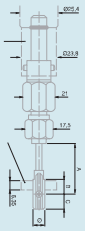
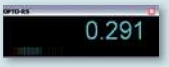
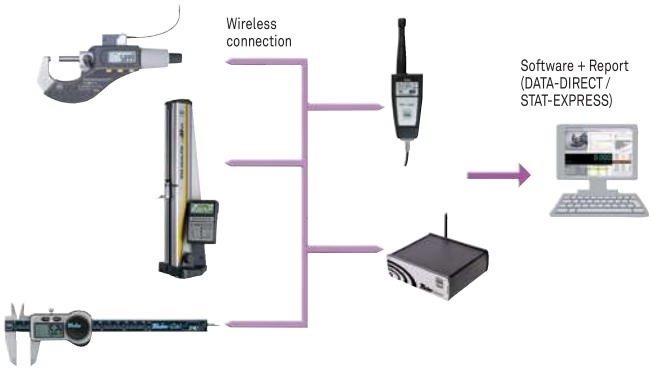
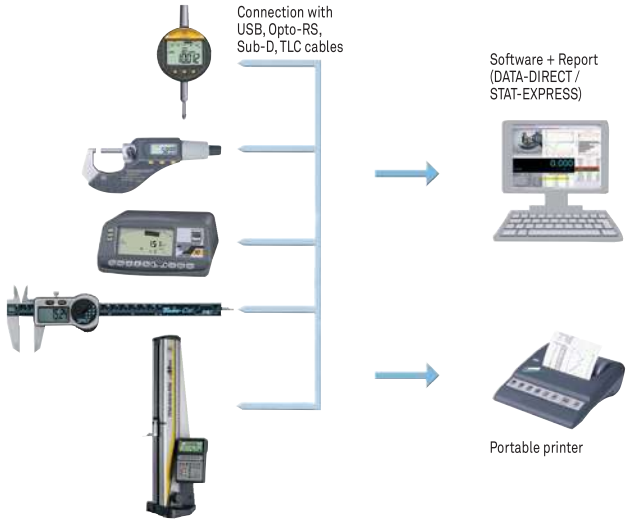
Connectivity

TESA SOFTWARE, CABLES AND LINKS FOR THE TRANSFER OF MEASURING RESULTS.

Inspection, traceability and cost reduction have a growing significance in all industrial sectors. This requires not only high quality metrology instruments, but also software suitable for evaluation and further analysis of the measurements carried out.

PRODUCTION		INSPECTION		EVALUATION	ARCHIVING	
						TESA DATA-DIRECT List of measurements, archiving, customised results calculations, traceability, statistics.
						TESA STAT-EXPRESS Statistical analysis of measurements, control charts, traceability and sharing of results.
						TESA PRINTER SPC Simple statistics, without the need for a PC, documented traceability.
		Measuring instrument		Software or portable printer	Database Electronic file (PDF) Printed report	





TESA offers various types of connection between measuring instruments and a PC as well as software for the management of results so that the production process can be optimised, quality improved and documents for traceability can be created.

DATA-DIRECT Software

DATA-DIRECT software is an easy way to collect and report results in real time from the majority of the measuring instruments in the TESA range that have a data output.

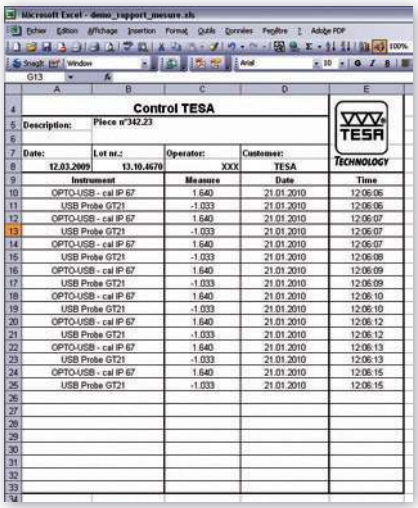
DATA-DIRECT is supplied not only with serial input/output drivers specially configured for TESA's products, but also for those purchased from other manufacturers. It works effectively to give data transfer for your data sheets, database, statistical modules or any other Windows-based applications.

