TESA TECHNOLOGY

PRODUCT INFO



TESATRONIC TT100 & TESA-MODUL

Multifunction Industrial Display for Dimensional Measurement

The TT100 digital display enables the simultaneous visualization of up to 32 measurement values, making it suitable for both production environments and quality control laboratories.

It's rugged aluminum housing with a touchscreen display provides a high level of protection for reliable use in industrial environments.

Different measuring probes and sensors are connected via TESA-MODUL interfaces. This remote connection through the TESA-BUS allows numerous measurement configurations; supporting TESA probes, HEIDENHAIN probes, temperature sensors, and other types of sensors.

The intuitive user interface makes it easy to set dimensional tolerances and select the most suitable display mode for optimal readability.

The display also offers an advanced mode, enabling the creation of sequential measurement programs and the visualization of results using SPC (Statistical Process Control) functions.

Key Features:

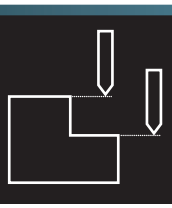
- *Simultaneous display of up to 32 measurement values*
- *Simultaneous management of up to 99 sensor inputs*
- *Large 7" touchscreen*
- *Measurement program creation*
- *SPC functions Gauss, deviation*
- *Internal memory for up to 1000 measurement values*
- *Sensor connection via TESA-MODUL*



Main Features:

- Display of up to 32 dimensions simultaneously on the screen
- Management of up to 99 instruments connected via TESA-MODUL
- Resolution down to 0.1 µm
- 7-inch touchscreen
- Creation of measurement programs
- Statistical Process Control (SPC) functions
- Four display modes: Bar Graph, Analog Indicator, Digital Indicator, and SPC
- Storage of up to 1000 measurement values in the internal memory
- Storage of up to 128 part references in the internal memory
- Management of up to 32 workstations (workstations = screens within the TT100)
- Automatic detection triggered by sensor movement
- Static and dynamic measurements (minimum, maximum, max–min, average, median)
- Mathematical functions (calculated dimensions based on other dimensions, trigonometric calculations)
- Calibration, calibration verification, and calibration validity management
- Measurement data transfer via USB or RS-232
- Data storage in the internal memory (up to 1,000 measurements per part reference) or on a USB flash drive
- Connection to programmable logic controllers (PLCs) via the TESA-MODUL IO-8

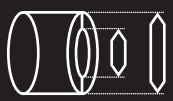
Examples of measurements that can be performed with the TT100 display:



- Height
- Height Difference



- Thickness



- Inner Diameter
- Outer Diameter



- Warping
- Flatness



- 2D Mode
- 3D Mode

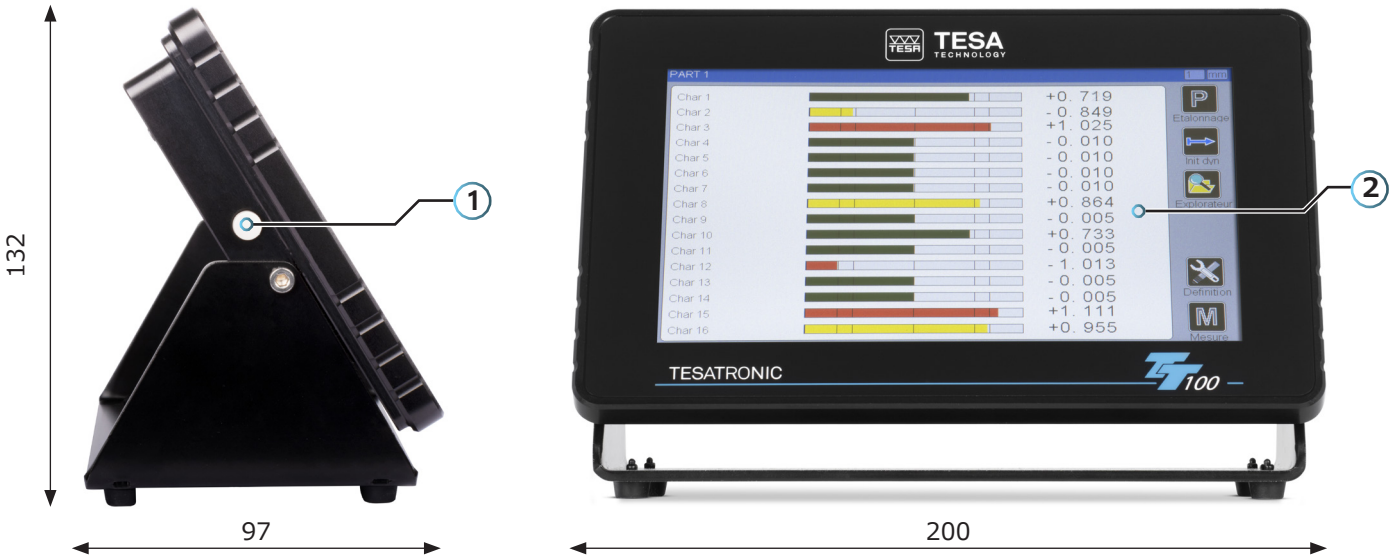


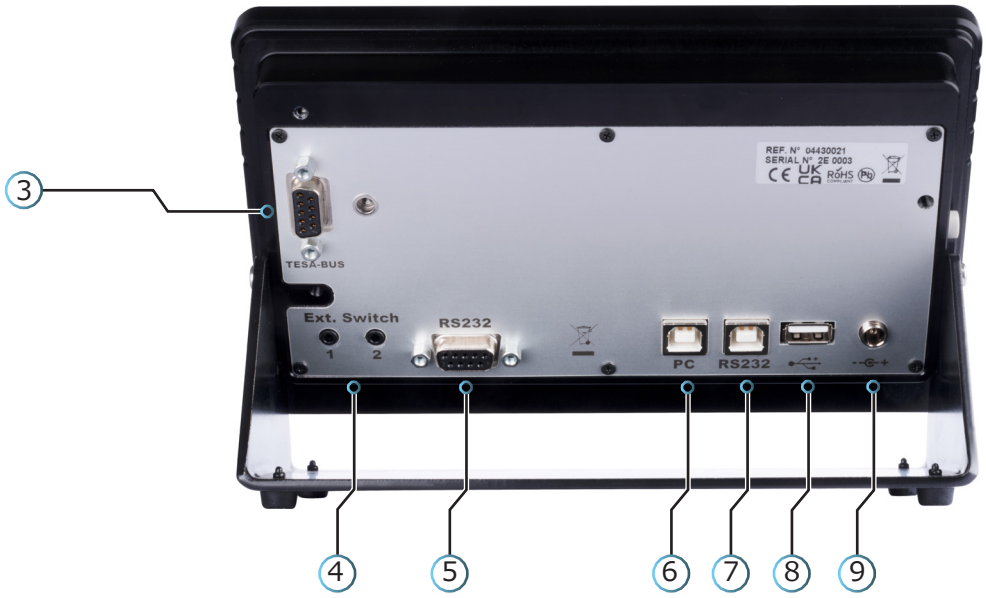
- Stroke
- Positioning

Software Functions:

Intuitive Menu	• Basic or advanced operating mode • Drop-down menus • Customizable contextual menu for the measurement screen
Languages	• English, French, German, Italian
Metrology Displays	• Analog gauge display, up to 1 dimension per screen • Bar graph display, up to 32 dimensions per screen • Digital indicator display, up to 12 dimensions per screen
Dimension Settings	• Automatic probe detection through sensor movement • Mathematical functions • Trigonometric functions • mm/inch conversion • Reversible measurement direction • Relative/absolute mode • Dimension tolerances • 16 classifications • OK / NOK / REWORK indication
Adjustable Calibration Mode	• Calibration value repeatability test to prevent drift • Drop-back test to verify proper probe operation • Automatic recalibration based on the number of measured parts or a predefined calibration interval • Calibration delay setting
Menu Locking	• Explorer menu access lock • Calibration lock • Workstation (page) change lock
Footswitch and Button Programming	• Functions: workstation change, data transfer, calibration, data storage, measurement sequence step • Up to 3 functions per actuator
Measurement Programs / Parts	• Up to 128 part programs stored in the TT100 • Up to 32 dimensions per part • Up to 32 workstations (pages) per part • Up to 1,000 measurements per part (internal memory)
SPC Statistics	• SPC functions • Histogram with Gaussian curve • Pareto analysis • Trend chart

Product Description:





No.	Description
1	ON/OFF power switch
2	7" touchscreen
3	1 × TESA-BUS Sub-D 9S port
4	2 × Ø 2.5 mm jack sockets for foot pedal
5	1 × RS-232 Sub-D 9S serial port + firmware update
6	1 × USB-B device port (connection for HID PC keyboard)
7	1 × USB-B virtual COM port (ASCII protocol + Modbus RTU, driver required)
8	1 × USB-A host port for peripherals (keyboard, USB flash drive, QR code reader)
9	24 V power supply connector

The table mounting feet are included. They allow the display to be tilted up to a horizontal position.

