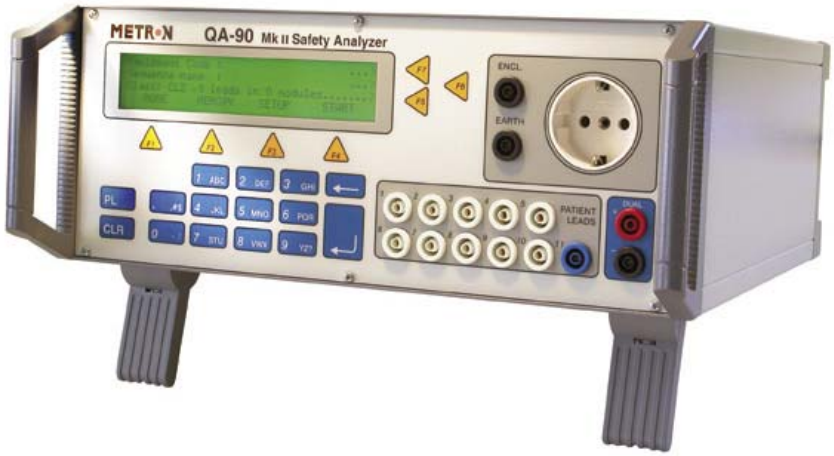

QA-90

MKII Electrical Safety Analyzer

PRODUCT HIGHLIGHTS

- Small size - easy to carry
- Can operate completely standalone or by remote control with the *ansur* software
- Tests instruments containing modules with different protection classes in one test run i.e. CF and BF (defibrillator)
- Tests module separation
- Differential current measurements (optional)
- 11 patient inputs (laboratory style)
- Test according to: IEC 60601.1, IEC 60601.1.1, IEC 60601.2.4, IEC 61010, VDE 751-1:1990, VDE 751-1: 2001, UL 2601.1, AS 3200.1, DB 9801, HEI 95, AAMI.
- Testing against standard or user defined limits
- Automatic, stepwise and manual test modes
- Programmable power up delay time before measurements
- Integrated keypad
- Internal memory for uploading test sequences and storing typically up to 200 equipment test results
- Built-in standard A4 protocols for on site documentation (localised)
- RS-232, Centronics and Bar code interface

OVERVIEW

The QA-90 represents a new generation of safety testing equipment. QA-90 is the only automatic safety tester that can test Instruments containing modules with different classes of protection in one test run (i.e. CF and BF defibrillators). It is simple to use. All you need to do is select the type and class of the equipment to be tested. When you press START, the QA-90 will execute the tests prescribed in the selected standard.

The test result can either be printed out immediately or stored internally in the unit for later use. The QA-90 can be fully remotely controlled via *ansur* software. With *ansur*, you can make your own test protocols, store the information on disk and export formatted data to equipment management databases.

Test sequence:

Individual test sequences may be compiled to satisfy national and international standards:
IEC 60601.1, VDE 0750 T1/12-91, BS 5724,
UL 2601.1, CAN/CSA-C22.2 No 601.1-M90, AS 3200.1,
NZS 6150:1990, VDE 0751:1990, VDE 0751:2001,
IEC 60601.1.1, IEC 60601.2.4, UL 544, HEI 95, DB9801 and more.

QA-90 Specifications

VOLTAGE MEASUREMENT:

The voltage measurement may be executed in the following ways:

- Between lead 1 and 2
- Between lead 1 and Earth
- Between lead 2 and Earth
- Between input/output E+ and E- (Floating inputs/outputs).

Range: 0-400V true RMS
Resolution: 0.1V
Accuracy: DC-100 Hz 1% of full scale ±1 LSD
100 Hz-10 kHz 2% of scale ±1 LSD
No. of Tests: 4 or multiple

CURRENT CONSUMPTION:

The current measurement may be executed in lead no. 1 (live).

Range 1: 0-1000mA true RMS (@<250VAC)
Resolution: 1mA
Accuracy: ±2% of full scale ±1 LSD
No. of Tests: 1 or multiple

Range 2: 1-16A true RMS (@<250VAC)
Resolution: 1mA
Accuracy: ±1% of full scale ±1 LSD
No. of Tests: 1 or multiple

PROTECTIVE EARTH:

The test current is 25A or 1A, delivered from a transformer with a maximum idle voltage of 6V. The measurement can be performed on ground leads or between E+ and E- (floating inputs/outputs).

Range: 0-2000 mohm
Resolution: 1 mohm
Accuracy: ±2% of full scale or 5% of reading
No. of Tests: 1, 2 or multiple.

