



DFS400 AED / Defibrillator Tester

Displays defibrillation shock waveform, energy (in Joules), parameters, and characteristic points at the same time

- Intuitive software interface with shock-related information on one screen – the waveform, energy (in Joules), parameters, and characteristic points captured at a sampling rate of 4μs
- Automatically saves complete raw data of the shock waveform to establish a test history
- Outputs ECG waveforms with selectable adult and child modes to achieve high accuracy for testing
- Raw data playback – plays recorded raw data or customized waveforms for repeated verification to facilitate the development process
- Built-in switchable loads ranging from 25Ω to 200Ω
- Repeatability and Reproducibility Analysis – compares the shock waveforms of multiple DUTs or a single DUT to confirm the consistency of quality and reliability, facilitating conducting the endurance test described in IEC 60601-2-4*
- Provides software development kit (SDK) for developing automated testing programs

*Note: The Repeatability and Reproducibility Analysis needs a separate purchase.

Specifications

Energy Measurement Specifications

Items	Specifications
Maximum Energy	Range: Up to 600J Accuracy: $\pm 1\%$ of reading $\pm 1J$ for up to 360J; $\pm 1\%$ of reading $\pm 1J$, typical for 360J – 600J
Voltage	Range: Up to 3000V Accuracy: $\pm (1\% \text{ of reading} + 1V)$ for 450V – 3000V & -450V – -3000V; $\pm (1\% \text{ of reading} + 2V)$ for -450V – 450V
Current	Range: 1.2 – 100.0A Accuracy: $\pm (1\% \text{ of reading} + 0.1A)$
Load Resistance	Resistance: 25, 50, 75, 100, 125, 150, 175, 200 Ω
Energy Accuracy	For 50 Ω : $\pm 1\%$ of reading $\pm 0.1J$ for up to 360J; $\pm 1\%$ of reading $\pm 0.1J$, typical for 360J – 600J For other resistance: $\pm 2\%$ of reading $\pm 0.1J$ for up to 360J; $\pm 2\%$ of reading $\pm 0.1J$, typical for 360J – 600J Note: Maximum energy of monophasic defibrillation may not reach 360J.
Pulse Trigger Level	60V
Pulse Width	Range: 1.0 – 60.0ms Accuracy: $\pm 0.05ms$
Sample Rate	250kHz (4 μs sample)
Maximum Average Power	24W, equivalent to 1 defibrillation pulse of 360J every 15 seconds

General Specifications

Items	Specifications
Temperature	Operating: 0°C – 50°C (32°F – 122°F) Storage: -20°C – +60°C (-4°F – +140°F)
Humidity	10% – 90% non-condensing
Communications	USB Type-C connector
Operation Modes	Remote (PC Software via API and SDK)
Power	DC12V Power Adaptor
Mechanical	Housing: ABS Plastic Size (L x W x H): 24.0 x 24.0 x 6.0cm Weight: 1.6kg

ECG Signal Specifications

Items	Specifications
Ventricular Fibrillation - Coarse	Vp-p = 3mV
Ventricular Fibrillation - Fine	Vp-p = 0.5mV
Ventricular Tachycardia ($\approx 180BPM$)	Vp-p = 3mV
Ventricular Tachycardia Plus ($\approx 234BPM$)	Vp-p = 3mV
Atrial Fibrillation	Vp-p = 1.2mV
Asystole	Vp-p = 0.03mV
Normal Sinus Rhythm (NSR) (20 – 360BPM by 1BPM per step)	Vp-p 0.25 – 5.0mV, step 0.5mV
User-defined Pattern (Max. 5kHz Sample Rate)	Load Customized Waveform function: Load a total capacity of up to 1000 seconds of raw data files with variable duration for each file to the DFS400 memory. Play Data function: Directly select and play raw data files stored on the computer with no file size limitations.
RCA Output Amplitude Range	1:875
RCA Output Amplitude Accuracy	<7.5% Vpp, Typical $\pm 5\%$ Vpp

ECG Performance Waveform Specifications

Parameters		Setting Range	Default Values	Minimum Step Size
Sine	Frequency	1 – 10Hz	1Hz	1Hz
	Amplitude	0.25 – 5.0mV	0.25mV	0.5mV
Triangle	Frequency	1 – 10Hz	1Hz	1Hz
	Amplitude	0.25 – 5.0mV	0.25mV	0.5mV
Square	Frequency	1 – 10Hz	1Hz	1Hz
	Amplitude	0.25 – 5.0mV	0.25mV	0.5mV
ECG	Frequency	0.33 – 6Hz	0.3Hz	1Hz
	P Amplitude	0 – 2mV	0.2mV	0.05mV
	R Amplitude	0 – 5mV	0.88mV	0.05mV
	T Amplitude	0 – 4.37mV	0.2mV	0.05mV
	ST Deviation	0 – 2mV	0mV	0.05mV
	PR Interval	0 – 200ms	160ms	10ms
	QRS Duration	5 – 200ms	100ms	10ms
	QT Interval	100 – 900ms	350ms	10ms
	P Duration	50 – 100ms	100ms	10ms

Compliance Specifications

Items	Specifications
Safety Standards	CE: IEC / EN61010-1 : 2010 + A1 : 2016; Pollution degree 2 61010-2-030 : 2017
Electromagnetic Compatibility Standards (EMC)	CE: EN61326-1 FCC: EMC P15B

* Specifications are subject to change without prior notice.