Specifications

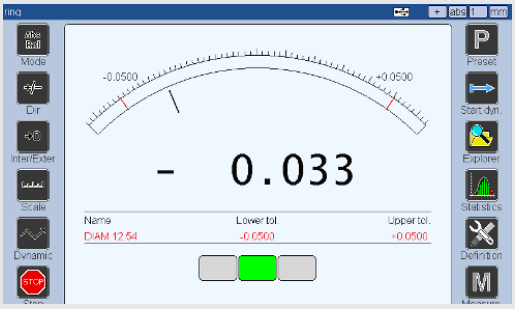
	TESATRONIC TT100
Article number	04430021
Description	Multifunction industrial display for dimensional measurement
Maximum number of sensor inputs managed simultaneously	Up to 99
Resolution	0.1 µm / 0.00001 in
Static measurement	Yes
Dynamic measurements	Min, Max, Max–Min, Median, (Max–Min)/2, Average
Sampling rate	Depends on the TESA-MODUL used
Standard operating conditions	20 °C ± 1 °C, relative humidity 40–65%, non-condensing
Operating limits	10 °C to 40 °C, relative humidity < 80%, non-condensing
Storage conditions	–10 °C to 60 °C, relative humidity < 80%, non-condensing
Indication error (at 20 °C, RH = 50%, using simulated probes)	Depends on the TESA-MODUL used
Zero drift (at 20 °C and RH = 50%)	Depends on the TESA-MODUL used
Protection rating	IP65 (front panel), IP20 (other sides)
Power supply	Input: 100–240 VAC, 50–60 Hz, 3.6 A Output: 24 VDC, 1.2 A
Power consumption	18 W sans appareil connecté (without connected devices)
Compliance	CE, UKCA
Weight	1.2 kg
Package contents	• TT100 • Power supply • Power cable • 4 interchangeable plug adapters (EU, UK, USA and CH) • Self-test report • 2 packaging foam inserts

Wall mounted bracket

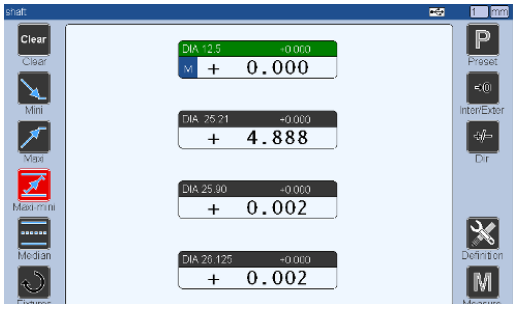


The wall mounted bracket accessory 04460023 allows the display to be flush-mounted into a wall or panel

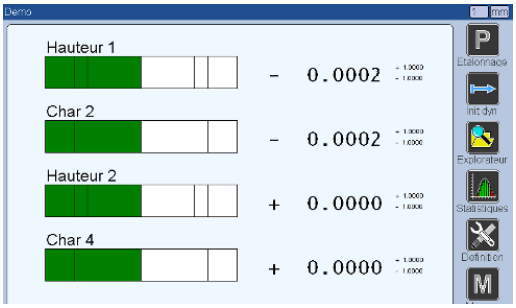
User Interface



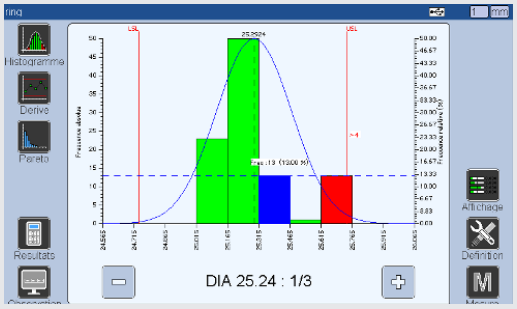
Analog Gauge Display
One dimension displayed at a time



Digital Indicator Display
Up to 8 dimensions per screen



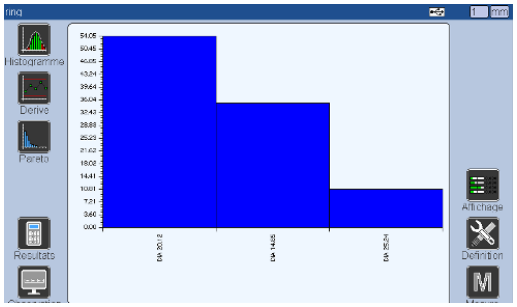
Bar Graph Display
Up to 32 dimensions per screen



Histogram with Gaussian Curve



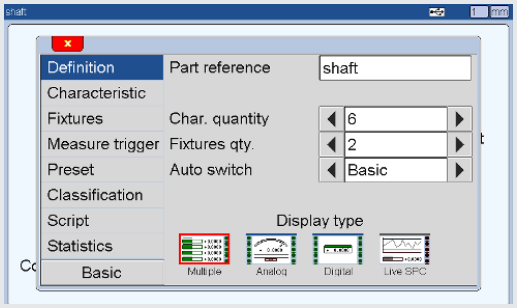
Trend Chart



Pareto Analysis



Main Menu



Dimension Menu

TESA-MODULE – TESA-BUS modules for TESA displays

The TESA-MODUL range offers multiple connection configurations for TESA displays via the TESA-BUS port.

These modules provide interfaces for various measuring probes, sensors and input signals, enabling automated data acquisition and expanding the range of measurement configurations.

TESA-BUS is a communication protocol used for data exchange between the TESA display and the TESA-MODUL units.



TESA-BUS allows the sensors to be remotely connected to the display without any loss of signal quality, while simplifying installation through a single 9-pin Sub-D cable (Part No. 04761052).

The modules feature rugged aluminum housings designed for demanding industrial environments. They can be daisy-chained for quick and easy integration on a DIN rail.



A colour code makes it possible to identify each type of TESA-MODUL.

TESA-MODUL Range

TESA MODUL

TESA MODUL

Multiplexer solution
Probe connection unit

TESA-MODUL HB-4A
4 TESA half-bridge probe inputs



Part number:	04130303
Dimensions (mm)	82 x 41 x 77
Connectors:	4 × 5-pin DIN 45322
Indication error:	0,3 µm + 0,2% x L (L in mm)
Sampling frequency:	6500 Hz synchronous acquisition (dynamic measurements)
Compatibility:	Dummy probes Linearized probes

TESA-MODUL HB-8A
8 TESA half-bridge probe inputs



Part number:	04130304
Dimensions (mm)	132 x 41 x 77
Connectors:	8 × 5-pin DIN 45322
Indication error:	0,3 µm + 1,2% x L (L in mm)
Sampling frequency:	400 Hz multiplexed acquisition (static measurements)
Compatibility:	Not compatible with dummy or linearized probes

TESA-MODUL SIN-2 HD
2 HEIDENHAIN probe inputs



Part number:	04130320
Dimensions (mm)	82 x 41 x 77
Connectors:	2 × Sub-D 15-pin female
Indication error:	Depends on connected probe
Compatibility:	HEIDENHAIN probes type 1 Vpp and 11 µApp

