



TESA-REFLEX panel II

18.08.2011

TESA-REFLEX panel is one of the TESA-REFLEX Concept key features





- **Accessible to everyone**

- No need to be a metrology specialist

- No need to have one person dedicated by machine type

- **Fast to learn**

- Required training course time minimised

- Same interface between all particular software applications

- **Intuitive**

- User friendly interface

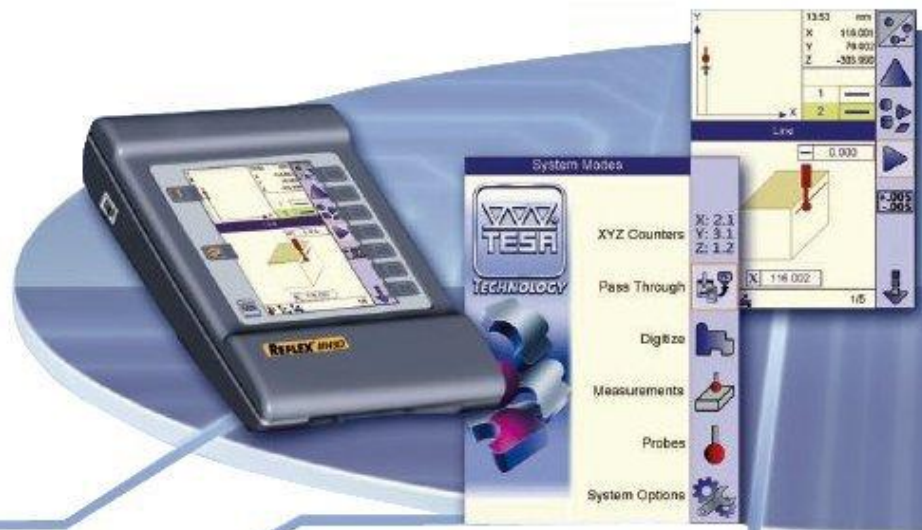
- Simple to understand quickly by customers

- **Simple in use**

- No complicated programming process

- Simple to demonstrate by sales forces

1 Software for 3 Tactile Machine Types



1 Software for 3 Tactile Machine Types

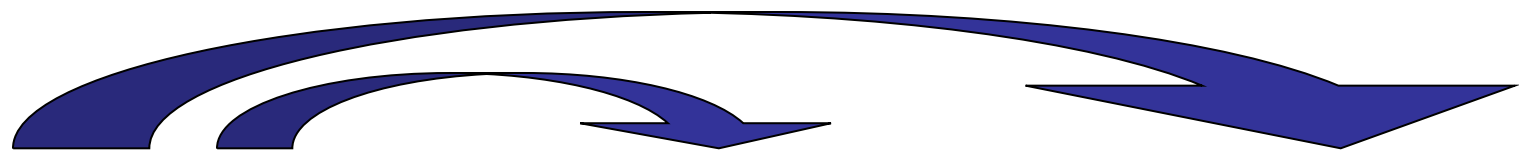
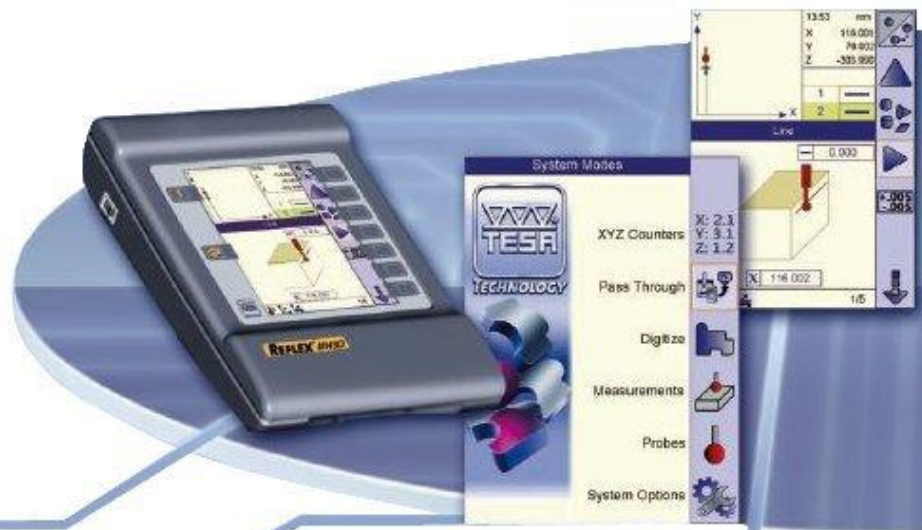


