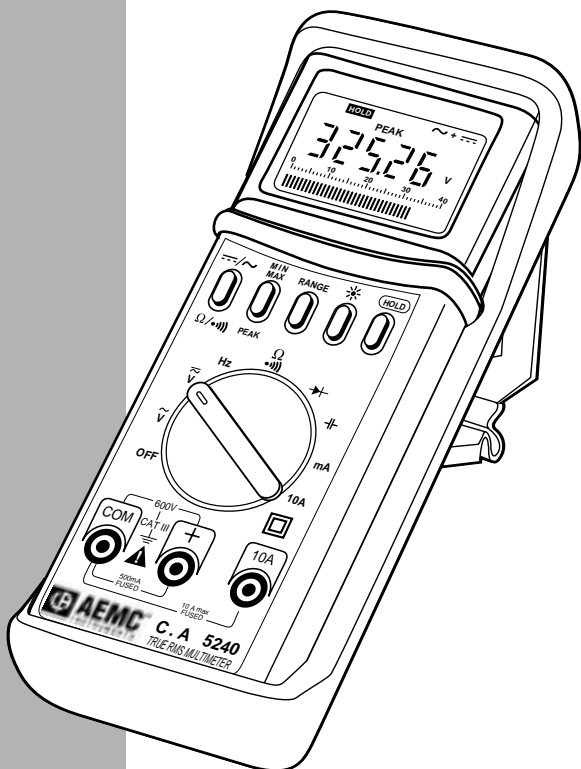


MULTIMETER

Digital Multimeter Model C.A 5240



ENGLISH

User manual

Meaning of the symbol

Warning ! Please refer to the User's Manual before using the instrument.

In this User's Manual, the instructions preceded by the above symbol, should they not be carried out as shown, can result in a physical accident or damage the instrument and the installations.

Meaning of the symbol

This device is protected by a double insulation or by a reinforced insulation. No linking is required from the protection earth terminal to ensure the electrical security.

Thank you for purchasing a **C.A 5240 Multimeter**.

To get the best service from this instrument :

- **read** this user's manual carefully,
- **respect** the safety precautions detailed.



SAFETY PRECAUTIONS



- Ensure that the value and type of fuses are respected; otherwise the instrument may be damaged and the warranty cancelled.
 - 0.5 A HBC fuse – rapid F (500 V min. – 10 kA – 6.3 x 32 mm)
 - 12 A HBC fuse – gR (600 V min. – 300 kA – 10.3 x 38 mm)
- Never use on voltage to earth circuits above 600 V, with a voltage surge category of over III, that is to say, fixed industrial and domestic installations (ref. IEC 664-1).
- To be used indoors in environments with a maximum pollution degree of 2 (ref. IEC 664-1), a temperature between 0 and 50°C and relative humidity below 70%.
- Use accessories which conform to safety standards (IEC 1010-2-031), with a minimum voltage of 600 V and a voltage surge of category III.
- Never open the multimeter case before disconnecting from any electrical source.
- Never connect up to a circuit to be measured if the multimeter case is not closed correctly.
- Before any measurements are taken, ensure the leads and switch are in the correct positions.
- Never measure resistances on a circuit with the power switched on.

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1 - PRESENTATION

The C.A. 5240 multimeter is intended to satisfy the everyday requirements of electricity professionals :

- true RMS measurement
- 40,000 count digital display and 40 segment bargraph
- automatic or manual selection of measurement
- stops automatically after 30 minutes if a command or function has not been activated
- possibility of permanent operation (see RANGE).

Various measurement accessories broaden the scope of application or provide the multimeter with new functions.

See the list of accessories and references on the " To Order " page (Documentation upon request).

Note : *Always use accessories suitable for the voltage and the voltage surge category of the circuit to be measured (as per IEC 1010).*

2 - DESCRIPTION

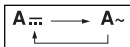
(See drawing in 13 - APPENDIX)

① LIQUID CRYSTAL DISPLAY

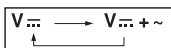
- 40,000 count measurement (height of figures: 10 mm)
Rate : 2 measurements per second
- 40-segment bargraph
Rate : 20 measurements per second
Note : the bargraph is inhibited in $V \sim + \sim$, Hz and --
- Automatic display of all command, measurement and function symbols
- Battery level indicator :
- Overrun indicator :
 - the 4th from the left flashes
 - arrow at the far end of the bargraph

② CONTROL BUTTONS

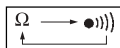
- \sim / \sim and $\Omega / \bullet \cdot \cdot \cdot$
- In mA and 10A, to switch from direct (\sim) to alternating (\sim) and vice versa



- In $V \sim$, to switch from $V \sim$ to $V \sim + \sim$ and vice versa



- In Ω , to switch from Ω to $\bullet \cdot \cdot \cdot$ and vice versa



HOLD

- To hold the display of the last measurement. HOLD is displayed.

