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VTSYIQI TL-1-HT

VTSYIQI Ultrasonic Flow Meter TL-1-HT User Manual

Model: TL-1-HT | Brand: VTSYIQI

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the VTSYIQI TL-1-HT Wall Mounted Ultrasonic Liquid Flow Meter. This device is designed for long-term online measurement of liquid flow in pipes ranging from DN300mm to DN6000mm.

The TL-1-HT flowmeter utilizes transit-time ultrasonic technology, offering high accuracy and reliability for various liquid applications. Its robust design includes an IP67 protection class for the converter and IP98 for the transducer, allowing for submerged operation up to 2 meters.



Figure 1: VTSYIQI TL-1-HT Ultrasonic Flow Meter Main Unit.

2. PRODUCT OVERVIEW

2.1 Key Features

- **High Accuracy:** Achieves a measurement accuracy of $\pm 1\%$.
- **Wide Measuring Range:** Supports pipe sizes from DN300mm to DN6000mm with various transducer selections.
- **High Reliability:** Employs low voltage, multi-pulse technology to improve accuracy, operation life, and reliability.
- **Strong Anti-interference:** Features a dual-balance signal differential receiver/driver circuit to minimize interference from external sources.
- **Data Recording:** Automatically records totalizer data for the last 512 days, 128 months, and 10 years. Logs the time and corresponding flow rate of the last 64 power on/off events, and the working status for the last 32 days.
- **Heat Measurement Support:** Connects to a temperature transducer (P100) for heat/energy measurement.
- **SD Card Memory:** Optional SD card support for data storage.
- **Signal Output:** Includes 1 way 4-20mA output (0-1K Ω , 0.1% accuracy), 1 way OCT pulse output (pulse width 1000ms, default 200ms), and 1 way Relay output.

- **Signal Input:** 3 way 4-20mA input for acquiring signals such as temperature, pressure, and liquid level.
- **Data Interface:** Insulated RS485 serial interface with MODBUS support for software upgrades via computer.

2.2 Components

The VTSYIQI TL-1-HT Ultrasonic Flow Meter consists of a main converter unit and transducers. Key parts of the converter unit are illustrated below:

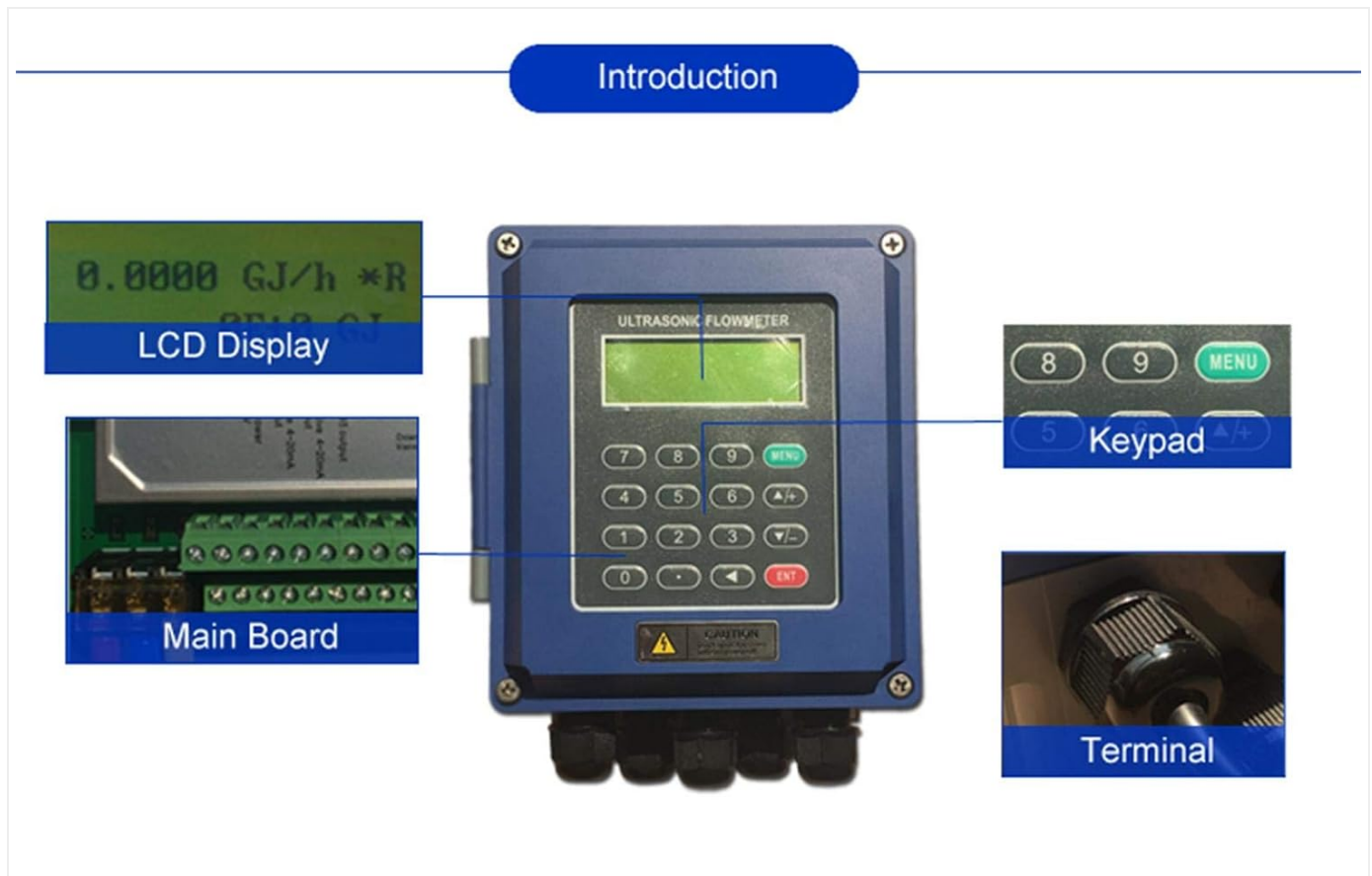


Figure 2: Main components of the flow meter converter.

LCD Display: Shows measurement data and menu options.

Keypad: For navigation and data input.

Main Board: Internal electronics for processing and control.

Terminal: Connection points for power, transducers, and signal outputs/inputs.



Figure 3: High Temperature Large Transducers (TL-1-HT).

3. SETUP

3.1 Pipe Installation Conditions

Ensure the following conditions are met for optimal performance:

- **Pipe Material:** Compatible with steel, stainless steel, cast iron, copper, cement pipe, PVC, aluminum, glass steel products. Liners are also allowed.
- **Pipe Diameter:** Suitable for pipes with diameters ranging from 300mm to 6000mm.
- **Straight Pipe Section:** For accurate measurement, transducers must be installed on a straight pipe section. Ensure a minimum of 10D (10 times the pipe diameter) upstream, 5D downstream, and at least 30D away from any pump.

3.2 Transducer Installation

The transducers are designed for clamp-on installation. Apply coupling gel to the contact surfaces between the

transducers and the pipe to ensure good acoustic coupling. Secure the transducers firmly to the pipe using the provided clamps. Ensure correct orientation (upstream/downstream) as indicated on the transducers (UP/DN markings).



Figure 4: Front view of the converter unit.



Figure 5: Back view of the converter unit with mounting brackets.

3.3 Electrical Connections

Connect the power supply (DC8-36V or AC85-264V, optional) to the designated power input terminals. Connect the transducers to the appropriate input terminals on the converter unit using the twisted-pair cable. Ensure all connections are secure and properly insulated. For signal output and input, refer to the terminal block diagram in the detailed manual (not provided here) for 4-20mA, OCT pulse, and Relay connections, as well as 4-20mA input for external sensors.



Figure 6: Bottom view of the converter unit with cable glands.

4. OPERATING INSTRUCTIONS

4.1 Power On and Initial Configuration

Once all physical and electrical connections are made, apply power to the unit. The LCD display will illuminate. Use the keypad to navigate through the menu options. Initial configuration typically involves inputting pipe parameters (diameter, material) and liquid type to ensure accurate measurements.

4.2 Measuring Medium Requirements

The flow meter is suitable for single liquids that can transmit sound waves. Examples include:

- Water (hot water, chilled water, city water, sea water, waste water, ultra-pure liquids)
- Sewage with small particle content
- Oils (crude oil, lubricating oil, diesel oil, fuel oil)
- Chemicals (alcohol, etc.)
- Plant effluent, beverages

The liquid temperature range is -30°C to 160°C. Turbidity should not exceed 10000ppm, and the liquid should have minimal bubbles. The measurable flow rate is 0 to ± 7 m/s.