Ordering Information

DFS400 Test System

Part No.	Description	Quantity
100-DF00007	Model No.: DFS400 Model Name: AED/Defibrillator Tester	1

Optional Accessories

Part No.	Description	Quantity
S92-0202021	DC12V Power Adaptor	1
K21-0738301	RCA to BNC cable (73.8cm)	1
K22-0500101	Open-ended AED Cable (Banana Male), 0.5 meter (Black)	1
K22-0500102	Open-ended AED Cable (Banana Male), 0.5 meter (Red)	1
N61-0210033	Compact Splicing Connector	1
K27-1800304	USB Transfer Cable: Type-A to Type-C (Male to Male), 1.8 meter	1

Optional Paddle Box Set

Part No.	Description	Quantity
300-DFPD0CK	DFS Tester Docking Base for Defibrillator	1
5HA-DF0L001	DFS Tester Defibrillation Receiving Plate	2
5HA-DF00001	AED Cable for Paddle Box, Female to Male (Black)	1
5HA-DF00002	AED Cable for Paddle Box, Female to Male (Red)	1

Optional Tool

Part No.	Description	Quantity
800-DF07001	Barcode Scanner (Argox barcode scanner, model no. AS-9400)	1

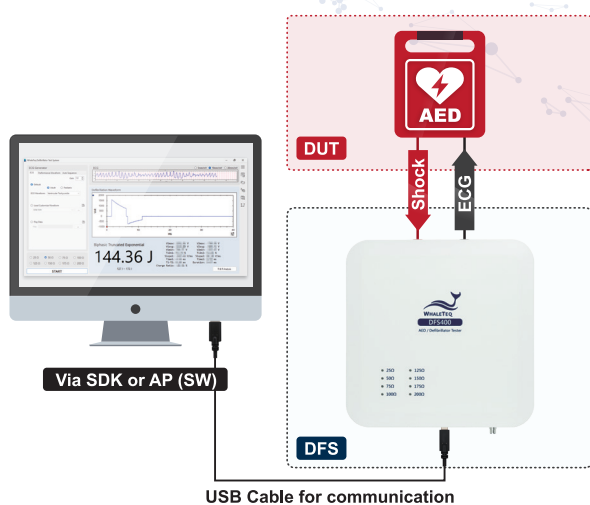
Optional Software Add-On Pack

Part No.	Description
HE0-DF00001	Repeatability and Reproducibility Analysis for inspecting DUT's quality and performance
HE0-OT00001	Barcode Scanner License

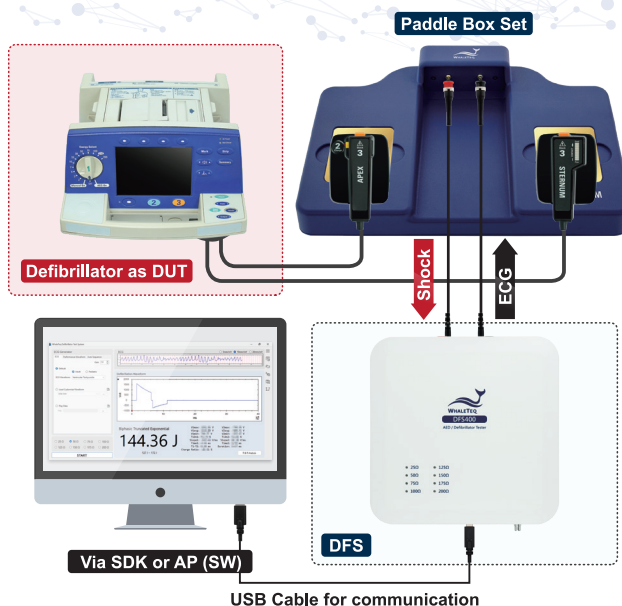
Optional Calibration Service and Warranty Extension

Part No.	Description
YY0007	Model No.: C3 Provides (3) years of calibration service coverage. WhaleTeq equipment can be calibrated to original performance on the basis of (1) year interval.
YY0008	Model No.: R3 Extends the limited warranty from (1) year to (3) years.

• AED Testing Scenario



• Defibrillator Testing Scenario (Optional)



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