TESA-MODUL DM-4
4 DIGIMATIC instrument inputs



Part number:	04130315
Dimensions (mm)	107 x 41 x 77
Connectors:	4 × DIGIMATIC
Indication error:	Depends on connected instrument
Compatibility:	DIGIMATIC handheld instruments

TESA MODUL

Digital solution – automation interface
Connects an automation device to a TESA display

TESA-MODUL IO-8
8 digital inputs / outputs



Part number:	04130301
Dimensions (mm)	82 x 41 x 77
Connectors:	Screw terminal block (included)
Power supply::	12 – 30 VDC
Current consumption:	≤ 30 mA

TESA MODUL

Temperature measurement module
Ambient temperature monitoring

TESA-MODUL TP
1 thermocouple input



Part number:	04130318
Dimensions (mm)	51 x 41 x 77
Connectors:	Type K & PT100 / PT1000
Thermocouple:	Type K, AISI 310 (included)



TESA MODUL

Relay contact outputs – limit value control
Used for dimension status evaluation

TESA-MODUL IOSUB
Relay outputs



Part number:	04130300
Dimensions (mm)	82 x 41 x 77
Connectors:	Sub-D 15-pin female
Compatibility:	No compatible con TT100
Voltage:	≤ 50 V
Current:	≤ 2 A

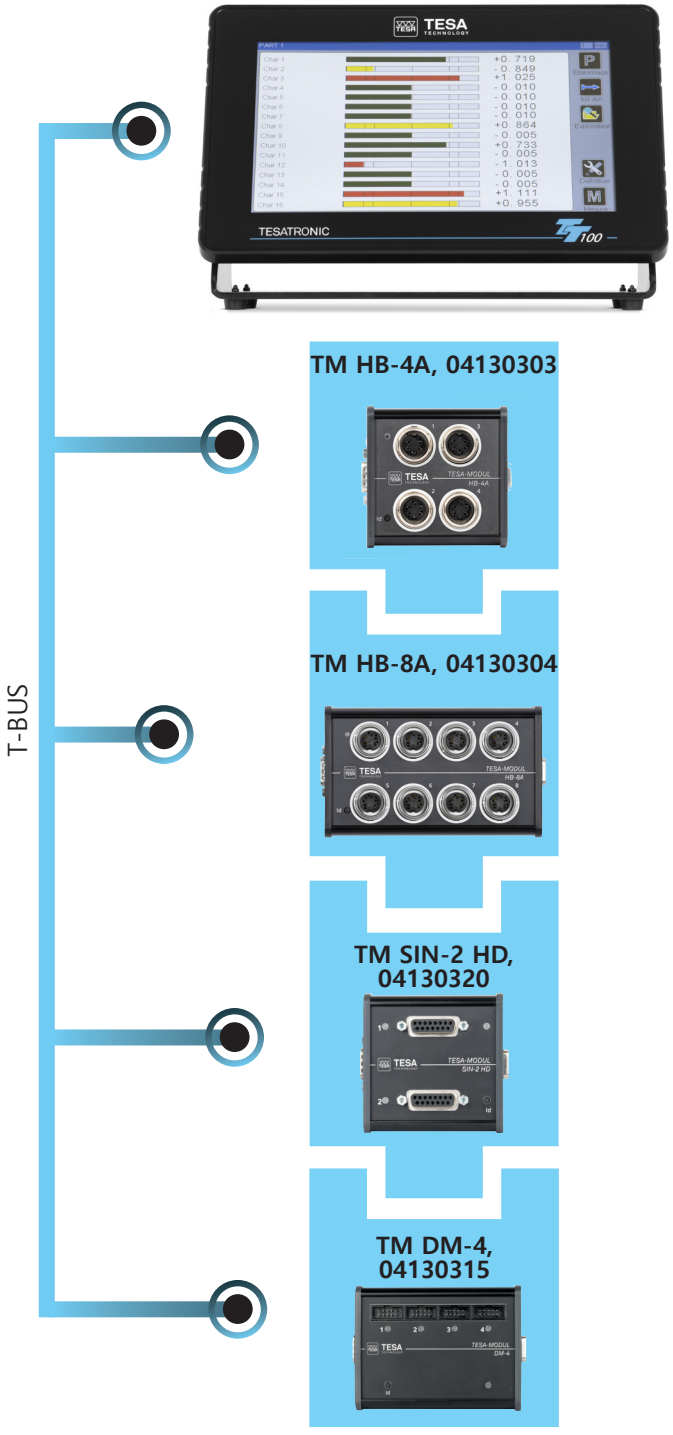
TESA-MODUL HB-4A / HB-8A / SIN-2 HD / DM-4

The multiplexing solutions allow a mixed connection of probes and instruments, making it possible to adapt optimally to different measurement applications. Measurements of flatness, straightness, or any other dimensional measurements are possible thanks to the high capacity of up to 99 instruments connected simultaneously.

The TESA-MODUL HB-4A and HB-8A modules enable the connection of TESA probes to solve multi-dimension measurement applications.

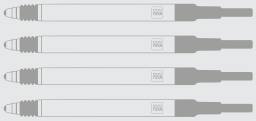
The TESA-MODUL SIN-2 HD module enables the connection of HEIDENHAIN probes, type 1 Vpp and 11 µApp. The wide measuring range of these probes allows absolute measurements on parts up to 100 mm.

The TESA-MODUL DM-4 module enables the connection of wired instruments with Digimatic-type connectors. This type of connection allows the combination of instruments from multiple brands within a single measurement interface.



