用户手册

TWIN-TESATRONIC显示器

04430014: TWIN-T20

04430020: TWIN-T20 nano

版本2.0，2022年5月

本文档为机密文件，仅供购买上述显示器的公司内部使用。在与使用这类仪器没有任何关联的情况下，复制本文档或将其发送给第三方前，须向TESA提交正式申请。

ME44.77053

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1. 介绍

1.1 致谢

尊敬的用户：
感谢您选择与TESA在计量领域建立合作伙伴关系。感谢您在购买此款同类最优显示器时给予我们的信任。
整个TESA团队欢迎您加入到TESA产品用户的行列中。

TESA团队

1.2 警告

在仪器的安装、维护或使用前，每位技术人员或操作人员必须阅读本快速入门文档。如未遵守某些使用说明，可能导致仪器故障或性能下降。

1.3 版权（文档）

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1.4 外观设计

设备的设计受外观设计专利DM212520的保护。

1.5 图标

本文档中使用了几种不同类型的图标。它们提供了正确使用测量仪器时需考虑的重要信息。

类型	描述
	未遵守这些说明可能导致测量结果错误。
	为更好地使用仪器提供帮助。

2. 规格

2.1 规格

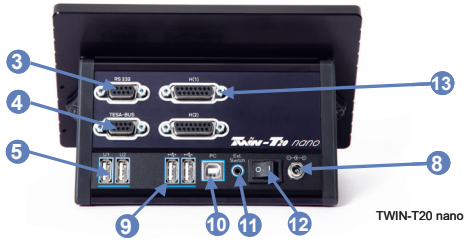
- **标准工作条件：**
  20° C +/- 1° C，湿度：40 % < 相对湿度 < 65 %，无凝结。
- **极限工作条件：**
  10° C < 温度 < 40° C，湿度 < 80 %，无凝结。
- **存放条件：**
  -10° C < 温度 < 60° C，湿度 < 80 %，无凝结。
- **示值误差（在20° C、相对湿度 = 50 %下，基于虚拟测头）：**
  ± (测量值的 0.2 % + 0.3 µm)
- **零点漂移（在20° C和50 %相对湿度下）：**
  最大0.15 µm/° C
- **尺寸(mm)：**
  190 x 112 x 119
- **重量(kg)：**
  1.2
- **IP防护等级(IEC 529)**：
  IP65（正面），IP20（其他）
- **电压（输入）**
  100 至 240 V / 50-60 Hz，0.6 A。功耗 = 4.2 W，无设备。

为了能够获得最佳性能，用户负责执行定期校准，以补偿因温度、湿度或其他外部因素引发的潜在漂移。

3. 外观

3.1 概述

TWIN-T20



TWIN-T20 nano

序号	描述
1	TLC封盖
2	触摸屏
3	RS 232串行口(Sub-D 9S接口)
4	TESA总线端口(Sub-D 9S接口)
5	2 个测试仪器用USB-A型接口
6	2 个TESA HB测头用DIN45322连接器
7	2 个TESA数字测头用M12连接器
8	15-24 V电源连接器
9	2 个外设用USB-A型接口（键盘、U盘、二维码扫描枪）
10	1 个USB-B型设备（HID键盘输出 + 固件更新）
11	脚踏开关用直径2.5mm 插孔接口
12	启/闭开关
13	2 x HEIDENHAIN 探头专用 Sub-D 15p

不允许在USB端口上使用集线器。

3.2 发货清单

数量	描述
1个	显示器
1个	电源
1根	电源线
4个	电源线插头：1个欧标、1个美标、1个瑞标、1个英标
1份	自动测试报告
1张	校准证书
1份	快速入门文档
2块	泡沫材料

