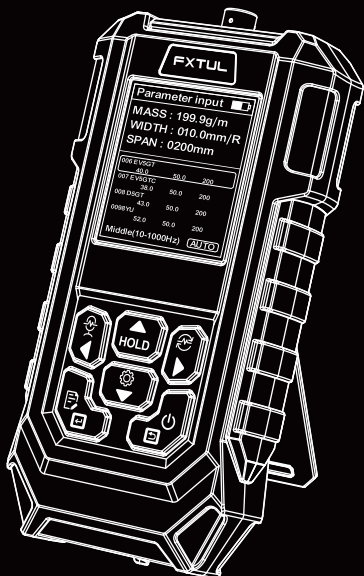


USER MANUAL



带式张力测试仪

SONIC BELT TENSION TESTER

EN

1

CN

12

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PRECAUTIONS

- Before using the product, please read the instructions carefully and use them correctly, and please keep the manual handy after reading.
- Do not use in an environment where fire or explosion may occur.
- Do not attempt to disassemble and modify the product.
- Do not use solvents (thinner, gasoline, etc.) to clean this product.
- Be sure to turn off the power supply after confirming that the machine is stopped, before perform a belt tension test.
- When using outdoors, if there's thunder sounds, turn off the power immediately and move to a safe place.
- Do not store in a humid, dusty, or high temperature place.
- Avoid tearing or twisting the probe and hose, and avoid bending the hose at sharp angles.
- If not in use for a long time, remove the battery.

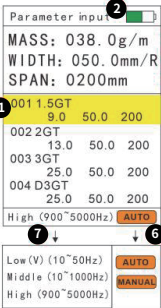
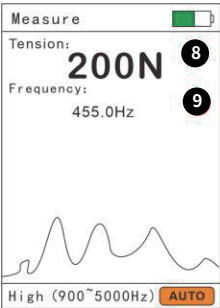
PRODUCT INTRODUCTION

When a longitudinal impact is applied to the belt between the pulleys, a certain frequency of vibration will be formed due to the elasticity of the belt itself, and the vibration frequency will also vary depending on the belt type, density, width and span. On the premise of determining the belt type, density, width and span, the belt tension analyzer can simply and accurately measure the installation tension related to the belt performance in a non-contact way by analyzing the belt vibration sound waves. When the belt is stationary, the sensor compensates for the sound waves generated by the belt span runout and displays the tension value of the belt through digital calculation and processing.

PRODUCT FEATURES

- TFT color screen display
- 10 levels of backlight brightness adjustment
- Indication of remaining battery power
- Single/continuous measurement mode
- Support setting the trigger intensity
- Support a variety of theme style display
- Support spectrum graphic display
- Built-in data quick selection
- Support user-defined data, up to 999 groups
- 50 sets of scratching data settings
- Lower brightness at 1 min idle, and power off after 5 min idle

DISPLAY STRUCTURE

 The diagram shows the Main Screen layout with numbered callouts 1 through 9. 1 points to the first data row (001 1.5GT). 2 points to the Parameter input header. 3 points to the MASS value (038.0g/m). 4 points to the WIDTH value (050.0mm/R). 5 points to the SPAN value (0200mm). 6 points to the MANUAL button. 7 points to the High frequency range (900~5000Hz). 8 points to the Tension value (200N). 9 points to the Frequency value (455.0Hz).	 The diagram shows the Measurement Screen layout with numbered callouts 8 and 9. 8 points to the Tension value (200N). 9 points to the Frequency value (455.0Hz). The screen also displays a spectrum graph and the High frequency range (900~5000Hz) with an AUTO button.
Main Screen	Measurement Screen