CUSTOMER APPLICATION

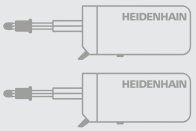
4 × TESA half-bridge probes



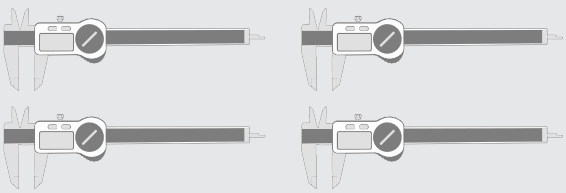
8 × TESA half-bridge probes



2 × HEIDENHAIN probes

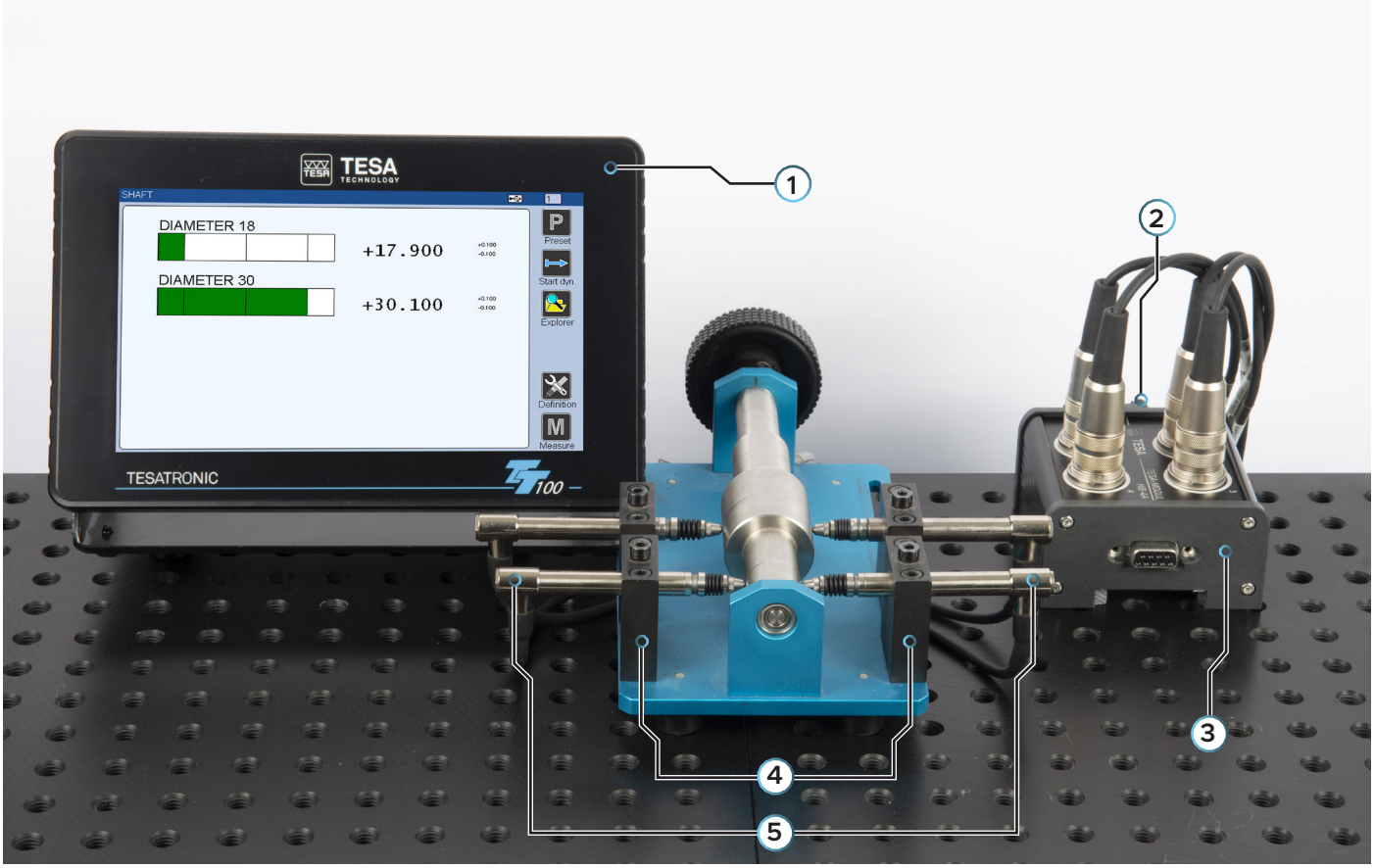


4 × DIGIMATIC instruments



TESA-MODUL HB-4A Application

The four TESA probes allow two diameters to be measured on a shaft. Two readings are displayed for each diameter, based on the sum of the measurements from two probes.



Equipment List

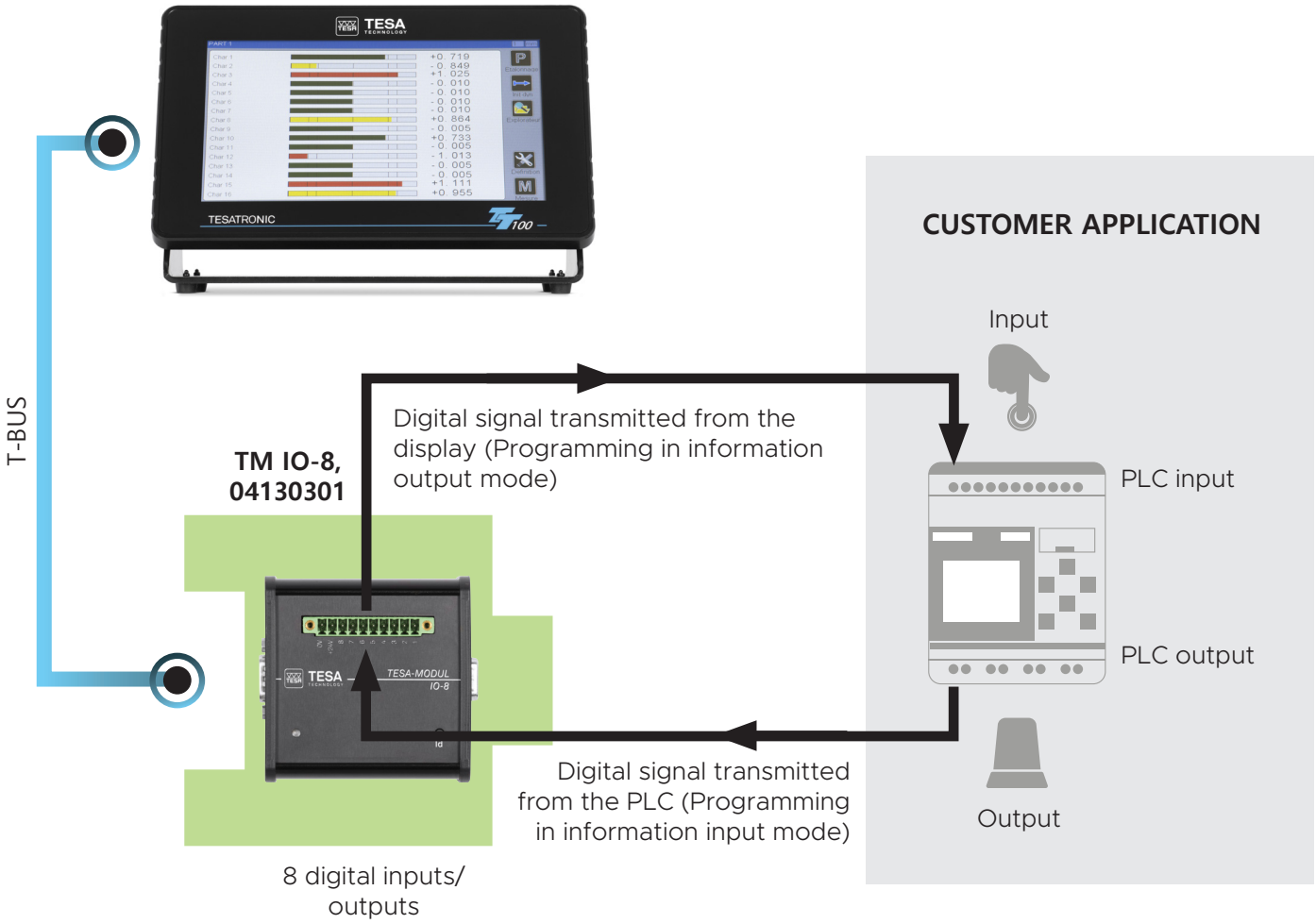
Position	Quantity	Item number	Description
1	1	04430021	TESATRONIC TT100 Display
2	1	04761052	9-pin Sub-D cable, 2M
3	1	04130303	TESA-MODUL HB-4A, 4 TESA half-bridge sensor inputs
4	4	02660048	VK-Befestigung
5	4	03210924	GT 22 Probe

TESA-MODUL IO-8

The TESA-MODUL IO-8 is the ideal solution for interfacing automation devices with TESA displays.

The intuitive assignment of actions to each terminal via the TESA display allows the creation of automation sequences based on inputs and results shown on the TESA display.

Each terminal can be freely assigned as either an input or an output.



Application examples:

- Calibration of measured dimensions triggered by a signal from a programmable logic controller (PLC)
- Transfer of results via Bluetooth at the end of a measurement step
- Activation of a light signal depending on the active class number of the measured value

Input information mode programming

In “input information” mode, this module allows measurement automation through the acquisition of information on the display coming from a programmable logic controller (PLC), for example.