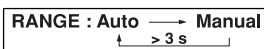
MIN - MAX / PEAK

- To display minimum and maximum values one after the other.
The instrument goes into manual measurement selection.
- Hold this button down to switch to PEAK mode (1 ms.) Only active in $V \sim$, mA and $A \sim$.

RANGE

- Selection of measurement: to switch from automatic to manual mode. Hold the button down (> 3 secs) to switch back to automatic mode.

Note : RANGE cannot be activated in Hz, automatic selection only.



- Permanent operation: possibility of inhibiting automatic cut-out, by keeping this button pressed before activating the switch from the OFF position.

Return to the OFF position cancels out permanent operation mode: the instrument automatically cuts out after 30 minutes if no command or function is activated.



To switch the display lighting on and off.

Note : switches off automatically after 1 minute.

③ FUNCTION SWITCH

- OFF** The off position
- V~** Alternating voltage up to 600 V
- V \simeq** Direct and alternating voltage up to 600 V
- Hz** Voltage frequency, up to 500 kHz
- Ω** Audible continuity test for $R \leq 40 \Omega$, resistance and resistance measurements up to 40 M Ω
- Diode test. Junction voltage. RANGE is displayed
- Capacities up to 40 μF
- mA** Current up to 400 mA $\overline{\sim}$ and \sim (on + terminal)
- 10 A** 10 A $\overline{\sim}$ and \sim current (on 10 A terminal). RANGE is displayed.

④ \varnothing 4 mm SAFETY TERMINALS

- COM** : common, terminal for black-lead
- +** : terminal for red-lead
- 10 A** : terminal for red-lead 10 A $\overline{\sim}$ and \sim measurements

3 - DC AND AC VOLTAGE

- Plug the leads into the multimeter and connect up in parallel to the circuit to be tested.
 - Put the switch in the voltmeter V~ or V \simeq position
 - Automatic measurement selection: read off the value measured
 - Save the value, if necessary, by pressing on the HOLD button.
- If necessary, press on the following buttons:
- RANGE to select the measurement manually
 - MIN-MAX to read off minimum, maximum or PEAK values
 - To light up the display.

V \simeq and \sim ⁽¹⁾	400 mV	4 V	40 V	400 V	600 V ⁽²⁾
Digital resolution	10 μ V	100 μ V	1 mV	10 mV	100 mV
Bargraph resolution	1 mV	10 mV	100 mV	1 V	10 V
Impedance	3 M Ω		2.3 M Ω		
Accuracy in DC	$\pm 0.15\%$ R ± 10 counts	$\pm 0.1\%$ rdg ± 3 count			
Accuracy in AC	$\pm 1.2\%$ R ± 20 counts	$\pm 1.5\%$ rdg ± 20 counts			
Accuracy AC + DC	(2)	$\pm 1.5\%$ R ± 10 counts	$\pm 2\%$ reading ± 20 counts		
Permitted overload	600 V eff. and 900 V peak				

(1) Peak factor $F_c \leq 3$ (full scale), Peak factor $F_c \leq 6$ (mid-scale).

40 Hz frequency at 1 kHz, except for 400 mV~, measurement from 40 to 60 Hz. Rejection ratio: in common mode up to 1000 V $\overline{\sim}$ > 110 dB and in series mode > 55 dB (50 and 60 Hz).

(2) Not accessible

4 - FREQUENCY

- Plug the leads into the multimeter and connect in parallel to the circuit to be tested.
- Put the switch in the Hz voltage frequency position
- Automatic measurement selection: read off the value measured
Note : *the bargraph is inhibited when measuring frequency*
- If necessary, press on the following buttons :
 - MIN-MAX to read min. and max. values
 - ✱ to light up the display

Hz	100 Hz	1 kHz	10 kHz	100 kHz (2)	400 kHz
Resolution	0.01 Hz	0.1 Hz	1 Hz	10 Hz	100 Hz
Accuracy	± 0.1% reading				
	± 10 counts	± 4 counts			± 10 counts
Permitted overload	500 V rms and 750 V peak				
Operating range (1)	(1) at 500 V				

(1) Trigger threshold :

- > 500 mV from 1 Hz to 100 kHz
- > 1.5 V from 100 kHz to 500 kHz

5 - CONTINUITY AND RESISTANCE



Never test a resistance on a live circuit

- Plug the leads into the multimeter and connect to the terminals of the circuit or component to be tested.
- Put the switch in the ohmmeter Ω position
Press on the Ω / \bullet button to switch from the audible continuity test to the measurement of resistance and vice versa.
- Automatic measurement selection: read off the value measured
- To save the measurement, if required, press on the HOLD button.