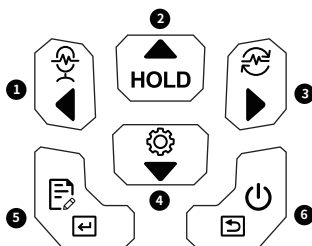
Main Screen

1	Preset belt specifications It offers quick access to the system database for frequently used belt specifications. To edit the database, a computer is needed.
2	Battery indication It shows the status of battery. Replace battery when battery level is low.
3	Mass input Mass input edit area, if need to temporary test a belt, of which the data is not available in the data-base.
4	Width input Width input edit area, if need to temporary test a belt, of which the data is not available in the data-base.
5	Span input Span input edit area, if need to temporary test a belt, of which the data is not available in the data-base.
6	Test Mode indication It shows the current test mode applied. Two kinds of test modes are available to be modified via the setting page. AUTO Mode: the unit would keep capturing data and calculate the tension continuously, if Hold button is not clicked on the keypad. Manual Mode: the unit would capture data and calculate the tension once, and restart another capture while click the Measure button again.
7	Frequency range The currently selected measurement frequency range. Pressing the Frequency select / Move Right button to select the appropriate range, to exclude sound frequency interference which is not in the measured frequency range.

Measurement Screen

8	Tension value display The tension value is calculated based on the frequency and belt data.
9	Frequency display It shows the captured frequency.

KEYPAD AND OPERATION

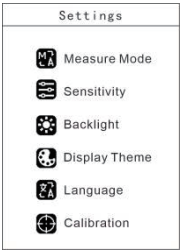


1	Measurement / Move left button Once the required data is inputted or selected on the main screen, click this button to start measure belt tension. This button also act as Navigation move left button on Data input mode, to move the active cursor left.
2	Hold / Move up / Increase button On measurement screen, click this button to stop continuous capturing and lock the latest test result. This button also act as Navigation move up button on setting page. In Edit mode, this button would act as a increase button to change the value.

3	Frequency select / Move Right button On main page, click this button to switch between different test frequency range. This button also act as Navigation move right button on Data input mode, to move the active cursor right.
4	Move down / Decrease / Setting button This button act as Navigation move up button on setting page. In Edit mode, this button would act as a increase button to change the value. Long press this button on the main screen to enter setting page.
5	Edit input / Confirm button Click this button on main screen, will turn into edit mode, in which the belt specifications could be adjusted, click this button again to quick edit mode. In setting page, this button would act as a confirm button.
6	Power / Return button Click this button to power on the unit. Long press this button to power off the unit at main screen. Return the the previous page at setting page.

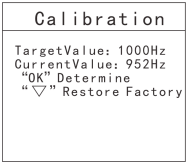
SETTING

- Long press the Move down/ Decrease/ Setting button on the main screen to enter setting page.
- It is possible to change the measurement mode, probe sensitivity, backlight brightness, modify the display style, change the language of the display content, and system calibration.



Calibration

Due to the special mechanism of the design, calibration would merely required even when change a sensor.



- Make sure the place is quite, Enter calibration page.
- Prepare a 1000Hz sound source, Click Confirm button to finish calibration of the unit.

At the ‘calibration’ page, click ‘Down Button’ to restore factory calibration, which is permanently stored in the unit.

DATA ENTRY

MASS input

- Usually, the belt supplier could provide the belt parameters, or the corresponding parameters will be marked on the belt, and it can be used directly.

Tooth & Flat timing belt

- The unit mass entered is width (mm) × length (m), in g/mm width × length, and the data capacity is 000.1~999.9g/mm width × length (m).

V, V-ribbed belt and wire

- Input the mass per meter of length in "g/m length" for unit mass. Able to input by four significant digits, i.e. three digits of integer and one digit below decimal point from 000.1 up to 999.9 g/m L. Unit mass corresponds to one piece for V-belt and wire, and one rib for V-ribbed belt.

	MASS	WIDTH	SPAN
Flat timing belt	g/mm W × mL	mm	mm
V-robbed belt	g/Ribbed × mL	Number of ribbed	mm
V belt	g/one belt × mL	1	mm
Wire	g/one belt × mL	1	mm

How to input the belt width or the number of belts (ribs)

Timing or Flat belt

- To put the date is for belt width is 000.1mm~999.9mm, three digits of integer and one digit below decimal point in mm.

V, V ribbed belt, Wire

- For V belt and Wire, put one piece. For V ribbed belt, put the number of ribs of V-ribbed belt.