Functions	Descriptions
Next sequence	Action to move to the next sequence
Transfer	Data transfer action according to the display’s data transfer settings
Init. Dyn	Initialization of the dynamic mode value
Zero	Reset display to zero
Zero clear (removes calibration)	Removes calibration or returns to raw probe value
Calibration	Sets the display measurements to the reference standard value
Sequence	Activation of the selected sequence (reserves 2 terminals, binary counting)
Part	Activation of the selected part (reserves 2 terminals, binary counting)

Output information mode programming

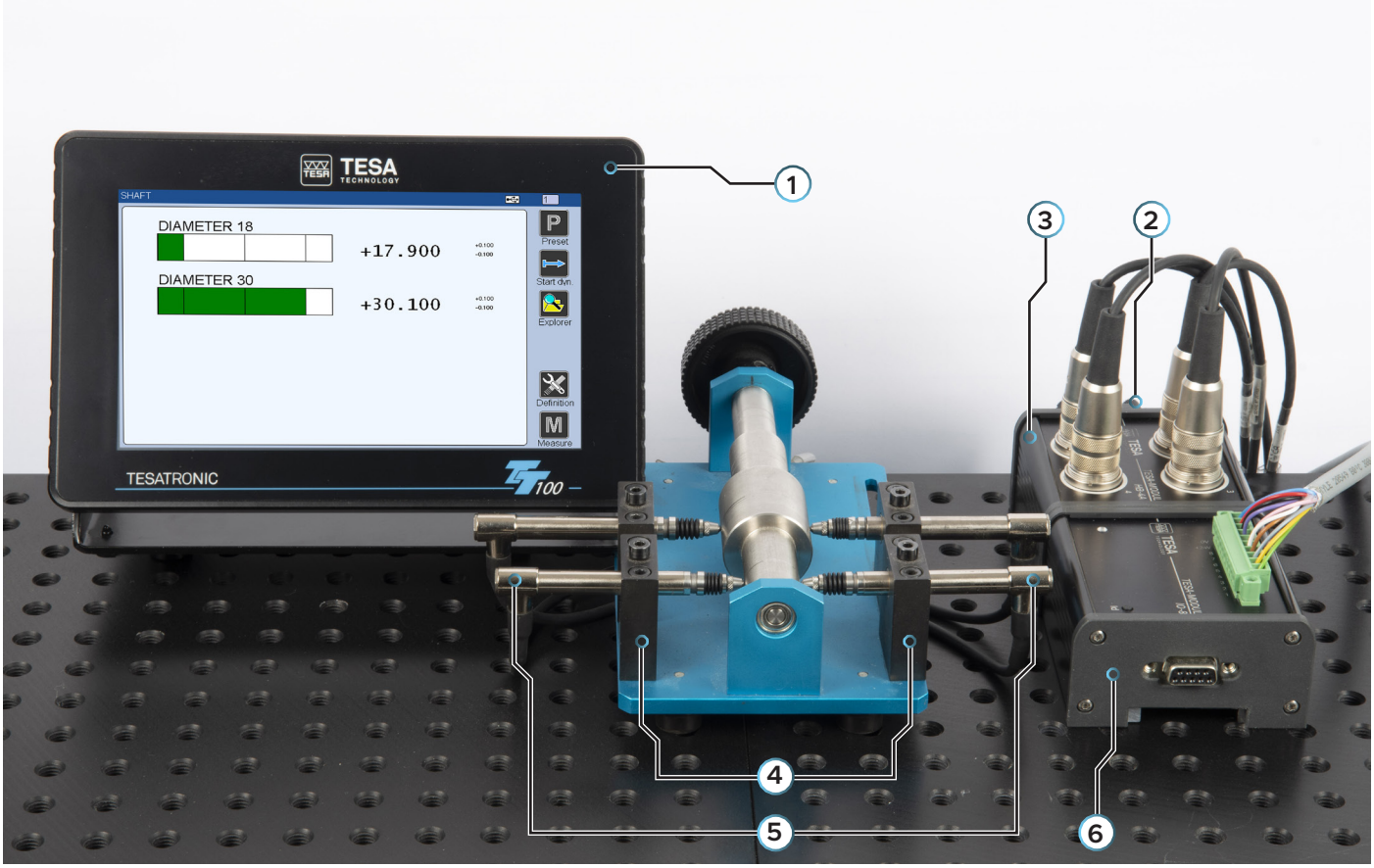
Output mode functions allow measurement results to be displayed on a light signal, for example.



Functions	Descriptions
Sequence OK	Terminal activated if the sequence result is within tolerances
Dimension OK	Terminal activated if the selected dimension is within tolerances
Dimension class number	Activates terminals according to the active class number of the dimension (binary counting)

Application TESA-MODUL IO-8

The TESA-MODUL IO-8 interface between the TT100 display and the automation device allows measurement calibration actions to be triggered by a signal from the programmable logic controller (PLC).



Equipment List

Position	Quantity	Item number	Description
1	1	04430021	TESATRONIC TT100 Display
2	1	04761052	9-pin Sub-D cable, 2M
3	1	04130303	TESA-MODUL HB-4A, 4 TESA half-bridge sensor inputs
4	4	02660048	VK-Befestigung
5	4	03210924	GT 22 Probe
6	1	04130301	TESA-MODUL IO-8, 8 digital inputs/outputs

TESA-MODUL TP

The TESA-MODUL TP allows temperature sensors to be connected.

Type K thermocouples and PT100 probes are compatible. Only one sensor can be connected at a time. The thermocouple supplied with the module is Type K, with AISI 310 refractory steel sheath.

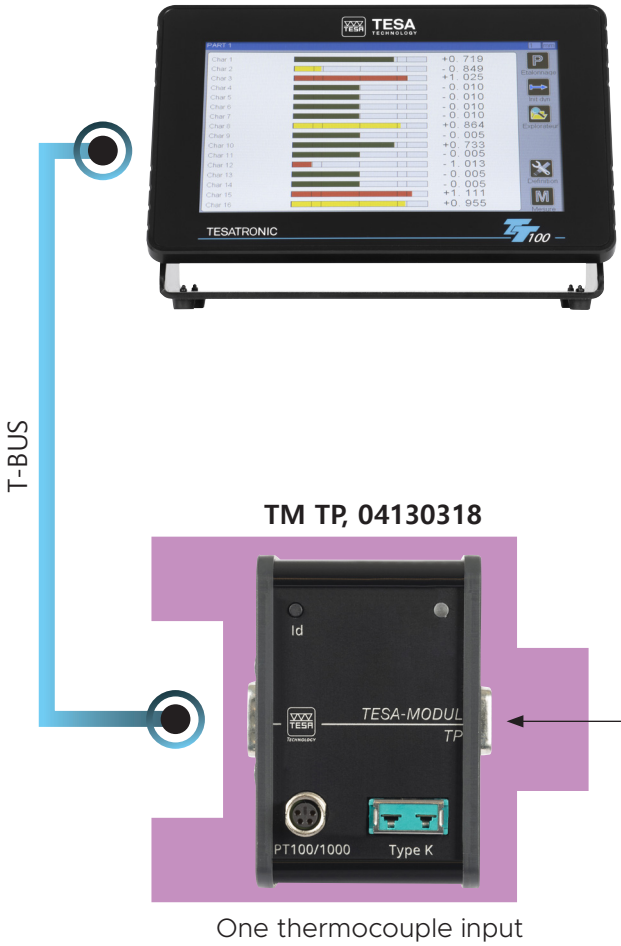
Two functions are available:

-Display of the current temperature on the screen as a dimension.

-Use of the sensor in temperature monitoring mode. (Not compatible with TT100; only TWIN-TESATRONIC)

In monitoring mode, if the temperature is outside the defined tolerance range, the dimension turns red to indicate to the user that the temperature is outside the set threshold.

If a calibration value is defined in the dimension, a message appears when the temperature value goes out of tolerance. The user must recalibrate the measurement sequence to avoid measurement errors due to ambient temperature variations.