INSULATING RESISTANCE:

The measurement of the insulating resistance may be executed between casing and power unit, or between patient module and power unit.

Test voltage: 500VDC through a 130 kohm limiting resistor.
No. of Tests: 1, 2 or multiple.

Range 1: 1-50 Mohm
Resolution: 1 Mohm
Accuracy: ±2% of full scale ±1 LSD

Range 2: 51-200 Mohm
Resolution: 1 Mohm
Accuracy: ±2% of full scale ±1 LSD

LEAKAGE CURRENTS:

All measurements can be performed with a IEC 601.1 filter (patient equivalent), or without (flat frequency response). The filter can be exchanged with filters covering other standards. All measurements can be performed as true RMS measurements, or AC/DC measurements.

The following leakage currents are measured:

	No. of Tests:
• Earth leakage current	4
• Enclosure leakage current	6 or multiple
• Differential current	2
• Substitute equipment current	1
• Direct current	2
• Current Fig. 9	1

The following leakage currents are measured for each module:

• Patient leakage current	6
• Mains on applied part leakage current	2
• Patient Auxiliary current	6
• Floating dual lead measurement of leakage currents	Multiple
• Substitute patient current	1

In one test run a maximum of 11 modules with different protection classes may be tested.

ACCURACY:

Range 1: 0-99.9 µA
Resolution: 0.1 µA
Accuracy: ± 2% of full scale ±1 LSD

Range 2: 100-1000 µA
Resolution: 1 µA
Accuracy: ± 2% of full scale ±1 LSD

Range 3: 1.0-10.0 mA
Resolution: 1 µA
Accuracy: ± 1% of full scale ±1 LSD

FREQUENCY RESPONSE:

DC - 1 MHz (-3dB) with a Crest factor: >2

The test voltage for the mains on applied part measurement is 110% of the line voltage, delivered through a limiting resistor of 47 kohm.

ansur SOFTWARE OFFERS THE FOLLOWING FEATURES

REMOTE CONTROL:
All functions and tests in QA-90 may be performed from the PC.

USER-DEFINITION OF TEST STANDARDS:
Select predefined standards or create your own local/new standard with test limits.

USER-PROGRAMMABLE TEST SEQUENCES:
Allows user-defined test sequences with a selection of tests from the selected test standard.

CUSTOMIZED PROTOCOLS:
Create your own protocol format including a header, checklist, job instructions, a command field and a test sequence.

STORAGE AND RECALL:
Protocol formats and data may be stored, recalled, printed out or transferred to D-base systems.

PRINT OUT:

METRON QA-90 Electrical Safety Analyzer Ver. x.xx QA-90 Serial no.:
Operator :
Establishment :

-- EQUIPMENT INFORMATION --

Equipment Code : 123 Class : CL1
Module Code : ECG Group 1 Type : CF No of leads :
Serial No :
Status :
Mod. :
Manufacturer :
Model :
Type :
Location :

-- SETUP DATA --

Test according to : IEC601.1 Test Mode : Automa.
Power-up delay time : 2 Stop at new power config : N
Stop at new module : N Stop before new power config : N
Multiple Protective Earth Test : N Multiple Enclosure Tests : N
Protective Earth test current : 25 A External Isolating Transformer : N