With this user-friendly software you will be able to create your own reports for component inspection.

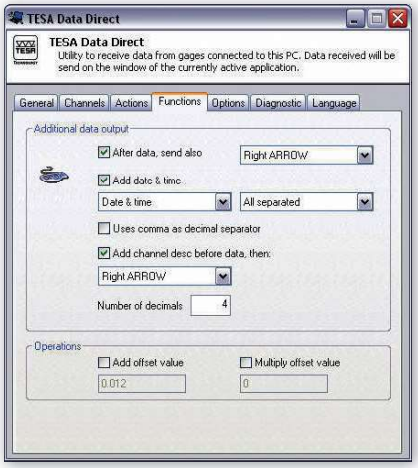
Minimum system requirements to run DATA-DIRECT:

- Pentium 4 or equivalent
- 512 MB RAM (live memory)
- 10 GB HD
- Windows XP, Windows 7 (32 or 64 bits) or Windows 8 (32 or 64 bits)

Please contact your TESA representative or an authorised distributor for a 30-day demo version.



List of measured values within a third party software, e.g. MS Excel



Tab function providing the facility to present the measured values

DATA-DIRECT: main window

Customisable tool bar

Real time display of the measured value in a separate window

		Included in delivery
04981001	DATA-DIRECT Software and dongle	TESA DATA-DIRECT installation CD with licence key (dongle) USB and user instructions (PDF version)

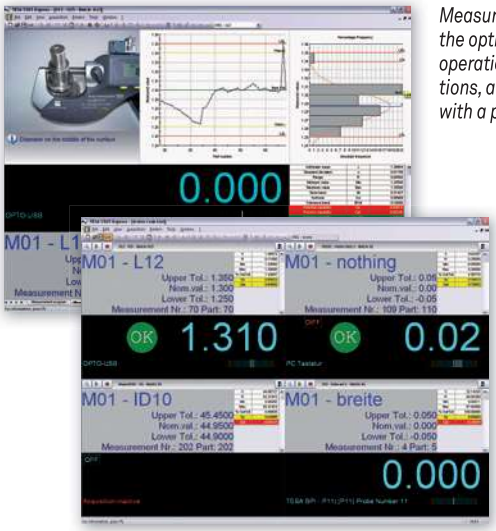
	TESA DATA-DIRECT Software
TESA Instruments compatible with DATA-DIRECT	Opto-RS Cables – Opto-USB Cables – Height gauges (TESA-HITE, MICRO-HITE) – USB probes – Surface roughness gauges RUGOSURF 10 / 20 / 10G / 90G – TPS presetting bench – BPX probe interface – TWIN-STATION wireless probe interface – TESA wireless systems – TLC-TWIN wireless transceiver
Other instruments compatible with DATA-DIRECT	Custom made instruments with RS232 output – Instruments from other makers: Mitutoyo: DMX3 - DMX8 – Steinwald single 6 – Etc.
Functions	Export of results to .csv file – ASCII commands – Real time dispay of measured results on a PC (except for models using the Rf-USB receiver)

STAT-EXPRESS Software

STAT-EXPRESS is a dedicated software package that enables the application of quality assurance into your manufacturing processes. It allows the downloading, reporting, transfer and storage of your quality-oriented control charts.

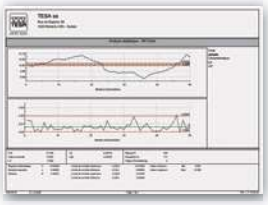
STAT-EXPRESS is compatible with all TESA's products – from calipers through to CMM or Vision machines. As an integrated software tool, STAT-EXPRESS provides the flexibility required for easy data transfer from most of the electronic gauges currently available on the market.

STAT-EXPRESS offers the ability to create reports including measured values obtained from a single instrument or several handtools, assign tolerances, calculate statistics, print out various measurement reports, compute XR control charts, and much more.