Except the following functionalities due to the the machine type specialities, those three software version remain the same



Going from one version to another is really easy

1 Software for 3 Machine Types



Reference version

Automatic motion

Probe calibration

- Program recalled in automatic or manual modes

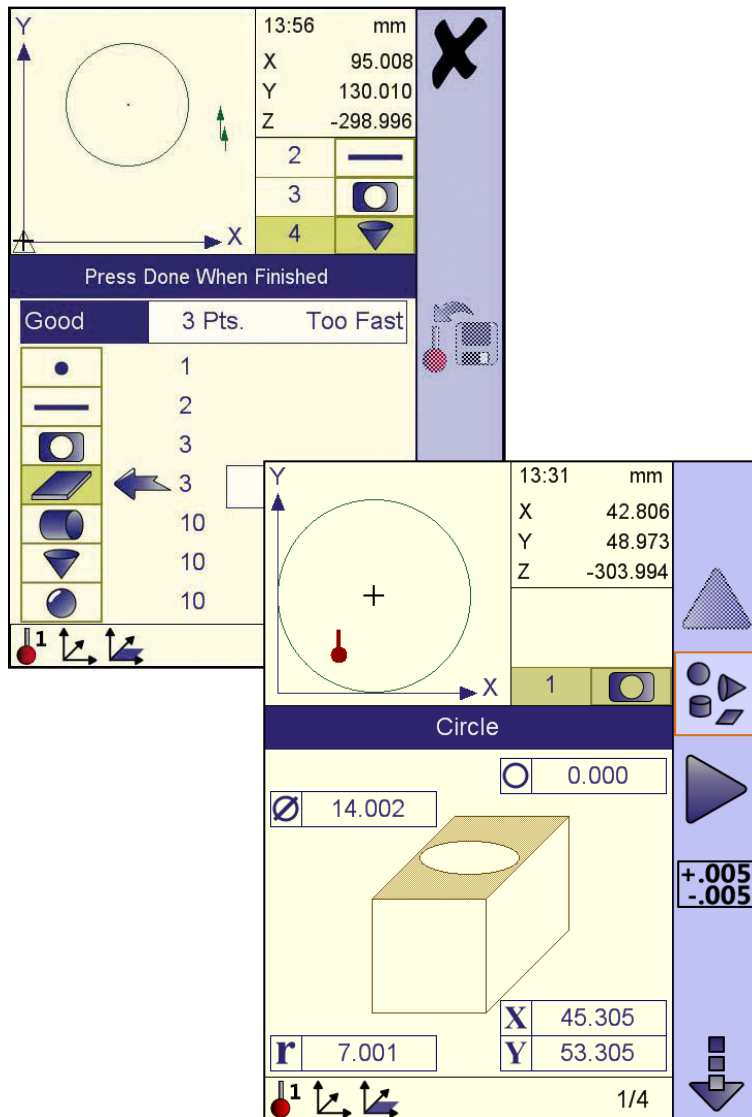
- Automatic probe recognition
- Only one probe calibration required

Overview



LOGY

Panel type	Micro-Hite 3D / RC	Micro-Hite 3D Recorder	Multi-Gage
Software application	TESA-REFLEX MH3D	TESA-REFLEX Recorder	TESA-REFLEX Multi-Gage
Screen	Color	Color	Black/White
Resolution	0.0001	0.0001	0.0001
Peripherals management			
USB printers	✓	✓	✓
USB dongle	✓	✓	✓
Connection with the machine	Cable	Cable	Cable
Measurement Results			
Data saving on USB dongle	✓	✓	✓
Data through serial port	✓	✓	✓
Data sending to USB printer	✓	✓	✓
Measurement Program Management			
Program saving on USB dongle			
Additional Applications Compatibility			
<i>ReflexScan</i>	✓	✓	✓
<i>PcDmis</i>	✓	✓	✓
<i>StatExpress</i> New	✓	✓	✓
<i>DataDirect</i>	✓	✓	✓
Measurement Report Management			
Report Header Management	✓	✓	✗
Go/NOGo Report New	✓	✓	✗
Language			
1x Customisable Language New	✓	✓	✗