If necessary, press on the following buttons :

- RANGE to select the measurement manually
- MIN-MAX to read min. and max. values
- ✱ to light the display

5-1 Resistances

Ω	400 Ω	4 k Ω	40 k Ω	400 k Ω	4 M Ω	40 M Ω
Digital resolution	0.1 Ω	1 Ω	10 Ω	100 Ω	1 k Ω	10 k Ω
Bargraph resolution	10 Ω	100 Ω	1 k Ω	10 k Ω	100 k Ω	1 M Ω
Accuracy	$\pm 0.3\%$ rdg ± 10 cts	$\pm 0.2\%$ rdg ± 3 cts			$\pm 0.2\%$ rdg ± 6 cts	$\pm 1\%$ rdg ± 10 cts
Voltage when circuit is live	< 1.2 V	< 2.5 V $\overline{\text{---}}$				
Protection	500 V rms and 750 V peak					

5-2 Audible continuity test ●)))

On the 400 Ω , measurement, a continuous beep is emitted for a resistance $R < 40 \Omega$. Response time : 100 m. secs.

Protection : same as resistances

6 - DIODE TEST



Never test a diode on a live circuit.

- Plug the leads into the multimeter and connect to the terminals of the component to be tested.
- Put the switch in the $\rightarrow|$ function :
 - in the direct direction, the display gives the value of the junction in volts (1 mV resolution)
 - accuracy : $\pm 1\%$ L ± 10 ct
 - live circuit voltage : < 3 V $\overline{\text{---}}$
 - short circuit current : 0.8 mA
 - in the reverse direction, the display indicates the voltage of the live circuit, in the region of 4 V.
- Save the value, if necessary by pressing on the HOLD button
- With this function, apart from testing classic diodes, it is also possible to test electroluminescent diodes (LED's or any other semi-conductor whose junction corresponds to a direct voltage of less than 3 V).
- Protection : same as resistances

7 - CAPACITANCE




Never measure capacity on a live circuit.

Always respect the polarity of the electrolytic condensers. This type of condenser may be temperature-sensitive; do not touch it, therefore, during measurement.

- Plug the leads into the multimeter and connect to the condenser terminals.
- Put the switch in the capacitance meter position $\text{--}||\text{--}$
- Automatic measurement selection: read off the value measured
Note : *The bargraph is inhibited during capacitance measurement*
- To save the measurement, if required, press on the HOLD button.

If necessary, press on the following buttons :

- RANGE to select the measurement manually
- MIN-MAX to read min. and max. values
- \ast to light the display

	4 nF	40 nF	400 nF	4 μF	40 μF (1)
Resolution	1 pF	10 pF	100 pF	1 nF	10 nF
Accuracy	± 3 % rdg ± 20 ct		± 1.5% rdg ± 5 cts		± 2 % R ± 5 ct
Protection	500 V rms and 750 V peak				

(1) For a capacitance $C > 20 \mu\text{F}$, the accuracy is $\pm 3.5\% \text{ rdg} \pm 10 \text{ counts}$

8 - DC AND AC CURRENT



Always disconnect the circuit to be tested before connecting the multimeter to the circuit.

- Be careful : plug the leads into the multimeter and connect in series to the circuit :
 - the red lead on the “+” Terminal, up to 400 mA
 - the red lead on the “10 A” terminal, from 400 mA to 10 A
- Put the switch in the ammeter A or mA position
Press on the $\text{---}/\sim$ button to select d.c. or a.c.
- Reconnect the circuit to be tested to the power
- Automatic measurement selection : read off the value measured
- If necessary, press on the following buttons :
 - RANGE to select the measurement manually
 - MIN-MAX to read min. and max. values
 - \ast to light the display

A $\overline{\sim}$ and ~	40 mA	400 mA	10 A
Voltage drop ⁽¹⁾	200 mV	1 V	400 mV
Digital resolution	1 μ A	10 μ A	1 mA
Bargraph resolution	0.1 mA	1 mA	100 mA
Accuracy in DC	$\pm 0.5\%$ rdg ± 5 counts		$\pm 1.5\%$ rdg ± 10 counts
Accuracy ⁽²⁾ in AC	$\pm 0.9\%$ rdg ± 10 counts		$\pm 1.5\%$ rdg ± 5 counts
Protection ⁽³⁾	Fuse 0.5 A HBC		Fuse 12 A HBC

(1) Voltage drop at terminals for 40 mA, 400 mA, 10 A

Peak factor $FC \leq 3$ (full scale) and $FC \leq 6$ (mid-scale)

(2) Use for 40 Hz to 1000 Hz frequencies

(3) Admissible overloads : 12 A for 30 seconds for 10 A measurements

600 mA for 30 seconds for 400 mA measurements

9 - GENERAL SPECIFICATIONS

9-1 Dimensions and weight

■ 2.5 x 7 x 1.7 " (64 x 177 x 42 mm)


■ 12.3 ounces (350 g)

9-2 Power supply

■ One battery 9 V

■ Autonomy : 200 hrs with type 6 F22 battery

400 hrs with alkaline type 6 LF 22 battery

■ Indication of battery wear : 

■ Automatic cut-out after 30 minutes

Note : Restart from the OFF position

9.3 Buzzer

■ Continuous audible beep for the continuity test

■ Intermittent audible beep each time the switch and buttons are activated and to indicate overruns.