Measuring display with the option of adding operational instructions, accompanied with a photo or drawing

Simultaneous data acquisition from several measurement programmes



XR Control chart

Minimum system requirements to run STAT-EXPRESS:

- Pentium 4 or equivalent
- 512 MB RAM (live memory)
- 10 GB HD
- Windows XP, Windows 7 (32 or 64 bits) or Windows 8 (32 or 64 bits)

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Detailed measuring report for each feature measured

Detailed measuring report for each part measured, together with serial number

		Included in delivery
04981002	STAT-EXPRESS software and dongle	TESA DATA-DIRECT installation CD with USB licence key (dongle) and user instructions (PDF version)

	STAT-EXPRESS Software
TESA instruments compatible with STAT-EXPRESS	Opto-RS cables – Opto-USB cables – Height gauges (TESA-HITE, MICRO-HITE) – USB probes – Surface roughness gauges: RUGOSURF 10 / 20 / 10G / 90G – TPS presetting bench – BPI Probe interface– BPX probe interface – TWIN-STATION wireless probe interface – TESA wireless systems – TLC-TWIN wireless emitter-receiver
Other instruments compatibles with STAT-EXPRESS	Custom made instruments with RS232 ouput – Instruments from other makers: Mitutoyo: DMX3 - DMX8 – Steinwald single 6 – etc.
Features	DATA-DIRECT included – Export of results to .csv file – Import of .csv files – Table of all measured results – XR control charts – Report by part measured – Report by feature measured – Simultaneous data acquisition – Overall report with statistics – Measuring report in .pdf or .html format etc.– Security protection set for each user

USB Accessories: Adaptor Sub-D 9pm/USB, Multiplexer USB, Foot Switch USB

S47120002

S47120003

04761071

		L, m	Connector (to PC or system)
S47120002	USB-D-Sub 9p/m adapter cable	0,1	USB
S47120003	USB multiplexer with 7 USB 2.0 ports. with external power supply, Max 4x 04761062 and 04761063.		USB
04761071	USB footswitch. For simultaneous data request from DATA-DIRECT or STAT-EXPRESS software of all connected instruments	2	USB

TESA Portable SPC PRINTER

TESA portable intelligent printer designed for the inspection of finished parts or incoming goods – Provides SPC statistics and prints out measurement results with graphical representations.

The TESA SPC PRINTER can be connected not only to TESA measuring instruments, but also to those provided with a DIGIMATIC output – Your TESA SPC PRINTER is capable of recognising the plug in tool and will execute the appropriate configuration automatically.

TESA SPC Printer

- Memory capacity : 9999 single values for one feature per sample.
- Two operating modes: “Normal” and “Tolerance”.
- Limits of size quickly set on the display of the connected instrument with subsequent transfer to TESA PRINTER SPC.
- Output of statistical values printed out with graphical representations.
- Output of reports with headings to be filled in by the operator.
- Hardcopies printed in preferred language (English, German, French, Italian or Spanish).
- Battery-powered (6 V) printer unit for use on the move (optional).

06430000	SPC PRINTER EU Portable. With memory, SPC, value classification and graphs. RS232 interface
DELIVERED WITH THE FOLLOWING ACCESSORIES:	
04765013	Roll of printer paper, width = 110 mm for TESA SPC Printer
04761054	Mains adapter /battery charger 100 ÷ 240 VAC 50 ÷ 60 Hz, 6,6 Vdc, 750 mAh supplied without cable
04761055	EU Mains cable for 04761054 adapter
OPTIONAL ACCESSORIES:	
04761056	USA Mains cable
04768035	Battery charger 6V, 0,5AH

180 x 180 x 84 mm (W x D x H)

Paper width: 110 mm. Print mode: 40 signs/line

RS232 for data inputs (9-pin male, trapezoid connector) DIGIMATIC (Ansley connector, 10-pin) Connector with mini-jack for remote triggering of data transfer

Mains adapter 100 to 240 Vac, 6,6 Vdc. Optional accessory: 6 V rechargeable battery pack.