13:56 mm

X	95.008
Y	130.010
Z	-298.996
2	—
3	□
4	▽

Press Done When Finished

Good	3 Pts.	Too Fast
•	1	
—	2	
□	3	
▽	3	
○	10	
▽	10	
●	10	

13:31 mm

X	42.806
Y	48.973
Z	-303.994

Circle

∅	14.002	○	0.000
---	--------	---	-------

r	7.001	X	45.305
		Y	53.305

1/4

Only Simple Features

- Point
- Circle
- Cylinder
- Sphere
- Line
- Plane
- Cone

Automatic Feature Recognition

- No need to be specialist
- Gain of time → No previous programming required

Feature results

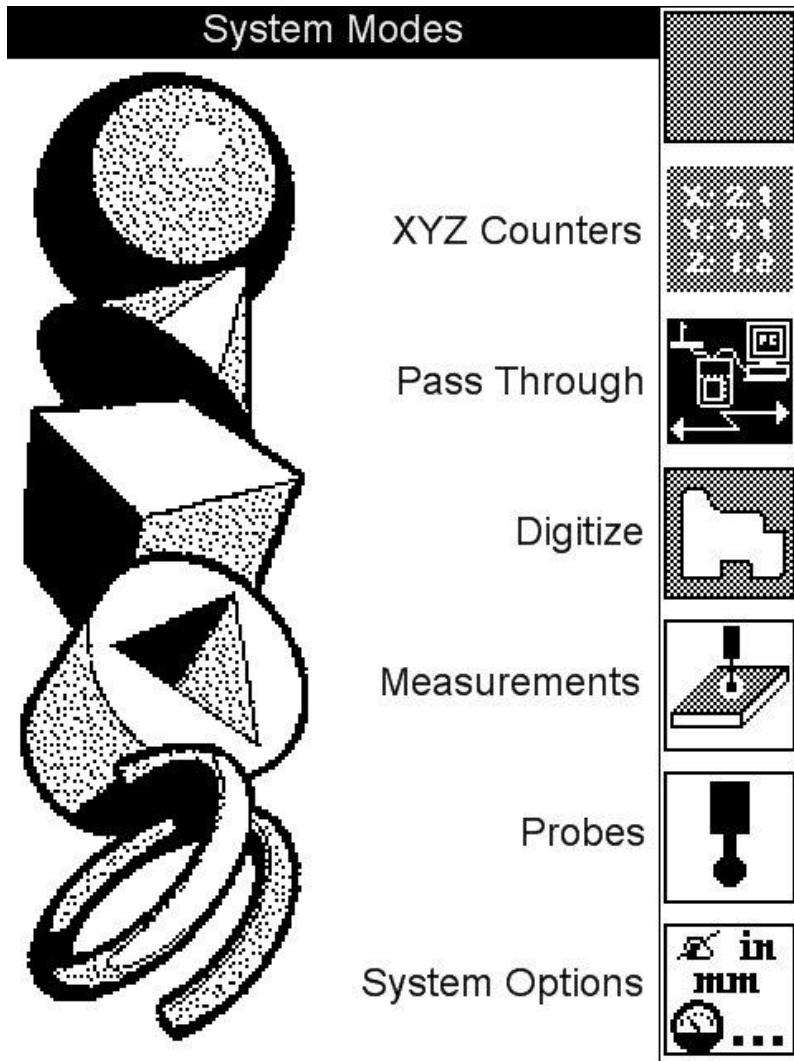
- All results automatically displayed
- Gain of time → No need to program for getting a particular result

User friendly

- Processes to follow
- Understandable and intuitive icons
- One day training is enough

