

VTSYIQI SUB100

VTSYIQI SUB100 Portable Digital Ultrasonic Flaw Detector

Instruction Manual

Model: SUB100 | Brand: VTSYIQI

1. INTRODUCTION

The VTSYIQI SUB100 is a portable digital ultrasonic flaw detector designed for accurate and reliable non-destructive testing. This device is capable of detecting internal defects in materials, measuring material thickness, and evaluating weld quality. Its advanced features and robust design make it suitable for various industrial inspection applications. This manual provides essential information for the safe and effective operation, maintenance, and troubleshooting of your SUB100 unit.

2. SAFETY INFORMATION

Please read and understand all safety instructions before operating the device. Failure to follow these instructions may result in injury or damage to the equipment.

- **Environmental Conditions:** Operate the device within the specified working temperature range of -10°C to 50°C and humidity of 20% to 95% RH. Avoid exposure to extreme temperatures, direct sunlight, dust, and moisture.
- **Power Supply:** Use only the charger provided with the device. Ensure the power source matches the charger's specifications.
- **Handling:** Handle the device with care. Avoid dropping or subjecting it to strong impacts.
- **Maintenance:** Do not attempt to open or repair the device yourself. Refer all servicing to qualified personnel.
- **Probes:** Ensure probes are correctly connected and handled to prevent damage.

3. PACKAGE CONTENTS

Verify that all items listed below are present in your package:

- SUB100 Detector (with wristlet)
- Charger (CD20L02QF)
- Connecting Cable (1m) - 2 units
- Normal Probe (F20mm, 2.5M)
- Angle Probe (2.5M 9x9 k2)
- Holster
- Belt
- Certificate
- SUFD2 Operating Manual (this document)
- PC Software
- USB Disk (2G)
- USB Disk Connector
- Plastic Tape



Figure 3.1: Complete SUB100 kit with detector and accessories in its protective hard case.

4. SETUP

4.1 Device Overview



Figure 4.1: Front view of the SUB100 detector with its display and control buttons.



Figure 4.2: Side view of the SUB100, showing its robust casing and wristlet attachment.



Figure 4.3: Top view of the SUB100, displaying the BNC probe connectors and USB port.

4.2 Charging the Device

The SUB100 is powered by an internal rechargeable battery. Before first use, fully charge the device using the provided charger. Connect the charger to the device's power input port and then to a suitable power outlet. The charging indicator will show the charging status.

4.3 Connecting Probes

Select the appropriate probe (Normal or Angle) for your inspection task. Connect the probe cable to one of the BNC connectors on the top of the SUB100 unit. Ensure the connection is secure to prevent signal loss.

4.4 Powering On/Off

Press and hold the power button located on the control panel to turn the device on or off. The LCD screen will illuminate upon successful power-on.

5. OPERATING INSTRUCTIONS

5.1 Basic Interface and Navigation

The SUB100 features a 640×480, 65536 Colors LCD screen for displaying scan data and settings. Navigation is performed using the control buttons and rotary encoder on the front panel. Familiarize yourself with the function keys (F1-F6), arrow keys, ENTER, and rotary knob for menu selection and parameter adjustment.



Figure 5.1: SUB100 in operation, showing an A-scan display with a connected probe.

5.2 Calibration

Before performing any inspection, it is crucial to calibrate the device. Calibration typically involves setting the sound velocity, probe delay, and gain using a known reference block. Refer to the on-screen menu for detailed calibration procedures specific to your application and probe type.

5.3 Performing a Scan

1. **Select Mode:** Choose between A-scan or B-scan display modes as required for your inspection.
2. **Apply Couplant:** Apply a suitable ultrasonic couplant to the surface of the material to be inspected and to the face of the probe.
3. **Position Probe:** Place the probe firmly on the couplant-covered surface.
4. **Adjust Parameters:** Adjust parameters such as Testing Range (0-9999mm), Velocity Range (1000-9999m/s), and Gain (0dB-110dB) to optimize the signal display.
5. **Interpret Display:** Observe the waveform on the screen to identify flaws or measure thickness. The display delay can be adjusted from $-20\mu\text{s}$ to $+3400\mu\text{s}$, and probe delay from $0\mu\text{s}$ to $99.99\mu\text{s}$ for precise measurements.

5.4 Data Storage and Transfer

The device has a 1GB storage capacity for saving inspection data. Use the PC software and USB disk

provided to transfer data to a computer for further analysis and reporting.

6. MAINTENANCE

6.1 Cleaning

Regularly clean the device's exterior with a soft, dry cloth. For stubborn dirt, a slightly damp cloth with mild detergent can be used, ensuring no liquid enters the device. Clean the probe faces thoroughly after each use to remove couplant residue.

6.2 Storage

When not in use, store the SUB100 and its accessories in the provided protective hard case in a cool, dry place, away from direct sunlight and extreme temperatures. Ensure the battery is partially charged (around 50%) for long-term storage to prolong battery life.

6.3 Battery Care

To maintain optimal battery performance, avoid fully discharging the battery frequently. Recharge the device when the battery level is low. If the device will not be used for an extended period, charge it periodically (e.g., every 3-6 months) to prevent deep discharge.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your SUB100 unit.

- **Device does not power on:** Ensure the battery is charged. Connect the charger and attempt to power on. If the issue persists, contact customer support.
- **No signal on screen:** Check probe connection. Ensure couplant is applied correctly. Verify gain settings are appropriate for the material and probe.
- **Inaccurate readings:** Recalibrate the device with a known reference block. Check probe wear and tear. Ensure correct material velocity is set.
- **Screen display issues:** If the screen is frozen or unresponsive, try restarting the device. If the problem continues, contact support.

8. TECHNICAL SPECIFICATIONS

Parameter	Specification
Model Number	SUB100
Testing Range	0~9999mm
Velocity Range	1000~9999m/s
Gain Range	0dB~110dB
Sampling Rate	100MHz
Display Delay	-20μs~+3400μs
Probe Delay	0μs~99.99μs

Parameter	Specification
Working Frequency	0.2~15MHz
Compatible Probe Types	4 (as per description) / 6 (as per feature bullets) - <i>Note: Please refer to device for exact number.</i>
Noise Level	≤10%
Transmit Voltage	5 levels optional
Transmit Pulse	Square wave
Probe Damping	4 levels optional
Pulse Width	50ns~1000ns
Probe Repeating Frequency	10~2000Hz
Surplus Sensitivity	>62dB
Resolution	>40dB(5P14)
Linear Inhibition	0~80% (Digital suppression)
Vertical Linear Error	≤3%
Horizontal Linear Error	≤0.1%
Dynamic Range	Less 100dB
Storage Capacity	1GB
Working Temperature	-10°C~50°C
Working Humidity	20%~95% RH
Screen	640×480, 65536 Colors LCD
Material	Plastic
Power Source	Battery Powered
International Protection Rating	IP54
Item Weight	90 Pounds (approx. 40.82 kg)
Parcel Dimensions	30 x 20 x 10 cm

9. WARRANTY INFORMATION

Please refer to the warranty card included in your package for detailed warranty terms and conditions. Typically, VTSYIQI products come with a limited warranty covering manufacturing defects. Keep your purchase receipt as proof of purchase.

10. CUSTOMER SUPPORT

For technical assistance, troubleshooting not covered in this manual, or warranty claims, please contact VTSYIQI customer support. You can find contact information on the official VTSYIQI website or through your retailer.

Visit the official [VTSYIQI Store](#) for more information.

11. VIDEO RESOURCES

No relevant official seller videos were found for embedding in this manual based on the provided product data.