IP40 (IEC 60529)

EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2

	"Normal" Mode	"Tolerance" Mode
Lower size limit (min.)	–	●
Upper size limit (max.)	–	●
Tolerance	–	●
Number of values taken:		
number of samples	●	●
< smallest dimension	–	●
> largest dimension	–	●
% out of tolerance	–	●
Lowest value listed	●	●
Highest value listed	●	●
Dispersion R	●	●
Arithmetical mean	●	●
Standard deviation sn, sn-1	●	●
Indication of capacity Cp, Cpk	–	●
Graphical representations: Position of each single value within the tolerance zone (10 classes)	–	●
Graphical representations: Histogrammes	–	●
Display (LED) - Classification of the value measured: Green for pass, yellow for rework,red for reject	–	●

1 x CR2032 3,0 V, 230mAh

12 months. Can be influenced by battery level.

EN 61326-1
EN 61000-4-3
ROHS, according to 2002/95/CE
EMC, according to 2004/108/CE
DEEE, according to 2002/96CE
REACH 1907/2006
ETSI EN 300 440 – 2 (CH et EU)
CFR and FCC 15.249

Wireless Connection for TWIN-STATION Receiver

The ultimate in flexibility and freedom of movement.

TESA TLC-TWIN wireless technology offers the flexibility of a hand tool thanks to bidirectional communication made possible by an instrument equipped with a TLC (TESA Link Connector) also compatible with the:

- TLC-TWIN-emitter/receiver station
- TLC-USB connecting cable
- TLC-Digimatic connecting cable.

*** The sale of the TLC-TWIN is currently restricted to EU countries, Switerland USA and Canada
*** Please contact TESA for further information.

Up to 48 instruments can be managed by the TWIN-STATION receiver over a maximum range of 12 m.

The IP67 degree of protection of an instrument is preserved, even when the TLC-TWIN is connected.

When a visual check that the measured result has been sent to the computer is not possible, an indication on the display of the instrument enables the user to confirm that the result has been sent and received.

TESA IP67 caliper used with a TLC-TWIN

TLC-TWIN Wireless emitter-reciever (04760180)

NO		Operating range, m	Compatible with connector	Diameter, mm	Weight, g
04760180	TESA TLC-TWIN wireless emitter-receiver. Compatible with any instrument fitted with a TLC (TESA Link Connector)	~ 12 (dependent on conditions)	TLC (TESA Link Connector)	Ø 28	~ 10
OPTIONAL ACCESSORIES:					
05030012	TWIN-STATION BPW Probe box				
04981001	DATA-DIRECT software and dongle				
04981002	STAT-EXPRESS software and dongle				

TWIN-STATION Receiver

TWIN-STATION: Receiver for wireless TLC-TWIN emitter-receiver units

Receives input signals from wireless TLC-TWIN emitter-receiver units

Output signals – digital, RS232

- Direct connection to a PC via the USB port.
- Optimal use for your measuring tasks as up to 48 instruments equipped with TLC-TWIN can be connected to this unit.
- Great reliability.

*** the sale of TWIN-STATION is currently limited to EU countries, Switzerland, USA and Canada
*** Please contact TESA for further details.

TWIN-STATION (front view)

TWIN-STATION (rear view)

NO	=	Number of instruments with TLC-TWIN	Power supply	Weight, kg
05030012	TWIN-STATION for TLC-TWIN wireless data transmisson	48	Power supply via: - USB port of the PC - connected USB hub - USB hub of the BPX interface	0,85

- Housing case in aluminium
- Power supply via the connection of the USB cable: - directly to the PC (USB Port) to a mains powered USB hub
- IP 40 (IEC 60529) (DIN 40050)
- IEC/EN 61326-1 U.S. 47 CFR part 15, subpart B, Class B digital device
- Data transfer delay from digital serial output (USB): depends on the operating system of the computer.
- RS232
- 55 x 172 x 155 mm (H x W x D)
- USB Cable 1, 80 m
- For a temperature of 20° C and a relative humidity of ≤ 50%: Digital output: ± (0,05 + 0,15% of the measuring range)