Color and user friendly icons

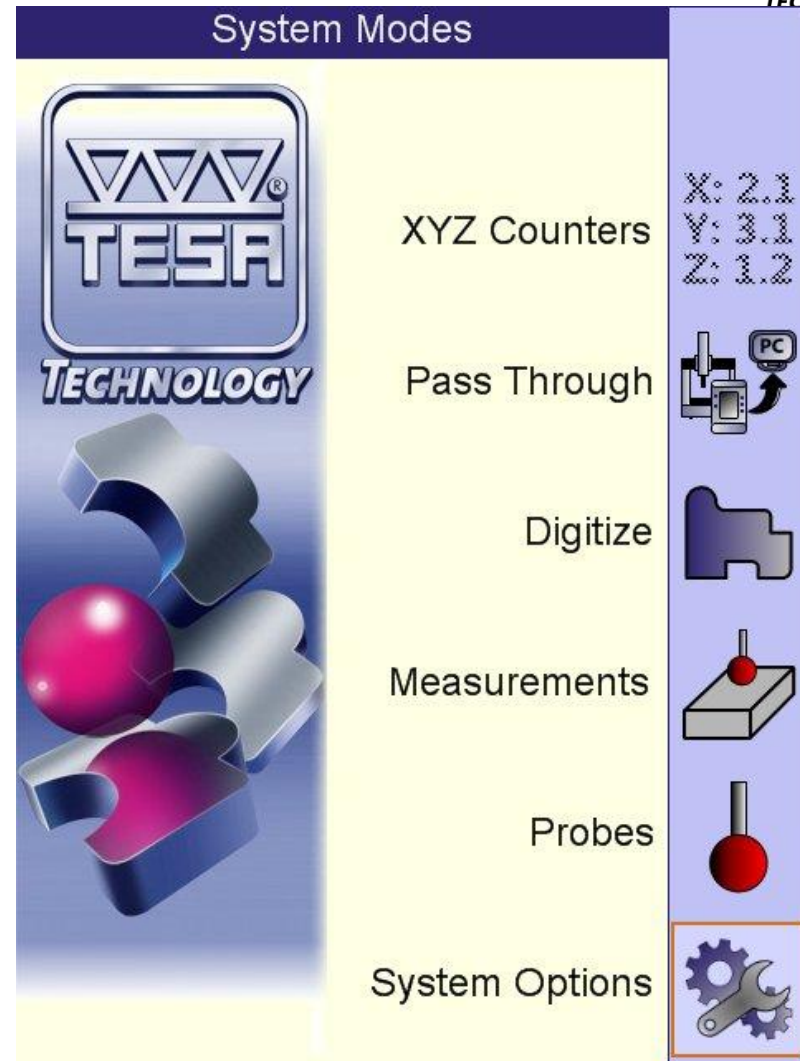
System Modes



XYZ Counters	
Pass Through	
Digitize	
Measurements	
Probes	
System Options	

TESA-REFLEX Panel I Software Version


System Modes




XYZ Counters	X: 2.1 Y: 3.1 Z: 1.2
Pass Through	
Digitize	
Measurements	
Probes	
System Options	

TESA-REFLEX Panel II Software Version

Results management possibilities



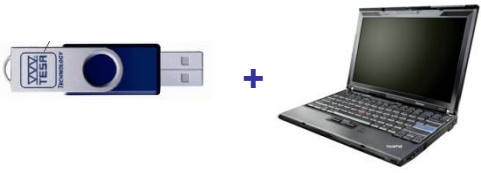
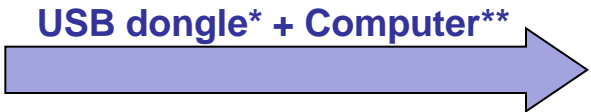


Data Transfer & Playback Options
(3)

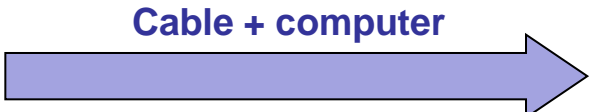
Send To Printer	Disabled
Send Out Serial	DataPage
Send To USB Key	Disabled
USB File Name	Name
Playback Pause	Disabled
Points Required	Disabled

Press Done To Continue

It is possible using all (or a few) possibilities at the same time



*Creation of a text file in the stick
**Computer required for data processing

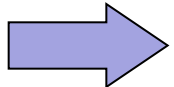


Sol. 1: Hyperterminal → Text file creation
Sol. 2: *Datadirect* → Data sent autom. in Excel
New Sol. 3: *StatExpress* → Automatic reports and stats