How to put the value of span length

- Span length is a distance between contacts with pulley, and can be calculated by the f following calculating formula. Alternatively, measure the distance between pulley contacts with a tape measure and put.

- S : Span length (mm)
- C: Distance between axes (mm)
- Dp: Large pulley pitch outer diameter (mm)
- dp: Small pulley pitch outer diameter (mm)

$$S = \sqrt{C^2 - \frac{(Dp - dp)^2}{4}}$$

PRODUCT PARAMETERS

- Display mode: TFT LCD screen
- Battery type: Four AAA batteries
- Frequency acquisition range: 10Hz~5000Hz
- Operating temperature range: -10°C~50°C
- Operating humidity range: 15~80%RH (non-condensing)
- Detection technology: acoustic wave analysis

GENERAL FAULT DIAGNOSIS

Symptom	Possible Cause	Solution
could not get test result	• The entered items do not match (the input values of unit mass, width, span are not reasonable) • Exceed the frequency range of the test • Insufficient battery	• Check the contents of the entered items • Change the test frequency range • Replace the batteries if the battery is low
Test result not correct	• During the measurement process, the probe is in direct contact with the belt	• Avoid contact between the probe and the belt.
The measured values are biased & unstable	• Environmental noise impact	• Measure in a relatively quiet environment

USER-DEFINED DATA

The product supports connecting to a computer via a USB-TypeC cable. Use Excel software to edit and add custom data.

Data Entry Steps:

- Use USB-TYPEC cable to connect the device to the computer;
- Using Microsoft Excel to open "DATA. CSV" file;
- Instructions and precautions should be followed when modifying parameters;
- After the modification is completed, close and save the file, and the file name and format cannot be modified when saving;
- Restart the device after saving to update.

Data Format Description:

NAME: You can use uppercase and lowercase letters, digits, decimal places, spaces, "-", "()", and the device can display up to 9 characters.

- MASS (mass): range 0.1–999.9 in g/m
- WIDTH: Range: 0–999.9, in mm
- SPAN (span): range 0–9999, unit mm
- ENABLE: "n" is disabled, and "y" is enabled

Note

- If the data format is wrong and cannot be recognized after the device is restarted, the device will automatically use a blank data table to overwrite the modified data table, which cannot be recovered.
- It is recommended to copy the DATA.CSV to the computer before editing, after the editing is completed.
- The data needs to be entered using English input method;

- Do not store other files in this storage space;
- Do not disconnect the USB connection while saving the file to avoid data loss;
- The database support up to 999 sets of data.

WARRANTY

Thank you for choosing our products, we will provide you with the following services and commitments:

- The warranty period of this product is 3 years.
- After the warranty expires, replacing parts will incur a repair fee.
- Please contact the manufacturer after failure, we will give you the most perfect service in the shortest time.

The following items are not covered by the warranty:

- The wearing parts are not covered by the warranty.
- Products purchased through informal channels.
- Damage caused by use and maintenance not in accordance with the product manual.

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注意事项

- 使用本产品前请仔细阅读说明书并正确使用，阅读后请妥善保管手册。
- 禁止在可能发生火灾或爆炸的环境中使用。
- 请勿尝试拆卸或改装本产品。
- 切勿使用溶剂（稀释剂、汽油等）清洁本产品。
- 进行皮带张力测试前，务必在确认机器停止运转后关闭电源。
- 户外使用时若闻雷声，应立即关闭电源并转移至安全场所。
- 请勿将产品存放在潮湿、多尘或高温场所。
- 避免探头与软管发生撕裂或扭曲，防止软管出现锐角弯曲。
- 长期不使用时请取出电池。

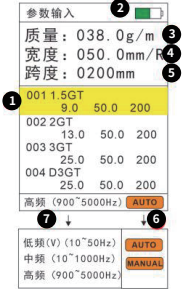
产品介绍

当对皮带轮之间的皮带施加纵向冲击时，由于皮带自身的弹性会形成特定频率的振动，且振动频率会因皮带类型、密度、宽度及跨距的不同而变化。在确定皮带类型、密度、宽度和跨距的前提下，皮带张力分析仪可通过分析皮带振动声波，以非接触方式简单准确地测量与皮带性能相关的安装张力。当皮带处于静止状态时，传感器会对皮带跨距跳动产生的声波进行补偿，并通过数字计算与处理显示出皮带的张力值。

