the slot on the back of the unit counter-clockwise.

Description

The Handscope Oscilloscope Model OX5042-CK combines three instruments into one:

- 40MHz oscilloscope
- Independent 8000-count multimeter with power measurements
- Built-in harmonic analyzer out to the 31st harmonic (fundamental between 40 and 450Hz)

The instrument operates at a constant acquisition depth of 2500 points.

An LCD TFT screen is used to view the applied signals along with all the setting parameters.

The main command functions are accessible using the buttons on the front panel.

A graphic interface is used to:

- adjust the parameters related to the selected button
- navigate using a horizontal main menu showing the current settings and vertical sub-menus

Channel Isolation

The two oscilloscope input channels are isolated from each other and from the ground/earth and the main power supply block. This isolation is provided by double or reinforced insulation, in compliance with the safety standards IEC 61010-1 and IEC 61010-2-030.

This makes it possible to make measurements on installations or systems connected to the electricity supply network for voltages of up to 600V in CAT III. The common mode authorized between the two channels is 600V in CAT III. Thus the operator, the test systems and the environment are completely protected at all times.

Any voltage (even dangerous) on one channel will not be present on the other channel. The low points of the inputs are completely insulated, so there is no possibility of the low points looping (which can be dangerous and highly destructive).



NOTE: The use of accessories with a voltage and/or category lower than 600V CAT III reduces the operating range to the lower voltages and/or categories.

The oscilloscope is rated 600V CAT III; at least 600V CAT III accessories must be used.

Control Features



Measurement Terminals

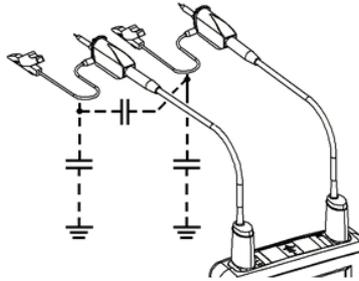


ITEM	BUTTON	DESCRIPTION
1		<p>OPERATING MODE BUTTONS</p> <p>Press these buttons to select the desired operating mode:</p> <ul style="list-style-type: none"> - Oscilloscope - Multimeter - Harmonic analyzer
2		<p>NAVIGATION BUTTONS</p> <p>Use these navigation buttons to move around the menus and dialog boxes:</p> <p>VERTICAL</p> <ul style="list-style-type: none"> - Vertical movement and automatic selection in the secondary menus - Adjustment of values in the main menus - Vertical movement in a dialog box <p>HORIZONTAL</p> <ul style="list-style-type: none"> - Horizontal movement through the main menus - Adjustment of values in the secondary menus - Horizontal movement in a dialog box <p>ENTER</p> <ul style="list-style-type: none"> - Opens a dialog box from a main menu or a secondary menu - Validation of the items in a dialog box
3		<p>CHANNEL A, B</p> <ul style="list-style-type: none"> - A single press selects channel A (or B) and shows the corresponding menu. - Pressing twice deselects the channel. <p>MATH/MEMORY BUTTONS</p> <ul style="list-style-type: none"> - A single press selects channel M (Math) and shows the corresponding menu. - Pressing twice deselects the channel. <p>NOTE: For the M (memory) channel, pressing twice invalidates the channel. Pressing once again selects the Math channel, the memory is lost and must be reloaded.</p>
4		<p>ON/OFF BUTTON</p> <ul style="list-style-type: none"> - The instrument is turned ON by a short press on this button. It is turned OFF by a long press (a shutdown message appears and a beep sounds).
5		<p>FUNCTION BUTTONS</p> <ul style="list-style-type: none"> - Auto Set: Performs an automatic adjustment on channels A and B. The success of each vertical autoset conditions the activation of the channel. - Run Hold: Starts or stops an acquisition.
6		<p>CHARGE STATUS</p> <ul style="list-style-type: none"> - Battery Charge LED