4.3 Data Monitoring and Recording

The 2x20 character LCD with backlight displays real-time flow data. The unit automatically records historical data, including totalizer values for various periods and event logs for power cycles and working status. An optional SD card can be used for extended data memory.

4.4 Heat/Energy Measurement

To enable heat/energy measurement, connect a P100 temperature transducer to the designated input. The flow meter will then calculate and display heat energy based on flow and temperature differentials.

4.5 Video Demonstrations

For visual guidance on setup and operation, please refer to the following official product videos:

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Video 1: VTSYIQI WUFL-2000 Wall Mounted Ultrasonic Flow Meter Display Video. This video demonstrates the display and basic functions of a similar VTSYIQI wall-mounted ultrasonic flow meter.

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Video 2: Ultrasonic Flow Meters Flowmeter. A comprehensive video providing an overview and operational details for ultrasonic flow meters.

5. MAINTENANCE

Regular maintenance ensures the longevity and accuracy of your VTSYIQI TL-1-HT flow meter.

- **Cleaning:** Keep the converter unit and transducers clean. Wipe surfaces with a soft, damp cloth. Avoid using abrasive cleaners or solvents.
- **Transducer Coupling:** Periodically check the coupling gel between the transducers and the pipe. Reapply if it appears dry or degraded to maintain optimal acoustic contact.
- **Cable Integrity:** Inspect all cables for signs of wear, damage, or corrosion. Ensure connections remain tight and secure.
- **Environmental Conditions:** Ensure the operating environment for the converter (Temperature: -20-60°C; Humidity: ≤85%RH) and transducers (Temperature: -30-160°C; can measure under water, water depth ≤2m) remains within specified limits.

6. TROUBLESHOOTING

This section provides general guidance for common issues. For detailed troubleshooting, refer to the full product manual or contact customer support.

Problem	Possible Cause	Solution
No display/Power off	No power supply or faulty connection.	Check power cable and supply. Ensure connections are secure.
Inaccurate readings	Incorrect pipe parameters, poor transducer coupling, air bubbles in liquid, or insufficient straight pipe length.	Verify pipe data in settings. Reapply coupling gel. Check for air bubbles in the pipe. Ensure transducers are installed on a sufficiently long straight pipe section.

Problem	Possible Cause	Solution
No flow reading	Transducers not properly installed, no liquid in pipe, or severe interference.	Check transducer placement and coupling. Confirm liquid presence. Investigate potential sources of strong electrical interference.

7. SPECIFICATIONS

Parameter	Detail
Model	TL-1-HT
Principle	Transit-time ultrasonic flowmeter
Accuracy	±1%
Display	2x20 character LCD with backlight (Chinese, English, Italian, Turkish support)
Signal Output	1x 4-20mA (0-1KΩ, 0.1% accuracy), 1x OCT pulse (1000ms pulse width, default 200ms), 1x Relay output
Signal Input	3x 4-20mA (0.1% accuracy) for temperature, pressure, liquid level
Data Interface	Insulated RS485 serial interface, MODBUS support
Pipe Diameter Range	DN300mm - DN6000mm
Liquid Temperature Range	-30°C to 160°C
Flow Rate Range	0 - ±7m/s
Converter Operating Temperature	-20°C to 60°C
Transducer Operating Temperature	-30°C to 160°C
Converter Humidity	≤85%RH
Transducer Humidity	Can measure under water, water depth ≤2m
Power Supply	DC8-36V or AC85-264V (Optional)
Power Consumption	1.5W
Converter Dimensions	132 x 150 x 85mm
Converter Protection Class	IP67
Transducer Protection Class	IP98
Item Weight	9.92 pounds
Package Dimensions	15.75 x 7.87 x 3.94 inches

8. WARRANTY AND SUPPORT

Warranty: The VTSYIQI TL-1-HT Ultrasonic Flow Meter comes with a**1-Year Warranty** from the date of purchase, covering manufacturing defects and material faults under normal use.

Returns: A 30-day return policy is available for refunds or replacements, subject to the seller's terms and conditions.

Customer Support: For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact VTSYIQI customer service. VETUS INDUSTRIAL CO.,LTD is committed to providing each customer with the highest standard of service.

You can find more information and contact details by visiting the[VTSYIQI Store on Amazon](#).

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question