产品特性

- TFT彩色屏幕显示
- 10级背光亮度调节
- 剩余电量指示
- 单次/连续测量模式
- 支持触发强度设置
- 支持多种主题风格显示
- 支持频谱图形显示
- 内置数据快速选择功能
- 支持用户自定义数据，最多999组
- 闲置1分钟后降低亮度，5分钟后自动关机

显示结构

	
主屏幕界面	测试界面

主屏幕界面

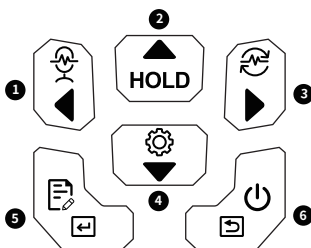
1	预设皮带规格 该界面可快速访问常用皮带规格的数据库。如需编辑、增删数据库条目，则需要将设备连接计算机。
2	电量显示 显示电池状态。当电量低时请更换电池。
3	质量输入 输入编辑区域，若需临时测试某条皮带，且其数据在数据库中不可用，可在此处输入皮带的质量参数。
4	宽度输入 输入编辑区域，若需临时测试某条皮带，且其数据在数据库中不可用，可在此处输入皮带的宽度参数。
5	跨度输入 输入编辑区域，若需临时测试某条皮带，且其数据在数据库中不可用，可在此处输入皮带的跨度参数。

6	测试模式显示 显示当前应用的测试模式。可通过设置页面修改两种测试模式： 自动模式：若未点击键盘上的保持按钮，设备将持续采集数据并连续计算张力。 手动模式：设备将单次采集数据并计算张力，再次点击测量按钮时重新启动新一轮采集。
7	频率捕捉范围 当前选定的测量频率范围。按下频率选择/右移按钮选择适当范围，以排除不在被测频率范围内的声频干扰。

测试界面

8	张力值显示 张力值是根据频率和皮带数据计算得出的。
9	频率显示 显示捕获到的频率数值。

按键及操作方法



1	测量 / 左移按钮 在主屏幕输入或选择所需数据后，点击此按钮开始测量皮带张力。该按钮在数据输入模式下同时作为向左导航移动按钮，用于将活动光标向左移动。
2	锁定 / 上移 / 增加按钮 在测量屏幕上，点击此按钮可停止连续捕获并锁定最新测试结果。该按钮在设置页面同时作为导航上移按钮使用。在编辑模式下，此按钮将作为数值增加按钮来修改参数值。
3	频率选择 / 右移按钮 在主页面上，点击此按钮可在不同测试频率范围间切换。该按钮在数据输入模式下还充当导航右移按钮，用于将活动光标向右移动。
4	向下移动 / 降低 / 设置按钮 该按钮在设置页面充当向上导航按钮。 在编辑模式下，此按钮将作为增加值按钮来修改数值。在主屏幕长按此按钮可进入设置页面。
5	编辑输入 / 确认按钮 在主屏幕上点击此按钮将进入编辑模式，此时可调整传送带规格，再次点击该按钮则快速切换至快捷编辑模式。在设置页面中，此按钮将作为确认按钮使用。
6	电源 / 返回按钮 点击此按钮可启动设备。 长按此按钮可在主屏幕关闭设备。 在设置页面返回上一级页面。

设置界面



- 主屏幕上长按下移/减小/设置按钮可进入设置页面。
在此可更改测量模式、探头灵敏度、背光亮度，修改显示样式，切换显示内容的语言，以及进行频率校准。

频率校准

由于该设计的特殊机制，即使更换传感器也仅需进行基础的校准。



- 确保环境安静，进入校准页面。
- 准备一个1000赫兹的声源， 点击确认按钮完成设备校准。

在校准页面，点击"向下按钮"可恢复出厂校准设置，该设置永久存储在设备中。

数据录入

质量录入

- 通常，皮带供应商会提供皮带参数，或相应参数会标注在皮带上，可直接使用。

齿形&平面正时皮带

- 输入的单位质量为宽度（毫米）×长度（米），以克/毫米宽度×米长度表示，数据容量范围为000.1~999.9克/毫米宽度×长度（米）。

V形、V形楔带和导线

- 以"克/米长度"为单位输入单位长度的质量。可输入四位有效数字，即整数部分三位加小数点后一位，范围从000.1至999.9克/米长度。单位质量对应V带和线材为单根，V型多楔带则为单条楔。