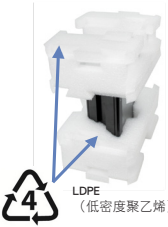
4. 拆包

我们建议保留原始包装材料供之后的运输使用，以免造成损坏。

4.1 第1步

4.2 第2步

4.3 第3步



5. 安装、安全和维护

5.1 热稳定性

开始测量前，须将显示器开启30分钟。

5.2 清洁

仅可使用一块干燥的不起毛软布清洁仪器。不得使用腐蚀性溶剂。

5.3 开箱

如果某人未经授权打开设备，将导致保修期自动失效。

5.4 回收利用

本产品不得与市政垃圾一起进行废弃处理。有关电子产品的废弃处理，请参阅当地法规。

5.5 兼容性

- **DIN 45322端口（见第5页序号6和序号7），兼容：**
  - 所有TESA半桥测头，DC和USB型号除外。
- **输出用USB-A 型端口（见第5页序号9），兼容：**
  - 二维码扫描枪（在美标键盘下配置的Datalogic Heron Hd3430，其他待测试）
  - U盘（威宝 StoreN˙ Go 32Go或东芝 transmemory U301均适用，其他待测试）
  - USB脚踏开关（TESA货号04761071）
  - 键盘（QWERTY型，美标）
- **输入用USB-A host接口（见第5页序号5），兼容：**
  - 带TLC端口的TESA卡尺（+ TLC-USB线缆，TESA货号04761081）
  - 带Opto端口的TESA电子指示表（+ Opto-USB线缆，TESA货号04761062）
  - 带Opto端口的TESA电子千分尺（+ Opto-USB线缆，TESA货号04761062）
  - 大多数的Mahr®和Sylvac®设备（+ 制造商线缆）待测试。
- **直径2.5mm 插孔接口（见第5页序号11），兼容：**
  - TESA脚踏开关（TESA货号04768001）
- **Sub-D 15p 端口（参见第 5 页第 13 项），与以下设备兼容：**
  - 所有 HEIDENHAIN 旗下增量式探头（1Vpp 和 11µA pp

6. 简明用户文档

6.1 启动

仪器可以使用按钮（见第5页序号12）打开。

6.2 初始页面

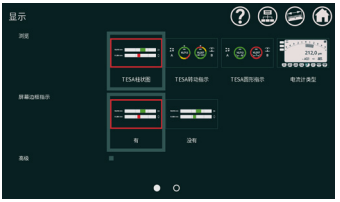
安装过程结束后，您将进入出厂配置的初始页面：

6.3 首页

使用 图标可进入首页访问所有设置：

您可以使用此图标返回测量页面

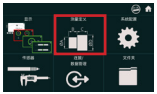
6.4 显示方式

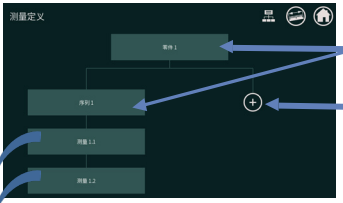


选择所需显示方式并使用 应用

注意：“电流计类型”仅限1个测量显示，如有第二个测量显示，请将其删除

6.5 测量定义

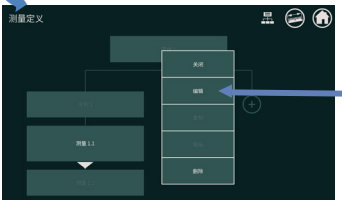




您可以在此重命名零件和序列

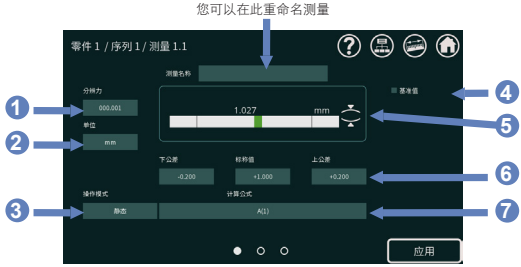
您可以在此重命名零件和序列

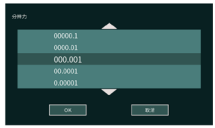
注意：您可以使用 访问此页面



在此访问测量设置

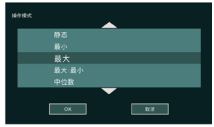
6.5.1 测量设置



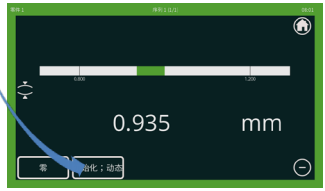


包含6种小数位显示的分辨率选项

单位选项



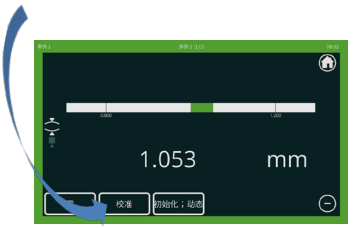
操作模式选项：
- **Static**：连续测量值
- **Min**：显示测量的最小值
- **Max**：显示测量的最大值
- **Max-Min**：显示最大值和最小值之间的差值
- **Median**：显示(最大+最小)/2得到的中间值
- **(Max-Min)/2**：显示(最大-最小)/2得到的值
- **Mean**：基于时间显示平均值