Transfer of Results with TESA LINK CONNECTOR TLC

TESA presents its new connectivity concept: the TLC connector that allows freedom of movement, flexibility, and ease of use, all combined.
Once an instrument is equipped with a TLC connector:
1) There is no longer any need to choose between a model with or without data output.
2) There is inbuilt compatibility for both cable and wireless connectivity.
3) A TLC connector can also be used for connection to a USB interface, a DIGIMATIC interface or for wireless connection, using a suitable cable or emitter-receiver unit, see table below:

Instrument equipped with a TLC connector. For example, TESA TWIN-CAL IP67 caliper

Wireless connection	Cable connection	
TLC-TWIN Two way wireless emitter-receiver unit	**TLC-USB** Two way communication cable	**TLC-DIGIMATIC** Two way communication cable
		
+	+	+
TWIN-STATION receiver base station for signals from the wireless TLC emitter-receiver unit	Interface with USB port	DIGIMATIC* interface
		
Personal computer		

* Please check with TESA for the list of equipment and instruments compatible with TESA-DIGIMATIC

OPTO AND SUB-D CONNECTION

Standard Opto Connection

Any connecting cable is defined by each of the connectors fitted at either end of the cable principally to suit the computer, and the measuring instrument being used. To achieve highest compatibility levels, TESA uses only standardized and proven connectors.

Examples of instruments with type Opto connector:

TESA-CAL IP67 / IP65 – TESA MICROMASTER – TESA IMICRO – TESA ALESOMETRE – TESA DIGICO 10 / 11 / 205 / 305 / 400 / 500 / 600 / 705 – TESATRONIC TT20 / TT60 / TT80 / TT90 – INTERAPID - Light

No		L, m	Connection (to instrument)	Connection (to PC or system)
04761062	Opto-USB cable, duplex, bidirectional communication	2	Opto-RS232	Type A USB
04761046	Opto-RS cable, simplex, 2 m, one way communication: from the instrument to the PC	2	Opto-RS232	Sub-D 9p/f Simplex
S47010022	Opto-RS cable, simplex, 5 m, one way communication: from the instrument to the PC	5	Opto-RS232	Sub-D 9p/f Simplex
04761049	Opto-RS cable, duplex, 2 m, bidirectional communication	2	Opto-RS232	Sub-D 9p/f Duplex
S47010024	Opto-RS cable, duplex, 5 m, bidirectional communication	5	Opto-RS232	Sub-D 9p/f Duplex
04761027	Connecting cable without connector	2	Opto-RS232	Without connector

04761062

04761046

04761049

04761027

Current systems		Compatible connectors	
	=		
TESA PRINTER SPC		Sub-D 9p/f	Ansley 10p/f
	=		
Computer		USB	Sub-D 9p/f

Standard Sub-D Connection

RS232, Sub-D 9p/m connector connecting cables for the following machines or precision handtools:TESA MICRO-HITE /TESA-HITE / TESA-µHITE / TESA TG / 3D Machines

04761063

04761052

S47120002

No		L, m	Connector (to instrument)	Connector (to PC or system)
04761063	Sub-D 9p/m to USB cable, 2M	2	Sub-D 9p/m	USB
04761052	Extension cable, Sub-D 9p/f to 9p/m, 2 m	2	Sub-D 9p/m	Sub-D 9p/f
S47010025	Extension cable, Sub-D 9p/f to 9p/m, 10 m	10	Sub-D 9p/m	Sub-D 9p/f
S47120002	Sub-D 9p/m to USB adapter cable	0,1	Sub-D 9p/m	USB