	质量	宽度	跨度
平面正时皮带	g/mm W × mL	mm	mm
V形楔带	g/Ribbed × mL	Number of ribbed	mm
V形	g/one belt × mL	1	mm
导线	g/one belt × mL	1	mm

如何输入皮带宽度或皮带（肋条）数量

正时皮带或平皮带

- 皮带宽度日期设置为000.1毫米至999.9毫米，采用毫米单位，包含三位整数和一位小数。

V形、V形楔带和导线

- 对于V型皮带和钢丝，各放置一件。对于V型多楔带，则放置该V型多楔带的楔数。

如何输入跨距长度值

- 跨距长度是指皮带轮接触点之间的距离，可通过以下计算公

式得出。或者，也可使用卷尺测量皮带轮接触点间的距离并记录。

$$S = \sqrt{C^2 - \frac{(Dp - dp)^2}{4}}$$

- S：跨度（mm）
- C：轴距（mm）
- Dp：大皮带轮节圆外径（mm）
- dp：小皮带轮节圆外径（mm）

产品参数

- 显示模式：TFT液晶显示屏
- 电池类型：四节AAA电池
- 频率采集范围：10Hz~5000Hz
- 工作温度范围：-10℃~50℃
- 工作湿度范围：15~80%RH（无冷凝）
- 检测技术：声波分析

通用故障诊断

现象	可能的原因	解决办法
无法获取测试结果	● 输入项不匹配（单位质量、宽度、跨度的输入值不合理） ● 超出测试频率范围 ● 电池电量不足	● 检查输入项的内容 ● 更改测试频率范围 ● 如电量不足请更换电池
测试结果不正确	● 在测量过程中，探头与皮带直接接触	● 避免探头与皮带发生接触。
测量值存在偏差且不稳定	● 环境噪声影响	● 在相对安静的环境中测量

用户自定义数据

该产品支持通过USB-TypeC数据线连接电脑，使用Excel软件编辑并添加自定义数据。

数据录入步骤

- 使用USB-TypeC数据线将设备连接至电脑；
- 使用Microsoft Excel打开"DATA.CSV"文件；
- 修改参数时应遵循操作说明及注意事项；
- 修改完成后关闭并保存文件，保存时不得修改文件名及格式；
- 保存后重启设备以完成更新。

数据格式

名称：可使用大小写字母、数字、小数点、空格、"-","()",设备最多可显示9个字符

- 质量（MASS）：范围0.1-999.9克/米
- 宽度（WIDTH）：范围0-999.9毫米
- 跨度（SPAN）：范围0-9999毫米
- 启用（ENABLE）："n"表示禁用，"y"表示启用

注意

- 若数据格式错误且设备重启后无法识别，设备将自动使用空白数据表覆盖修改后的数据表，此操作不可恢复。
- 建议在编辑前将DATA.CSV文件拷贝至计算机，待编辑完成后再传回设备。
- 数据录入必须使用英文输入法；
- 输入数据必须严格遵循模板格式要求；
- 请勿在该存储空间存放其他文件；
- 保存文件时切勿断开USB连接，以防数据丢失；
- 数据库最多支持999组数据存储。

售后保修

感谢您选择我们的产品，我们将为您提供以下服务和承诺：

- 本产品保修期为3年。
- 保修期满后，更换零件将收取维修费用。
- 出现故障后，请联系我们，我们将在最短的时间内给您最完善的服务。

以下情况不在保修范围内：

- 易损件不在保修范围内。
- 非正规渠道购买的产品。
- 未按产品说明书要求使用和维护造成的损坏。

FXTUL

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   RoHS MADE IN CHINA