9-4 Climatic conditions

■ Temperature : use : 0°C to +50°C / storage : -20°C to +60°C


■ Relative humidity : use : $\leq 70\%$ RH

storage : $\leq 80\%$ RH

■ Altitude : use < 2000 m

9-5 Conformity with international standards

9-5-1 Electrical safety (as per IEC 1010-1)

■ Double insulation : 

■ Installation category : III

■ Degree of pollution : 2

■ Assigned voltage : 600 V RMS

Note : This overload category III multimeter conforms to the strict reliability and availability requirements corresponding to fixed industrial and domestic installations (IEC 664-1).

9-5-2 Electromagnetic compatibility: conforms to CE

■ Emission (EN 50081-1) ■ Immunity (EN 50082-1)

9-5-3 Mechanical protection

■ Degree of watertightness (IEC 529) : protection index IP 40

10 - TO ORDER

Use designations and references below

C.A 5240 Cat# **2116.77**

Sold with shockproof case, a pair of leads with probes attached,
a 9 V battery and this user's manual

Accessories

■ AC current probe model MN 251 (200 A AC) Cat# **2115.77**

■ AC current probe model MD 303 (500 A AC) Cat# **1201.21**

■ AC current probe model SR 652 (1000 A AC) Cat# **2113.46**

■ AC/DC MicroProbe model K110

(from 100 μ A AC/DC to 300 mA AC/ 450 mA DC) Cat# **2111.73**

■ AC/DC current probe model MR410

(400 A AC/600 A DC) Cat# **1200.70**

■ Amp**FLEX** model 1000-24-1-1 (1000 A AC) Cat# **2112.39**

■ Replacement leads Cat# **2118.66**

■ Soft carrying case Cat# **2118.65**

■ Replacement shockproof case Cat# **2980.15**

■ Fuse set of 10, 0.5 A Cat# **2970.28**

■ Fuse set of 10, 12 A Cat# **2970.21**

11 - WARRANTY

Our guarantee is applicable for **three years** after the date on which
the equipment is made available (copy available on request).

12 - MAINTENANCE



For maintenance, use only specified spare parts.

**The manufacturer will not be held responsible for any
accident occurring following a repair done other than by its
After Sales Service or approved repairers.**

12-1 Replacement of battery and fuses



**The multimeter must be disconnected from any electrical
source.**

■ Put the switch in the OFF position

■ Unscrew the captive screws and remove the lower half of the casing

■ Replace the worn battery with a 9 V battery (6F22 or 6LF22)

- Replace the faulty fuses, ensuring value and type are respected :
 - 0.5 A HBC rapid F fuse (600 V – 10 kA – min 6.3 x 32 mm)
 - 12 A HBC gR fuse (600 V min. – 300 kA – 10.3 x 38 mm)

12-2 Storage

If the multimeter is not to be used for a period of 60 days or more, remove the battery and store separately.

12-3 Cleaning



The multimeter must be disconnected from any electrical source.

To clean the case, use a cloth dampened with soapy water. Rinse with a damp cloth. Then dry quickly with a cloth or pulsated air.

12-4 Repair and calibration

To guarantee that your instrument complies with the factory specifications, we recommend that the Model C.A 5240 be submitted to our factory service center at one-year intervals for recalibration, or as required by other standards.

For instrument repair and/or calibration, please call our factory, toll-free, at **(800) 945-AEMC** (800-945-2362) :

CHAUVIN ARNOUX, Inc.
d.b.a. AEMC® Instruments
15 Faraday Drive
Dover, NH 03820 USA
Tel : (800) 954-2362
(603) 749-6434
Fax : (603) 742-2346

(Or contact your authorised distributor)

Estimates for repairs, normal recalibration, and and calibration traceable to N.I.S.T. are available upon request. Overseas customers must receive written authorisation before returning any instrument.

12-5 Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper use or application of this instrument, please call our technical hotline :

CHAUVIN ARNOUX, Inc.
d.b.a. AEMC® Instruments
99 Chauncy St.
Boston, MA 02111 USA
Tel : (800) 343-1391
(617) 451-0227
Fax : (617) 423-2952

www.aemc.com