TEST <Rapid>	TYPE		LIMIT	RESULT	WARNING
Supply Voltage	Live - Neutral			240.0 V	
Supply Voltage	Live - Ground			240.0 V	
Supply Voltage	Neutral - Ground			0 V	
Current Consumption				285.0 mA	
Protective Earth			200 mOhm	260.0 mOhm	x
Insulation Resistance	Mains to Case			>200.0 MOhm	
Insulation Resistance	Applied Part Mod. 1			>200.0 MOhm	
Earth Leakage Current		(OS)	1000 µA	627.0 µA	
Earth Leakage Current		(NC)	500 µA	407.0 µA	
Earth Leakage Current		(OSRM)	1000 µA	626.0 µA	
Earth Leakage Current		(NCRM)	500 µA	413.0 µA	
Enclosure Leakage Current		(OS)	500 µA	30.0 µA	
Enclosure Leakage Current		(NC)	100 µA	5.0 µA	
Enclosure Leakage Current		(OE)	500 µA	409.0 µA	
Enclosure Leakage Current		(OSRM)	500 µA	33.0 µA	
Enclosure Leakage Current		(NCRM)	100 µA	8.0 µA	
Enclosure Leakage Current		(OERM)	500 µA	413.0 µA	
Patient Leakage Current	AC Mod. 1, Lead 3	(OS)	50 µA	4.0 µA	
Patient Leakage Current	AC Mod. 1, Lead 3	(NC)	10 µA	1.0 µA	
Patient Leakage Current	AC Mod. 1, Lead 3	(OE)	50 µA	5.0 µA	
Patient Leakage Current	AC Mod. 1, Lead 3	(OSRM)	50 µA	3.0 µA	
Patient Leakage Current	AC Mod. 1, Lead 3	(NCRM)	10 µA	0.0 µA	
Patient Leakage Current	AC Mod. 1, Lead 3	(OERM)	50 µA	3.0 µA	
Patient Auxiliary Current	AC Mod. 1, Lead 3	(OS)	50 µA	10.0 µA	
Patient Auxiliary Current	AC Mod. 1, Lead 1	(NC)	10 µA	1.0 µA	
Patient Auxiliary Current	AC Mod. 1, Lead 1	(OE)	50 µA	5.0 µA	
Patient Auxiliary Current	AC Mod. 1, Lead 3	(OSRM)	50 µA	12.0 µA	
Patient Auxiliary Current	AC Mod. 1, Lead 3	(NCRM)	10 µA	3.0 µA	
Patient Auxiliary Current	AC Mod. 1, Lead 3	(OERM)	50 µA	6.0 µA	
Mains on Applied Part	Mod. 1	(SFC)	50 µA	25.0 µA	
Mains on Applied Part	Mod. 1	(SFCRM)	50 µA	35.0 µA	
Patient Auxiliary Current	DC Mod. 1, Lead 3	(OS)	50 µA	0.0 µA	
Patient Auxiliary Current	DC Mod. 1, Lead 3	(NC)	10 µA	0.0 µA	
Patient Auxiliary Current	DC Mod. 1, Lead 3	(OE)	50 µA	0.0 µA	
Patient Auxiliary Current	DC Mod. 1, Lead 3	(OSRM)	50 µA	0.0 µA	
Patient Auxiliary Current	DC Mod. 1, Lead 3	(NCRM)	10 µA	0.0 µA	
Patient Auxiliary Current	DC Mod. 1, Lead 3	(OERM)	50 µA	0.0 µA	
Patient Leakage Current	DC Mod. 1, Lead 3	(OS)	50 µA	0.0 µA	
Patient Leakage Current	DC Mod. 1, Lead 3	(NC)	10 µA	0.0 µA	
Patient Leakage Current	DC Mod. 1, Lead 3	(OE)	50 µA	0.0 µA	
Patient Leakage Current	DC Mod. 1, Lead 3	(OSRM)	50 µA	0.0 µA	
Patient Leakage Current	DC Mod. 1, Lead 3	(NCRM)	10 µA	0.0 µA	
Patient Leakage Current	DC Mod. 1, Lead 3	(OERM)	50 µA	0.0 µA	

Unit passed test : Unit failed test : x
Comments :
Date-Time/Signature : xx/xx/xxxx-xx.xx

Example of printout of a test.

GENERAL INFORMATION

TEMPERATURE REQUIREMENTS:

+15°C to +35°C while operating
0°C to +50°C for storage

DISPLAY:

Type: LCD
Alphanumeric format: 4 lines by 40 characters
Display control: 7 F-keys and a keypad

DATA INPUT/OUTPUTS (2):

Parallel printer port (1); bi-directional RS-232C (1) for Computer control.
Bar code interface.

POWER: From 100 VAC to 240 VAC, 47/63 Hz.

HOUSING: Metal case

DIMENSIONS: L x W x H:
305mm x 342mm x 132mm

WEIGHT: 5.8 kg

STANDARD ACCESSORIES:

User/Service manual.

RECOMMENDED PRINTERS:

HP Desk Jet, Canon Bubble Jet or compatible

QA-90 ORDERING INFORMATION

Order no:

11020: QA-90 MKII Electrical Safety Analyzer (specify power supply socket)

Accessories:

Various power supply socket including: European Schuco, French Schuco, UK, Swiss, Australian, US.

11100: Carrying Case
11110: Hard Case
10500: Carrying Case, ext. printer
11400: Bar code reader
11401: Isolating transformer 400VA
11410: Isolating transformer 800VA
11402: Test unit (ESA)
11451: E-Input Measuring Cable, 2m, black
11452: E-Input Measuring Cable, 2m, red
11481: E-Input Measuring Cable, 5m, black
11482: E-Input Measuring Cable, 5m, red
11461: Clamp - Crocodile style, black
11462: Clamp - Crocodile style, red
11471: Grip C, black
11472: Grip C, red
11200: *ansur* QA-90 plug-in
11201: *ansur* QA-90 plug-in, demo
11225: User manual *ansur* QA-90 plug-in
11025: User/Service manual QA-90