使用测量屏幕上的“动态初始化”(Init.Dyn.)按钮开始动态测量。

当使用基准零件时，需要进行选择

注意：如果已选择，可在测量页面上访问基准值设置



使用测量屏幕上的“校准”按钮完成基准值校准。
如有效，图标会从 变为

触碰该区域可进行不同的选择：外径、内径、距离或角度。

6

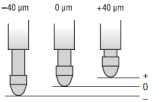
在此示例中，所需的测量为 10 $^{+0.2}_{-0.1}$

注意：这些字段的单位定义见 2

7

允许选择要显示的端口，并最终应用一个计算公式。

测头注意事项：
当测头杆缩回本体时，正极+A或+B会导致正极侧的显示发生改变



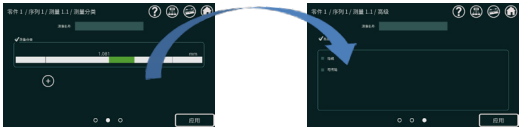
6.5.2 分类

滑至第一个测量设置页面，可访问分类页面。

使用+号最多可添加8个类别

6.5.3 高级测量设置

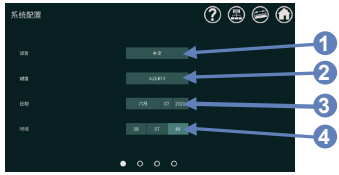
滑至第二个测量设置页面，可访问高级选项。



隐藏和/或可转换的测量选项

6.6 系统配置

登录页面



6.6.1 语言

在该区域内选择语言 1

6.6.2 键盘类型

在该区域内选择键盘类型 2

6.6.3 日期

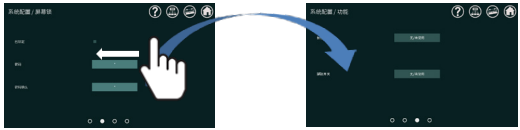
在该区域内设置日期 3

6.6.4 时间

在该区域内设置时间 4

6.6.5 锁定选项

滑至下一个页面，使用该选项可借助4位数字代码锁定测量设置。



6.6.6 可配置的软键和脚踏开关

滑至这两个页面，可配置在测量页面中能够访问的1个软键 + 1个插孔接口脚踏开关 + 2个USB接口脚踏开关：

可配置的软键 + 插孔接口脚踏开关

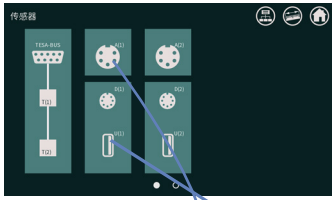
可配置的USB脚踏开关

配置选项：
无 / 置零 / 清零 / 校准 / 动态初始化/ 下一个序列 / 传输 / USB读取触发。

注意：在“传输”(Transfer)选项中，需要选择传输目的地：

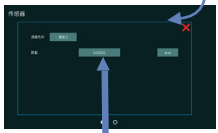
6.7 传感器

“传感器”页面汇总了所有已连接的设备及其参数：



TWIN-T20 专用连接图纸。

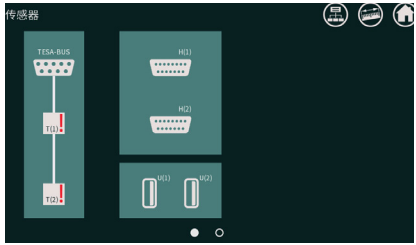
示例：
测头已连接在DIN45322连接器上：



测头的原始值，安装过程中使其接近于0最佳

设备已连接在USB端口上：

USB设备信息
可连续读取设备的选项



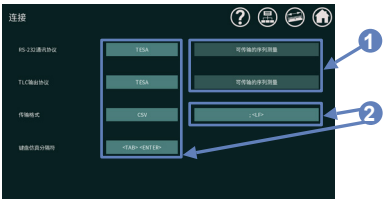
TWIN-T20 nano 专用连接图纸。

H(1) 和 H(2) Sub-D 15p 型号为 HEIDENHAIN 探头专用。

“间距（µm）”一栏应填写传感器型号相对应的探头间距。

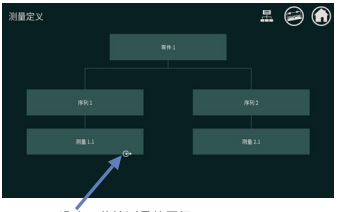
“分辨率”一栏应填写探头的分辨率。默认标准值为 200，单位为毫米。该数值可为 200 和 2000 之间。

6.8 连接通讯



1 **待传输测量的选项：**
- 序列的可传输测量（见6.5.3章节）
- 序列的测量
- 可传输的零件尺寸（见6.5.3章节）
- 零件尺寸
- 测量1.1
- 测量1.2

