



REM/ARM/CQM TEST MODULE



CQM-2000

USER MANUAL

**BC BIOMEDICAL
CQM-2000
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WARNING - USERS

The CQM-2000 is for use by skilled technical personnel only.

WARNING - USE

The CQM-2000 is intended for testing only should never be used in diagnostics, treatment or any other capacity where they would come in contact with a patient.

WARNING - MODIFICATIONS

The CQM-2000 is intended for use within the published specifications. Any application beyond these specifications or any unauthorized user modifications may result in hazards or improper operation.

WARNING - CONNECTIONS

All connections to patients must be removed before connecting the DUT to the CQM-2000. A serious hazard may occur if the patient is connected when testing with the CQM-2000. Do not connect any leads from the patient directly to the CQM-2000 or DUT.

WARNING - LIQUIDS

Do not submerge or spill liquids on the CQM-2000. Do not operate the CQM-2000 if internal components not intended for use with fluids may have been exposed to fluid, as the internal leakage may have caused corrosion and be a potential hazard.

CAUTION - SERVICE

The CQM-2000 is intended to be serviced only by authorized service personnel. Troubleshooting and service procedures should only be performed by qualified technical personnel.

CAUTION - CLEANING

Do not immerse. The CQM-2000 should be cleaned by wiping gently with a damp, lint-free cloth.

CAUTION - INSPECTION

The CQM-2000 should be inspected before each use for obvious signs of abuse and wear. The CQM-2000 should not be used and should be serviced if any parts are in question.

NOTICE – ABBREVIATIONS

ARM	Automatic Return Monitor
C	Celsius
CQM	Contact Quality Monitor
°	Degree(s)
DUT	Device Under Test
ESU	Electrosurgical Unit
F	Fahrenheit
kg	kilogram(s)
mm	millimeter(s)
Ω	ohm(s)
lbs	pounds
REM	Return Electrode Monitor
USA	United States of America

NOTICE – DISCLAIMER

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NOTICE – CONTACT INFORMATION

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**BC BIOMEDICAL
CQM-2000
REM/ARM/CQM TEST MODULE**

The CQM-2000 is used to test the Return Electrode Contact Quality Monitor of an Electrosurgical Unit. The CQM-2000 provides an adjustable resistance from 0 to 210 ohms in 1 ohm increments. The internal switches are 'make-before-break' type to ensure that the CQM circuit in the DUT does not see a momentary open condition.

To Operate the Unit:

- Connect the DUT Return electrodes to the CQM-2000 Test Jacks.
- Set the Resistance using the knobs on the CQM-2000 Front Panel.

Many ESUs measure a baseline resistance as the CQM connector is plugged in.

The DUT should alarm based on the following conditions:

- If the Resistance is too low, a CQM alarm should occur.
- If the Resistance is too high, a CQM alarm should occur.
- If the Resistance changes some percentage above or below the baseline resistance, a CQM alarm should occur.

Baseline Resistance limits and percent resistance rise limits vary based on ESU manufacturer. Consult DUT manual for these parameters.

MANUAL REVISIONS

<u>Revision #</u>	<u>Revisions Made</u>
Rev 01	Origination
Rev 02	Updated Format
Rev 03	Updated Format
Rev 04	Format Updated, Misc. Edits

LIMITED WARRANTY

WARRANTY: BC GROUP INTERNATIONAL, INC. WARRANTS ITS NEW PRODUCTS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER THE SERVICE FOR WHICH THEY ARE INTENDED. THIS WARRANTY IS EFFECTIVE FOR TWELVE MONTHS FROM THE DATE OF SHIPMENT.

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REMEDIES: THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE: (1) THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS OR PRODUCTS, WITHOUT CHARGE. (2) AT THE OPTION OF **BC GROUP INTERNATIONAL, INC.**, THE REFUND OF THE PURCHASE PRICE.

SPECIFICATIONS

RESISTANCE

RANGE	0 to 210 Ω
ACCURACY	$\pm 0.5\%$ Setting + 0.5 Ohm (NOTE: Accuracy after subtraction of zero resistance.)
CONNECTIONS	Safety Jack, 4 mm

ENVIRONMENTAL AND PHYSICAL

OPERATING RANGE	15° to 40° C (59° to 104° F)
STORAGE RANGE	-20° to 65° C (-4° to 149° F)
CONSTRUCTION	Enclosure – ABS Plastic, Face – Lexan Printed
SIZE	5.12 x 2.56 x 0.97 inches (130 x 65 x 25 mm)
WEIGHT	≤ 0.4 lbs (0.18 kg)

NOTES



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