Connecting Cables from the Instrument to a PC or Computer Controlled System

04760181

04760182

Instrument connection: special CLINOBEVEL

04761038

Instrument connection: special DIGICO 12

PC/system connection: Ansley 10p/f

Instrument connection: MiniDIN 8p/m

Instrument connection: Special for DIGICO 1 or 2

NO		L, m	Connection (to instrument)	Connection (to PC or system)
04760181	TESA TLC-USB CABLE for instruments with a TLC connector	2	TLC (TESA Link Connector)	USB
04760182	TLC-DIGIMATIC CABLE for instruments with a TLC connector	2	TLC (TESA Link Connector)	Ansley connector 10 pin/f
04761023	Cable: miniDIN 8p/m to Sub-D 9p/f, 2 m for TT10 and MICRO-HITE manual versions 10/11/12	2	MiniDIN 8p/m	Sub-D 9p/f
04761024	Cable: miniDIN 8p/m to Sub-D 25p/m, 2 m for TT10 and MICRO-HITE manual versions 10/11/12	2	MiniDIN 8p/m	Sub-D 25p/m
04761038	Cable: miniDIN 8p/m to Sub-D 25p/m for DIGICO 1 and 2, with powered display	3	Special connector for DIGICO 1 or 2	Sub-D 25p/f
S47078588	Cable for DIGICO 1 or 2 and TESA SPC printer	2	Special connector for DIGICO 1 or 2	Ansley connector 10 pin/f
04761060	RS232 cable with external power supply	2	Specially for DIGICO 12 and TESA IP65 electronic lever type dial test indicators	Sub-D 9p/f
03969007	RS232 Sub-D 9p/f to Sub-D 9p/f, 3 m cable for TESA-REFLEX MH3D, TESA-SCOPE	3	Specially for DIGICO 12 and TESA IP65 electronic lever type dial test indicators	Sub-D 9p/f
S53300165	USB Cable for CLINOBEVEL 1 L = 1,8 m	1,8	Special connector for CLINOBEVEL 1	USB
S53070174	USB Cable for CLINOBEVEL 2 L = 2,5 m	2,5	Special connector for CLINOBEVEL 2	Sub-D 9p/f

Hand / Foot Switches, Adapters, Battery Chargers, Power Cables

04768001

04768000

04761054

04761017

S47001891

NO		L, mm	Connection (to instrument)	Connection (to PC or system)
04768000	Hand switch for triggering data transfer. Jack plug, 1,8 m – to TESA SPC PRINTER – to TESATRONIC (TT) display units	1,8	–	Jack plug
04768001	Foot switch for triggering data transfer. Jack plug, 1,8 m – to TESA SPC PRINTER – to TESATRONIC (TT) display units	1,8	–	Jack plug
04761017	Adapter ADP-01 Sub-D 9pf to Sub-D 25pm		–	–
S47001891	DIGIMATIC adapter for 04761046 cable Sub-D 9p/m to Ansley 10p/f	0,2	–	Sub-D 9p/f or Ansley 10p/f
04761054	Mains adapter /battery charger 100 ÷ 240 VAC, 50 ÷ 60 Hz, 6,6 Vdc, 750 mAh, supplied without cable	2	DC-Jack	–
04761055	EU mains cable for 04761054	1,5	–	–
04761056	USA mains cable for 04761054	1,5	–	–
04761037	Mains cable 230V for DIGICO 1 or 2	2	Special connector for DIGICO 1 or 2	–
04761057	Mains cable 110V for DIGICO 1 or 2	2	Special connector for DIGICO 1 or 2	Sub-D 9p/f

Connecting Cables for RUGOSURF to PC or Printer

Connecting cables for RUGOSURF roughness gauges

04760099

058213

06960062 version 3

056109

04760099	Cable RUGOSURF 20 to PC
06960062	Cable RUGOSURF 10G and RUGOSURF 90G to PC (connector v3)
058213	Connecting cable RUGOSURF 20 to dot matrix printer
056109	Connecting cable RUGOSURF 10G and RUGOSURF 90G to dot matrix printer