One thermocouple input

CUSTOMER APPLICATION



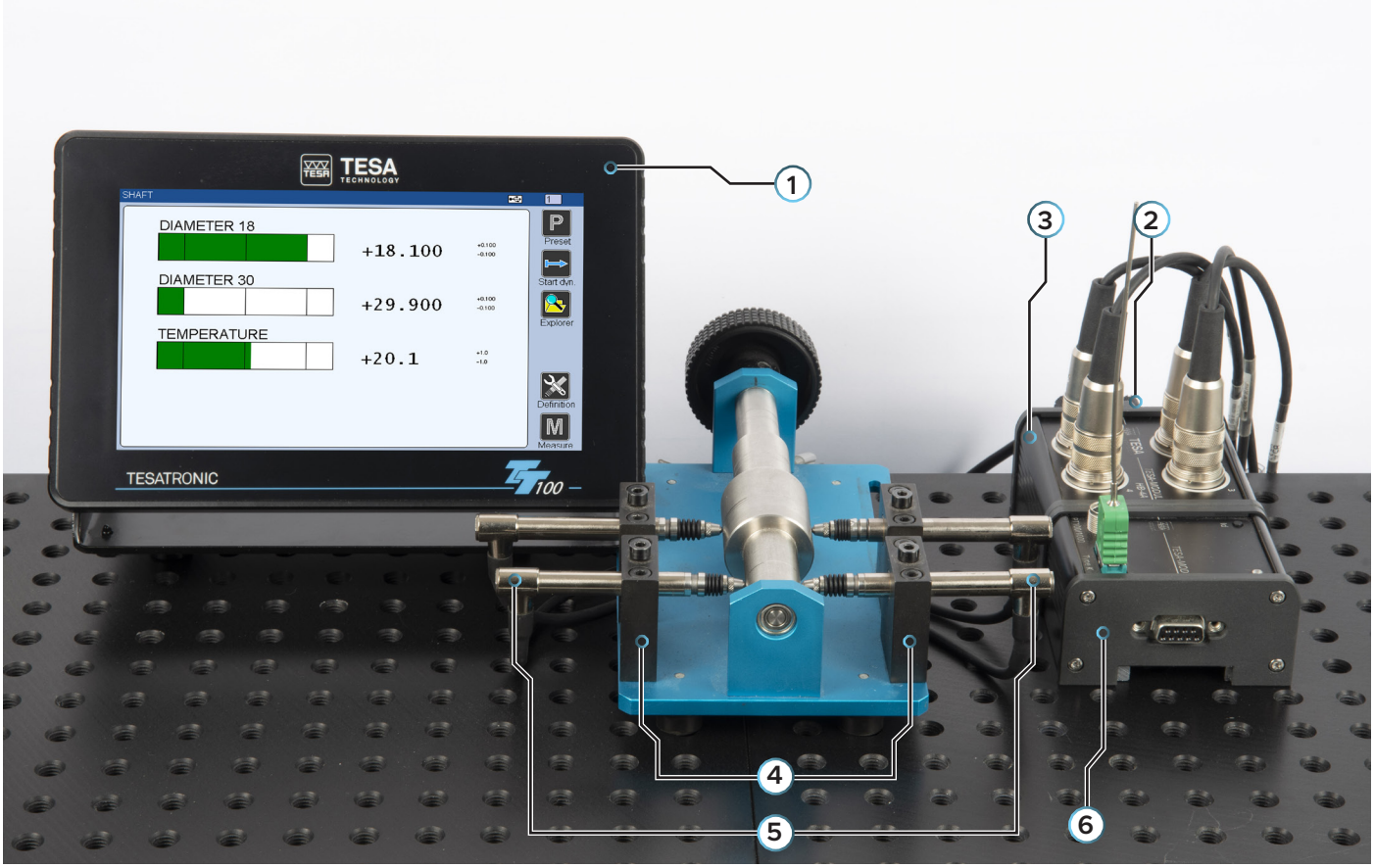
Termopar

Examples of applications:

- Display of the ambient temperature of the measurement application
- Temperature monitoring. In case of temperature threshold exceedance, recalibration is requested (Not compatible with TT100, only with TWIN-TESATRONIC)

Application TESA-MODUL TP

The thermocouple connected to the TESA-MODUL TP allows the ambient temperature of the laboratory to be displayed instantly.



Equipment List

Posición	Cantidad	Número de artículo	Descripción
1	1	04430021	TESATRONIC TT100 Display
2	1	04761052	9-pin Sub-D cable, 2M
3	1	04130303	TESA-MODUL HB-4A, 4 TESA half-bridge sensor inputs
4	4	02660048	VK-Befestigung
5	4	03210924	GT 22 Probe
6	1	04130318	TESA-MODUL TP, 1 thermocouple input

TESA-MODUL IOSUB

The TESA-MODUL IOSUB allows the use of tolerance results (Good, Reject, Rework) by activating relay contacts.

It is ideal, for example, for transmitting the status of a dimension via a visual indicator (light signal).

The TESA-MODUL IOSUB ensures backward compatibility with applications connected to the Sub-D 15p/f connector of older TESATRONIC TT20 and TT60 systems.

TM IOSUB, 04130300



Relay outputs

Application examples

- Transmission of the dimension status via a light signal
- Transfer of the measurement result to an electrically controlled relay system

Usage precautions

- This module is not compatible with the TT100 display. It is only compatible with the TWIN-TESATRONIC series.*
- The TESA-MODUL IOSUB must be connected alone on the TESA-BUS, without any other TESA-MODUL, to avoid reading errors on the display.
- The TESA-MODUL IOSUB works only with the result of dimension 1 in sequence 1.
- Dimension 2 and sequence 2 cannot be used with this module. This is to reproduce the same operation as the former TESATRONIC TT20/TT60 systems.
- The analog output based on measurement is not available.



REJECT





GOOD

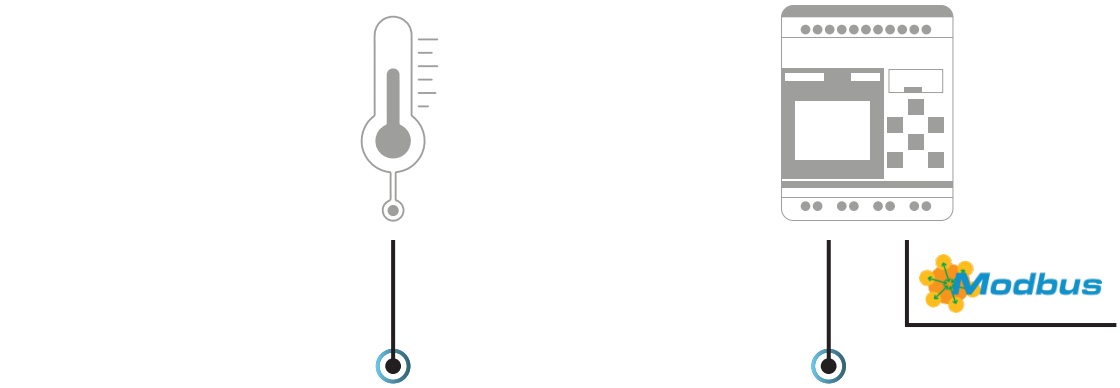




REWORK

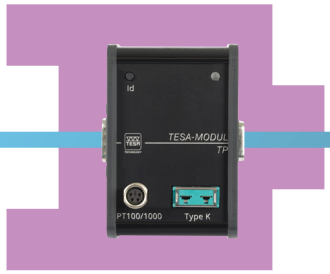


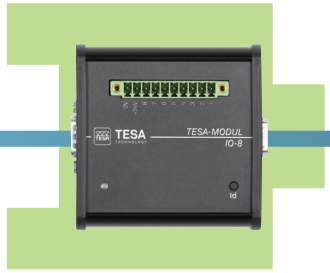
*TWIN-T20, TWIN-T20 Ultimate, TWIN-T20 Nano, TWIN-T40.



