QA-40

MKII Defibrillator Analyzer

PRODUCT HIGHLIGHTS

- Biphasic energy measurement.
- Energy and cardioversion measurement.
- Peak voltage and current reading.
- Storage and playback of output waveform.
- 12 lead ECG simulation.
- ECG, Performance and Arrhythmia simulation.
- Automatic defibrillator test procedures.
- Large graphic display.
- RS-232C and Centronic printer interface.
- Battery operation or AC adapter.

OVERVIEW

The QA-40 MKII is a defibrillator analyzer developed for testing all external defibrillators. The unit may operate as a powerful stand-alone device or may be incorporated into an automated PC-based and remotely controlled.

The test result can either be written directly to a printer from the QA-40, or they may be transferred to *ansur* QA-40/45 test automation software. With *ansur*, you can make your own test protocols, store protocols and test results to disk, and provide test data to update your equipment management database.

QA-40 MKII Specifications

ENERGY OUTPUT MEASUREMENT

HIGH RANGE:

Voltage:	< 5000 V
Maximum current:	120 A
Maximum Energy:	1000 J
Accuracy:	±2 % of reading for > 100 J
	±2 J of reading for < 100 J
Trigger level:	100 volts
Playback amplitude:	1 mV/1000 V Lead I
Test pulse:	125 J ±20%

LOW RANGE:

Voltage:	< 1000 V
Maximum current:	24 A
Maximum Energy:	50 J
Accuracy:	±2 % of reading for > 20 J
	±2 J of reading for < 20 J
Trigger level:	20 volts
Playback amplitude:	1 mV/200 V Lead I
Test pulse:	5 J ±20%
Load resistance:	50 ohms ±1 %; non-inductive (< 1 µH)
Display resolution:	0.1 J
Measurement time Window:	100 ms
Absolute max. peak Voltage:	6000 V
Pulse width:	100 ms

Cardioversion: Measured time delay ±2 ms
Biphasic Measurement

OSCILLOSCOPE OUTPUT:

High Range: 1000:1 amplitude attenuation
Low Range: 200:1 amplitude attenuation

WAVEFORM STORAGE AND PLAYBACK:

Discharge can be viewed via ECG outputs and paddles

Output: 200:1 Time Base Expansion

SYNC TIME MEASUREMENTS:

Timing window:	Starts 40 ms before each R wave peak
Test waveforms:	All Waveform simulations available
Delay time accuracy:	±1 ms

CHARGE TIME MEASUREMENT:

From 0.1 to second to 99.9 seconds

ECG WAVE

ECG GENERAL:

Lead configuration:	12-lead simulation. RL, RA, LA, LL, V1-6
Output Impedance:	
Limb leads:	1000 ohms to RL
V Leads:	1000 ohms to RL
High level Output:	1.0 V/mV of low level (lead II)

MANUAL ECG PERFORMANCE TEST:

DC Pulse:	4.0 seconds 1.0 mV
Square wave:	2 Hz 1.0 mV p-p
Triangle wave:	2 Hz 1.0 mV
Sine waves:	0.1, 0.2, 0.5, 10, 40, 50, 60, 100Hz
Amplitudes:	0.5, 1.0, 1.5, 2.0 mV (Lead II)
Accuracy:	±5 % (Lead II 1.0 mV)

ECG PERFORMANCE TEST:

Gain/Damping:	2 Hz square wave
Frequency response:	
Low Frequency:	4 second DC pulse
Band Pass:	10 Hz sine
Monitor:	-3dB point: 40 Hz sine
Power line notch filter:	50 Hz sine
Linearity:	2 Hz triangle wave

NORMAL SINUS:

Rates:	30, 60, 80, 120, 180, 240 & 300 BPM
Accuracy:	±1 % of selection
Amplitudes:	0.5, 1.0, 1.5, 2.0 mV (Lead II)
Accuracy:	±5 % (Lead II 1.0 mV)

Automatic ECG rate Test

ARRHYTHMIA SELECTIONS:

vfib	– Ventricular Fibrillation
afib	– Atrial Fibrillation
blk II	– Second degree A-V block
RBBB	– Right Bundle Branch Block
PAC	– Premature Atrial Contraction
PVC_E	– Early PVC
PVC_STD	– PVC
PVCRonT	– R on T PVC
mfPVC	– Multifocal PVC
bigeminy	– Bigeminy
run5PVC	– Run of 5 PVCs
vtach	– Ventricular Tachycardia

SHOCK ADVISORY ALGORITHM TEST:

8 ECG signals are available to test the advisory algorithm of Automatic defibrillators:

- Asystole
- CVF: Coarse Ventricular Fibrillation
- FVF: Fine Ventricular Fibrillation
- MVT 140: Multifocal Ventricular Tachycardy @ 140 BPM
- MVT 160: Multifocal Ventricular Tachycardy @ 160 BPM
- PVT 140 : Polyfocal Ventricular Tachycardy @ 140 BPM
- PVT 160 : Polyfocal Ventricular Tachycardy @ 160 BPM
- SVTa 90 : Supra Ventricular Tachycardy @ 90 BPM

ansur QA-40/45 OFFERS THE FOLLOWING FEATURES

ansur QA-40/45 is a 'remote control' program developed to control QA-40 from a PC. The following section describes *ansur* QA-40/45, and how it works.

ansur QA-40/45 is supplied with its own user manual, which contains all information about the product. This manual is also supplied when ordering the demonstration version of the program. *ansur* QA-40/45 is run as a Microsoft Windows application.

ansur QA-40/45 offers the following functions:

- Manual energy test
- Automatic energy test
- ECG simulation
- ECG performance test
- Manual pacer, sensitivity and refractory period test
- Automatic pacer test sequence
- Test protocols for each individual instrument

GENERAL INFORMATION

TEMPERATURE RANGE:

+15°C to +35°C	when operating
0°C to +50°C	in storage

DISPLAY:

Type:	LCD graphic display
Alphanumeric format:	8 lines by 40 characters

DATA INPUT/OUTPUTS (2):

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

POWER:

2 x 9 Volt Alkaline Battery or 240 VAC (Battery Eliminator).

HOUSING: High impact plastic case

DIMENSIONS: L x W x H:
280 mm x 248 mm x 98 mm

WEIGHT: 1.85 kg with battery.

STANDARD ACCESSORIES:

User/Service manual
Battery Eliminator
9 Volt Alkaline Battery

RECOMMENDED PRINTERS:

HP Desk Jet, Canon Bubble Jet or compatible

QA-40 MKII ORDERING INFORMATION

Order no:

13020: QA-40 MKII Defibrillator Analyzer

Accessories:

17021: Battery Eliminator 240 VAC
17027: Battery Eliminator 115 VAC
13422: Carrying Case
10500: Carrying Case, ext. printer
13403: Internal paddle contact adapter
13404: Ground contact adapter
13410: Defib./Pace Test Cable, Laerdal
13411: Defib./Pace Test Cable, Physiocontrol
13412: Defib./Pace Test Cable, Marquette
13415: Defib./Pace Test Cable, HP/Agilent
13416: Defib./Pace Test Cable, S&W Artema
13417: FR2 Paddle Contact Adapter, HP/Agilent
13427: Defib./Pace Test Cable, Zoll
13428: Pace Only Test Cable, Physiocontrol
13429: Pace Only Test Cable, Zoll
17024: Universal Banana Adapter
13600: *ansur* QA-40/45 Plug-In
13601: *ansur* QA-40/45 Plug-In, demo
13605: User manual ansur QA-40/45 Plug-In
13050: User/Service manual QA-40