***At each measurement steps, results are displayed
New ***A Go/NoGo report can be displayed for each measurement run

Several formats can be used



Datapage

```
!SOT
DEFAULT CIX1 X 75.076 75.100 0.100 -0.100
DEFAULT CIY1 Y 87.272 87.300 0.100 -0.100
DEFAULT CIID1 D 53.083 53.100 0.100 -0.100
!EOT
```

- ### Space between values
- Prog. Name
 - Feature
 - Channel
 - MV, Nom, UT, LT

Gagetalker

```
DEFAULT ,1, X, CI, 75.076,75.100,0.100,-0.100,-0.024
DEFAULT ,1, Y, CI, 87.272,87.300,0.100,-0.100,-0.028
DEFAULT ,1,ID, CI, 53.083,53.100,0.100,-0.100,-0.017
```

- ### Coma between values
- Prog. Name
 - Feature n°
 - Channel
 - Feature
 - MV, Nom, UT, LT, Dev

Mitutoyo (or Mux10)

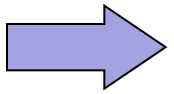
```
01A 53.082737
```

- ### Measurement values only
- Feature n°
 - Channel
 - Measured value

Print

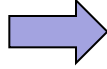
```
==> Circle (1)
... Circle
MEASURED NOMINAL UPPER TOL LOWER TOL DEVIATION OUT/TOL
X 75.076 75.100 0.100 -0.100 -0.024 ==*=====
Y 87.272 87.300 0.100 -0.100 -0.028 ==*=====
Diameter 53.083 53.100 0.100 -0.100 -0.017 ==*=====
```

- ### Measurement values only
- Feature title
 - One line/characteristic
 - MV, Nom, UT, LT, Dev

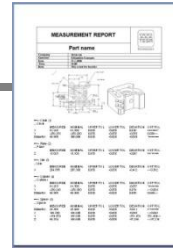
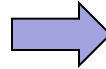


Measurement Data

Possibility 1

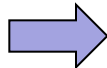


Printer

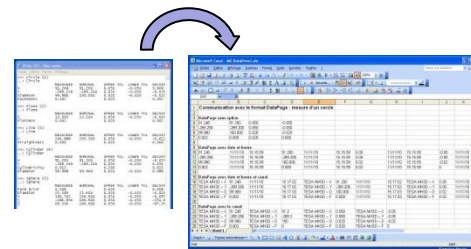


Automatic report printed

Possibility 2

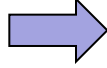


USB stick

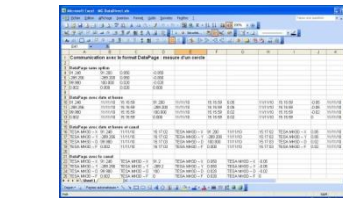
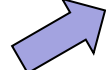


*.txt manual importation in Excel

Possibility 3

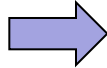


Hyperterminal

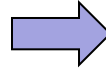


Data automatically imported in Excel

Possibility 4

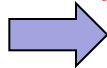


Datadirect

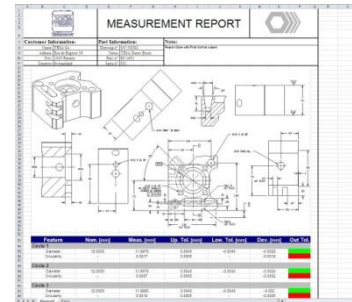
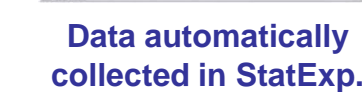
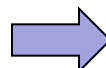


Data automatically collected in StatExp.

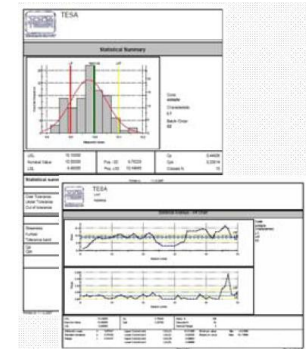
Possibility 5



New StatExpress



Excel report template filled



Several reports automatically created



Data Transfer & Playback Options (3)

- Send To Printer: Disabled
- Send Out Serial: DataPage
- Send To USB Key: Disabled
- USB File Name: Name
- Playback Pause: Disabled
- Points Required: Disabled