1 x temperature

Digital signal





TM TP
04130318

TM IO-8
04130301

T-BUS

TM HB-4A
04130303



TM HB-8A
04130304



TM SIN-2 HD
04130320



TM DM-4
04130315

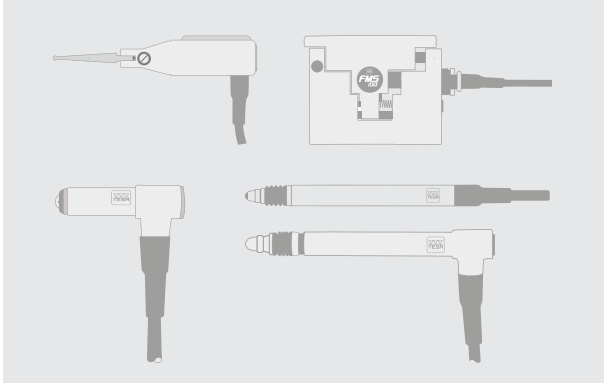


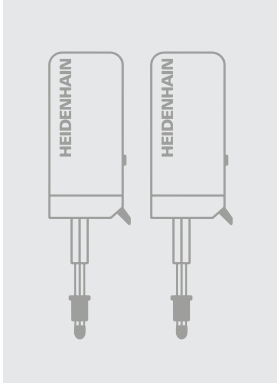
4 x probe TESA

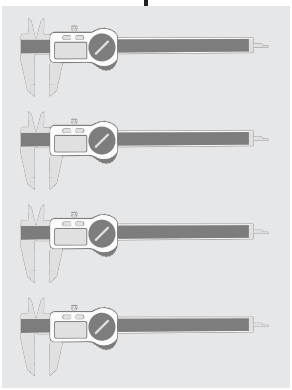
8 x probe TESA

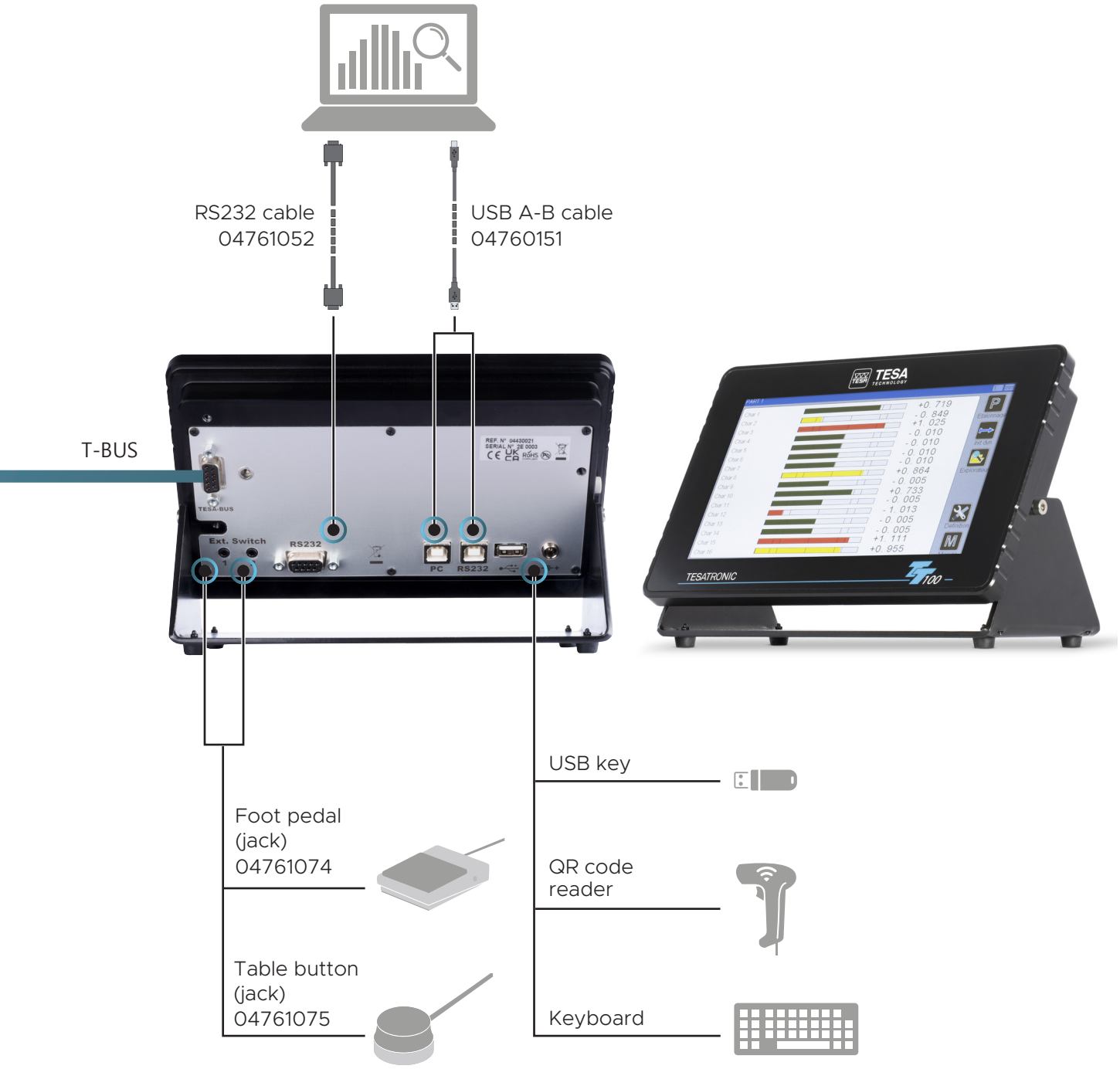
2 x probe HEIDENHAIN

4 x DIGIMATIC







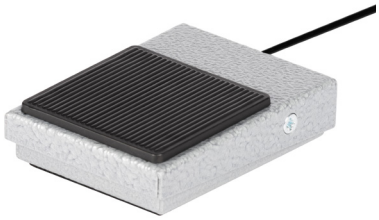

RS232 cable
04761052
USB A-B cable
04760151
T-BUS
TESA-BUS
Ext. Switch
RS232
PC
RS232
TESATRONIC
USB key
Foot pedal
(jack)
04761074
QR code
reader
Table button
(jack)
04761075
Keyboard



04460016



04460023



04761074



04761075



04761063



04760151



04761052

Part number	Description
04460016	Power supply + power cable + 4 interchangeable plugs EU, UK, USA and CH
04460023	Wall mount
04761074	Footswitch, jack, 2.0 m
04761075	Table button, jack, 2.0 m
04761063	Sub-D 9p/m to USB cable, 2 m
04760151	USB A-B cable, 1.8 m
04761052	Sub-D 9p cable, 2 m

SCAN → MEASUREMENT → RESULTS → CLASS

SCAN
The QR code reader allows the operator to select the measurement program. All class tolerance limits are automatically loaded into the display.

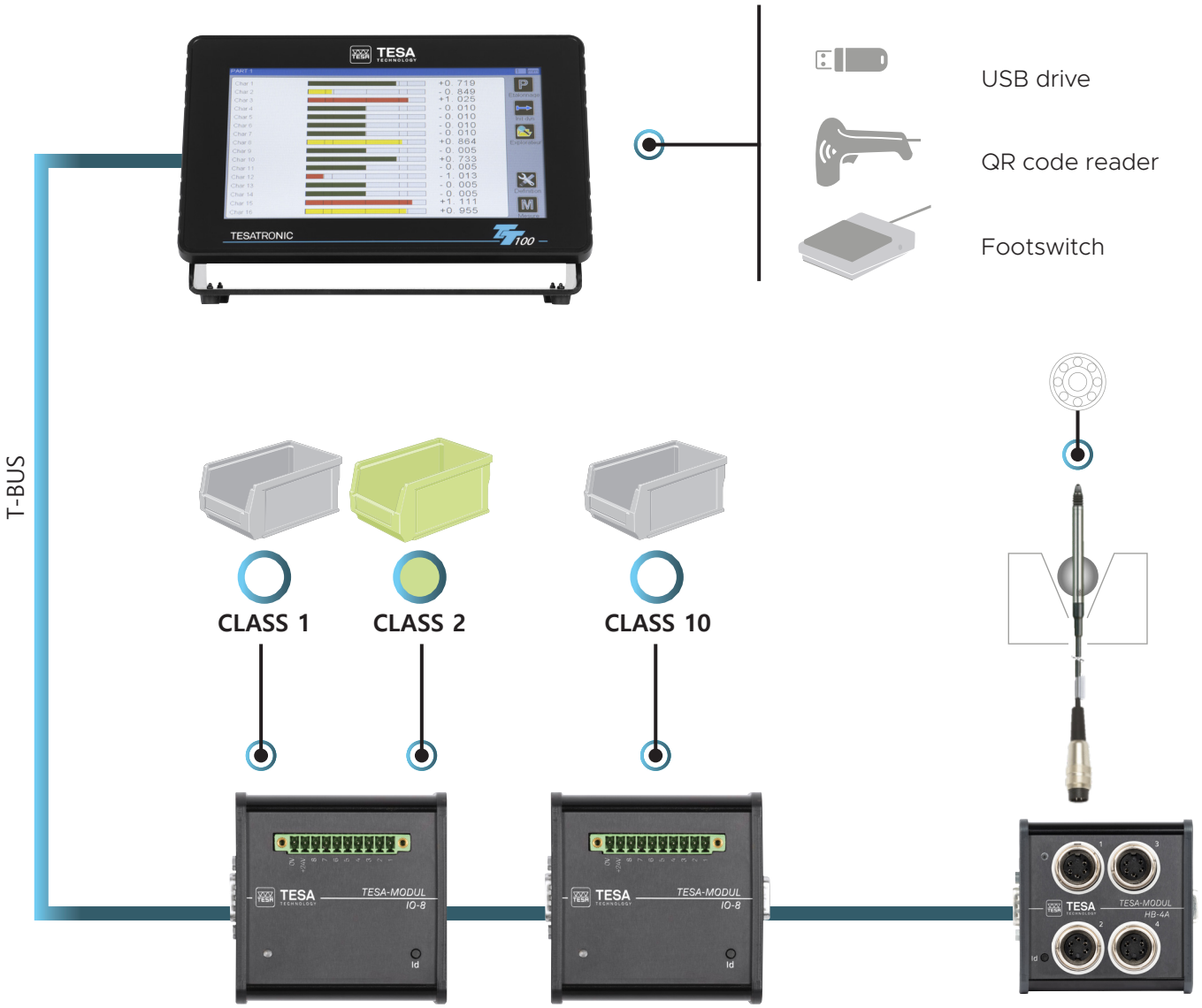
MEASUREMENT
The measurement is performed using a TESA probe connected to the TESA-MODUL HB-4A. The wide range of TESA probes ensures the best adaptation to the specific measuring application.