注1：您可以轻松获得测量定义页面的概况（见6.5章节）



设为可传输测量的图标

注2：RS-232输出协议

特性：

传输速度： 4800波特率	**奇偶校验位：** 偶
起始位： 1位	**字符输出：** 7位ASCII数据位
停止位： 2位	

按下<回车>发送所需信息

6.9 文件夹

2个测量程序可保存在TWIN-T20中，并能够在该页面中进行选择。

6.10 Modbus

Modbus 协议允许显示器与 PLC（可编程逻辑控制器）连接。

连接信息和数据库可在 TESA 网站的“下载”一栏找到。

6.11 TESA-MODUL

TESA-MODUL 用于根据模块型号添加新功能。

所有模块均按照以下方式连接：

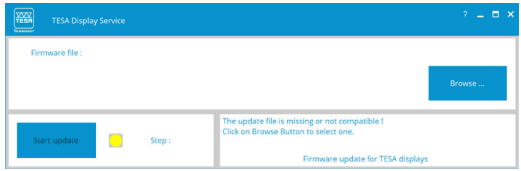
1. 使模块通过 TESA-BUS 连接器，将 Sub-D 9p/f 电缆连接到 Sub-D 9p/m 电缆 (04761052)。模块的 LED 指示灯开始闪烁。
2. 进入“传感器”菜单。
3. 轻按“TESA-BUS”连接器。
4. 轻按“+”按钮。在打开的窗口中选择“是”以确认。
5. 轻按 TESA-MODUL 中的“Id”按钮，添加您所需的配置。
6. 新添模块已在屏幕上显示（示例为 TM X.X）

6.12 固件更新

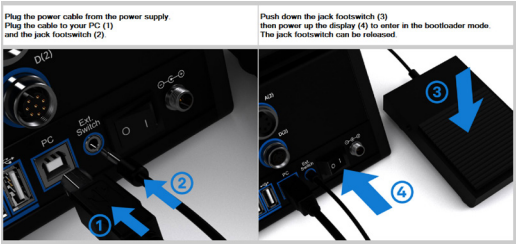
如仪器功能有所改进，TESA 服务团队可提供固件（如有必要）。

如需更新固件，请使用 TESA Display Service 软件，可在我们官网的“下载”一栏找到。

1. 1.运行 TESA Display Service 软件。
2. 2.点击“浏览...”，选择 .bin 格式文件以进行最新版本的固件更新。
3. 3.将弹出新窗口，以执行以下步骤。



1. 使用主电源为显示器供电。
2. 使用 USB A-B 电缆 (04760151) 将显示器与主机连接。
3. 连接 jack 踏板 (04768001)。
4. 持续按住 jack 踏板。
5. 同时按住主开关，启动显示屏以进入更新模式。更新将会自动进行。
6. 现在可以松开踏板。



如需检查更新，请重启显示器。点击启动屏幕上的 TESA 标志。一个显示当前固件版本的窗口将会弹出。

7. 字体版权

7.1 Noto

本设备可能使用下列字体软件：Noto。该字体软件属于Noto项目的一部分，其免费开源受《SIL开源字型许可证版本1.1》的保护。
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7.2 Open sans

本设备可能使用下列字体软件：Open sans。该字体软件由Steve Matteson设计，其免费开源受《Apache 许可证2.0》的保护。
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认证：

质量保证部

9. 常见问题

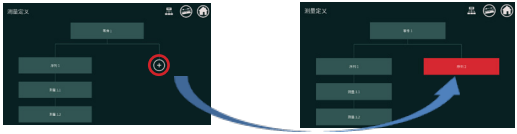
9.1 如何增加一个序列?

在测量页面中选择“首页”(home)

在首页中选择“测量定义”。

这是显示器交付时的默认配置：通过1个序列和显示在同一个序列中的2次测量来执行零件的测量程序。

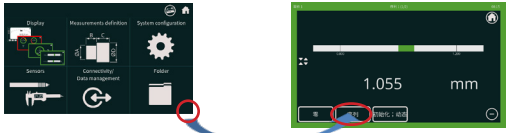
在“电流计”显示方式中，所显示的测量数量仅限于1次测量和1个序列。当更改显示方式时，仅保留第一次测量。



使用“+”按钮创建第二个序列

使用右侧箭头将测量1.2移至第二个序列中。

9.2 如何从一个序列切换至另一个序列?

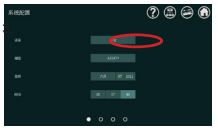


使用“+”按钮显示“序列”（sequence）按键。
然后，使用“序列”（sequence）按键转至下一个序列。

注意:
查看屏幕顶部便可轻松了解所显示的序列情况：

9.3 如何更改语言?

2.



4.

ANNEX A: SIL OPEN FONT LICENSE V1.1

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

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TESA Technology
Bugnon 38 – CH-1020 Renens – Switzerland
Tel. +41(0)21 633 16 00 – Fax +41(0)21 635 75 35
www.tesatechnology.com – tesa-info@hexagon.com

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