Press Done To Continue

Data format selection

- Mitutoyo = Mux10
- Datapage
- Gagetalker
- Print

Possibility 1: the printer

Report Header Setup (4)

- Print Company Disabled
- Print Operator (blank)
- Print Part Name Disabled
- Print Date Disabled
- Print Time Disabled
- Print Note Disabled
- Company Picture Disabled
- Part Picture Disabled

Press Done To Continue

MEASUREMENT REPORT

Part name

Company	TESA SA					
Operator	Sébastien Granges					
Date	11.7.2008					
Time	14:58					
Note	Don't test for header					

	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUT.TOL
Circle (1)						
..Circle						
X	91.245	91.300	0.050	-0.050	0.048	-----
Y	-289.256	-289.200	0.050	-0.050	-0.056	0.005>>
Diameter	99.980	100.000	0.020	-0.020	-0.020	-----
Plane (2)						
..Plane						
Z	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUT.TOL
	13.093	13.100	0.050	-0.050	-0.007	-----
Line (3)						
..Line						
X	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUT.TOL
	204.888	205.300	0.050	-0.050	-0.412	<<-0.362
Cylinder (4)						
..Cylinder						
X	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUT.TOL
	91.263	91.300	0.050	-0.050	-0.037	-----
Y	-289.246	-289.300	0.050	-0.050	0.054	<<-0.004
Diameter	99.988	99.900	0.020	-0.020	0.088	0.068>>
Sphere (5)						
..Sphere						
Diameter	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUT.TOL
	25.389	25.400	0.020	-0.020	-0.011	-----
X	166.505	166.600	0.050	-0.050	-0.095	<<-0.045
Y	-184.854	166.600	0.050	-0.050	-351.454	351.404>>
Z	69.334	166.600	0.050	-0.050	-97.266	<<-97.216

file created with Print format

Data sent to Printer

Company logo

- Company name
- Operator name
- Time and date
- ...

Measurement part

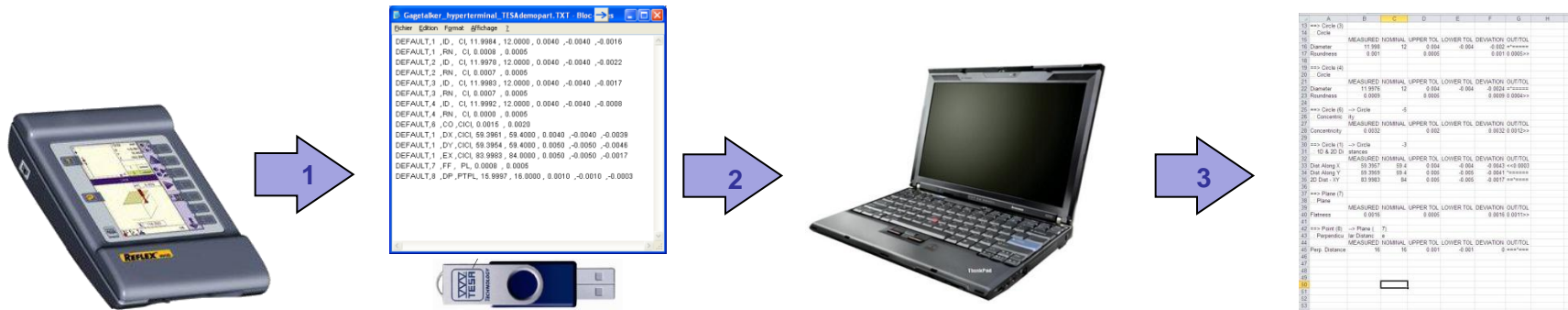
TESA-REFLEX can not manage protocols other than the PCL3 native ones.

TESA recommends the use of printer units from the following list, otherwise no formal assurance with regards to compatibility can be provided.



HP	Deskjet 6940, Deskjet D2500, Business Inkjet 2800dt, OfficeJet Pro 8000
Epson	ACL 2600N, ACL C2600N, ACL C2800N, ACL C3800N, ACL C4200DN, ACL C9100, EPL N2550, EPL N3000, EPL 6200, CX21
Lexmark	Lexmark E250, E35X-serie, E450, T64X-serie, W840, Lexmark C53X-serie, C78X-serie, C935, Lexmark X34x-serie, X64X-serie, X85X-serie, X78-serie, X94X-serie

Possibility 2: USB stick

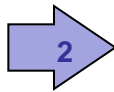
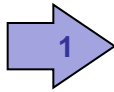


1. Data are automatically sent to the USB stick where a *.txt file is created
2. The *.txt file is transferred manually to a computer
3. The *.txt file is imported manually in the 'data' sheet of an Excel file
4. The report template placed in the 'report' sheet of the Excel file is filled automatically by the imported values.
5. The user can see at first sight if the part is good or not.