Pressing the foot pedal calibrates the system and sets the reference.

RESULTS
The measurement result is displayed on the screen together with the class number. The bar graph provides an easy visual indication of the measurement result.

A USB flash drive can be used to save the measurement data for each sorted part.

CLASS
The part can now be placed in the correct bin according to the class displayed on the screen.



INPUT SIGNAL → MEASUREMENT → RESULTS → OUTPUT SIGNAL

INPUT SIGNAL

The connection between the PLC and the TT100 display via the TESA-MODUL IO-8 enables information exchange. An input signal from the PLC triggers an action on the TT100 display (e.g. calibration).

MEASUREMENT

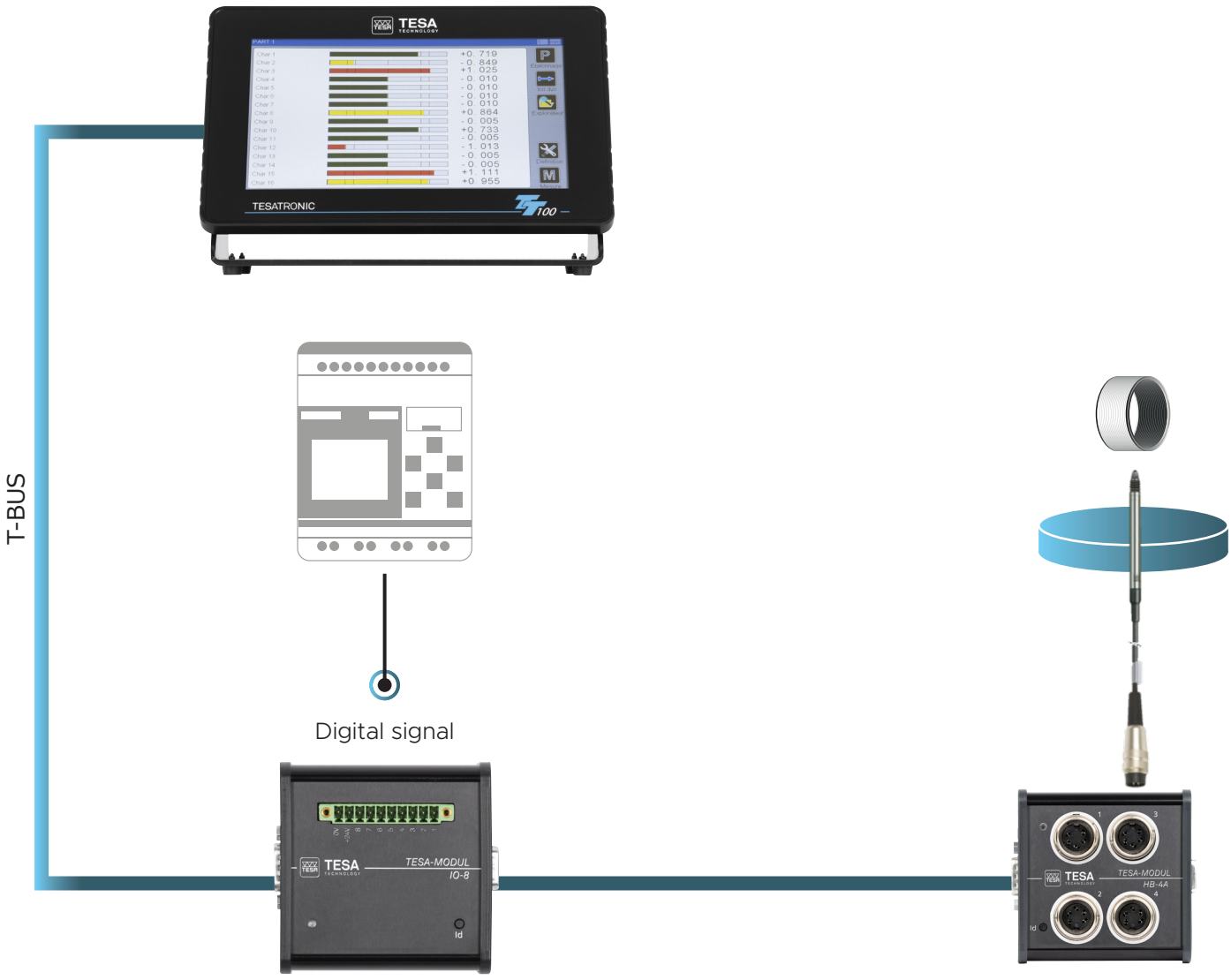
Once calibration has been completed, the operator can proceed with measuring the part.

RESULTS

The bar graph displayed for each measurement step provides improved readability of the measurement result.

OUTPUT SIGNAL

The TESA-MODUL IO-8 converts the measurement result into a binary output signal. The information is transmitted to the PLC when the result is within the specified tolerances. Otherwise, no signal is transmitted.



SCAN → MEASUREMENT → RESULTS → REPORT

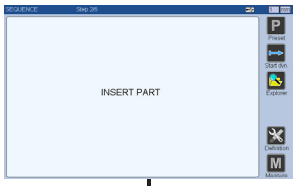
SCAN
The QR code reader allows the operator to select the measurement program. The measurement sequence is automatically loaded into the display.

MEASUREMENT
Each step displays the dimension to be checked. Attribute inspections (Go/NoGo) are also supported.

RESULTS
The bar graph displayed for each measurement step provides improved readability of the measurement result.

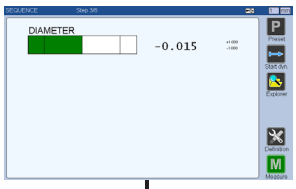
REPORT
The results table provides an overall view of all measurement results, including various SPC charts.

1 MESSAGE DISPLAY



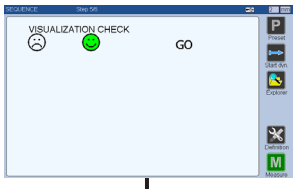


2 MEASUREMENT



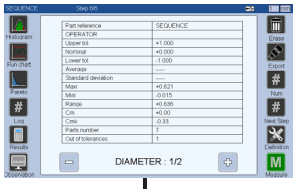


3 VISUALIZATION CHECK





4 DATA ANALYSIS





5 DATA EXPORT

DATA EXPORT
STATISTIC

- CSV
- USB
- Run chart
- Histogram
- Pareto chart