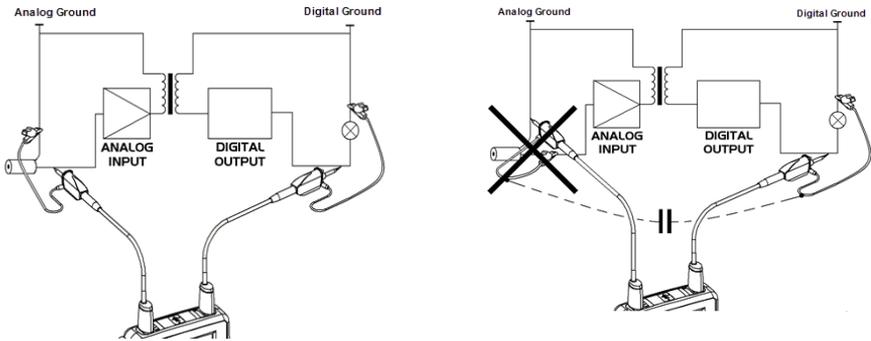
ITEM	BUTTON	DESCRIPTION
7		<p>OPTICAL COMMUNICATOR</p> <ul style="list-style-type: none"> - Provides the communication between the oscilloscope and a PC.
8		<p>TIME BASE BUTTONS</p> <ul style="list-style-type: none"> - increases the time base for acquisition up to 200 s. - decreases the time base for acquisition down to 25 ns.
9		<p>SENSITIVITY BUTTONS</p> <ul style="list-style-type: none"> - decreases the vertical sensitivity of the last selected channel down to 5mV. - increases the vertical sensitivity of the last selected channel up to 200V. <p>NOTE: For the M channel, the “sensitivity” buttons vary the amplitude factor but only if a math channel is validated.</p>
10		<p>MENU BUTTONS</p> <ul style="list-style-type: none"> - displays the main “Trigger” menu - displays the main “Tools” menu - displays the main “Acquisition” menu - displays the main “Memory” menu - displays the main “Measurement/Cursor” menu - displays the “Help” window

Use of the 10:1 Probes

Distribution of stray capacitors:



Considering the stray capacitances, it is imperative to correctly connect the reference conductors for each probe. The conductors should preferably be connected to the cold points to avoid the transmission of noise by the stray capacitance between modes.



The noise of the digital ground (earth) is sent to the analog input by the stray capacitance.



NOTE: In order to prevent electric shocks or possible fires, never use accessories on which the casing is accessible if it has a voltage of > 30Vrms compared to the ground.

10:1 Probe Calibration

To obtain optimum response, the probe's low frequency compensation must be adjusted.



NOTE: To carry out this adjustment, **the two channels of your oscilloscope must be disconnected** from the measured circuits before opening the battery housing cover.

The calibration output (3Vpp, 1kHz) for the probe is underneath the battery cover. To remove the battery cover, use a coin to turn the slot on the back of the unit counter-clockwise.

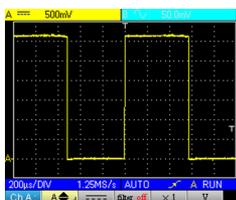


Connect the probe to be adjusted to the calibration output under the battery housing cover, as shown.

- Select the DC coupling for the channel to which the probe is connected and run an AutoSet  to carry out pre-setting.
- Adjust the sensitivity and the vertical offset of the channel so that the signal fills the screen, and adjust the time base to 200 μ s to view a signal period on the screen.
- Turn the BNC base of the probe in order to access the probe adjustment screw:



In this example, the probe is over-compensated: an overshoot occurs.



Turn the screw in either direction until the signal is horizontal and looks like the screen shown opposite. Your probe is now calibrated.

Turn the BNC base again to close access to the adjustment screw and replace the battery cover.

Remote Programming

The oscilloscope can be programmed remotely from a computer by using the SX-METRO software, which is located on the CD-ROM supplied with your instrument. This software is used to:

- Configure the instrument
- Perform measurements and retrieve the results
- Transfer files (traces, configuration, screenshots, etc.)

To communicate between the instrument and the computer:

- Connect the USB end of the cable to one of the PC's USB ports (if necessary install the driver shipped with the cable).
- Connect the optical connector to the oscilloscope, after first powering it up.
- Open SX-METRO; select USB communications and wait for communication to be established (in the event of a problem, refer to the SX-METRO instructions).

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be scheduled back to our factory Service Center at one-year intervals for recalibration, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization Number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (Includes calibration certificate plus recorded calibration data).

Ship To: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments

15 Faraday Drive

Dover, NH 03820 USA

Phone: (800) 945-2362 (Ext. 360)

(603) 749-6434 (Ext. 360)

Fax: (603) 742-2346 or (603) 749-6309

E-mail: repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: You must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, mail, fax or e-mail our technical support team:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments

Phone: (800) 945-2362 (Ext. 351) • (603) 749-6434 (Ext. 351)

Fax: (603) 742-2346

E-mail: techsupport@aemc.com

Limited Warranty

The Model OX5042 are warranted to the owner for a period of two years from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by AEMC® Instruments.

Full warranty coverage and registration is available on our website:

www.aemc.com

Please print the online Warranty Coverage Information for your records.

What AEMC® Instruments will do:

If a malfunction occurs within the warranty period, you may return the instrument to us for repair, provided we have your warranty registration information on file or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material.

Register your product online at www.aemc.com

Warranty Repairs

What you must do to return an Instrument for Warranty Repair:

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Ship To: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments

15 Faraday Drive

Dover, NH 03820 USA

Phone: (800) 945-2362 (Ext. 360)

(603) 749-6434 (Ext. 360)

Fax: (603) 742-2346 or (603) 749-6309

E-mail: repair@aemc.com

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

You must obtain a CSA# before returning any instrument.



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