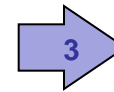
A report template is available on TESA portal (for more information contact your area manager)

Feature	Nom. [mm]	Mess. [mm]	Up. Tol. [mm]	Low. Tol. [mm]	Dev. [mm]	Out Tol.
Circle 1						
Diameter	12.0000	11.9978	0.0040	-0.0040	-0.0022	Green
Circularity	-	0.0017	0.0005	-	-0.0012	Green
Circle 2						
Diameter	12.0000	11.9978	0.0040	-0.0040	-0.0024	Green
Circularity	-	0.0007	0.0005	-	-0.0002	Green
Circle 3						
Diameter	12.0000	11.9980	0.0040	-0.0040	-0.0020	Green
Circularity	-	0.0010	0.0005	-	-0.0005	Green
Circle 4						
Diameter	12.0000	11.9978	0.0040	-0.0040	-0.0024	Green
Circularity	-	0.0009	0.0005	-	-0.0004	Green
Relation circle 5/circle 6						
Concentricity	-	0.0032	0.0020	-	-0.0012	Green
Relation circle 3/circle 4						
Distance ΔX	59.4000	59.3987	0.0040	-0.0040	<<<0.0003	Green
Distance ΔY	89.4000	89.3989	0.0050	-0.0050	-0.0041	Green
Distance ΔZ	89.0000	89.9982	0.0050	-0.0050	-0.0017	Green
Plane 1						
Flatness	-	0.0016	0.0005	-	-0.0011	Green
Relation plane 1/point 1						
Perpendicular distance	16.0000	16.0000	0.0010	-0.0010	0.0000	Green

Possibility 3: Hyperterminal



```
Gagstaber_hyperterminal_T154demopart.TXT
[Other] Editon Fgmat @fchage ?
DEFAULT_1_ID, CL, 11.9984, 12.0000, 0.0040, -0.0040, -0.0016
DEFAULT_1_RN, CL, 0.0000, 0.0005
DEFAULT_2_ID, CL, 11.9979, 12.0000, 0.0040, -0.0040, -0.0022
DEFAULT_2_RN, CL, 0.0007, 0.0005
DEFAULT_3_ID, CL, 11.9993, 12.0000, 0.0040, -0.0040, -0.0017
DEFAULT_3_RN, CL, 0.0007, 0.0005
DEFAULT_4_ID, CL, 11.9992, 12.0000, 0.0040, -0.0040, -0.0008
DEFAULT_4_RN, CL, 0.0000, 0.0005
DEFAULT_5_ID, CIL, CIL, 0.0015, 0.0020
DEFAULT_1_DX, CIL, 59.3961, 59.4000, 0.0040, -0.0040, -0.0039
DEFAULT_1_DY, CIL, 59.3954, 59.4000, 0.0050, -0.0050, -0.0048
DEFAULT_1_EK, CIL, 59.3969, 59.4000, 0.0050, -0.0050, -0.0017
DEFAULT_7_FF, PL, 0.0005, 0.0005
DEFAULT_8_DP, PTF, 15.9997, 16.0000, 0.0010, -0.0010, -0.0003
```



	A	B	C	D	E	F	G	H
15	Circle (3)							
16	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
17	Diameter	11.9984	12	0.004	-0.004	-0.0024	0.0006	
18	Circularity	0.0001		0.0005			0.001	0.0005
19	Circle (4)							
20	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
21	Diameter	11.9979	12	0.004	-0.004	-0.0024	0.0006	
22	Circularity	0.0005		0.0005			0.0009	0.0004
23	Circle (5)							
24	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
25	Diameter	11.9993	12	0.004	-0.004	-0.0024	0.0006	
26	Circularity	0		0.0005			0.0012	0.0012
27	Circle (6)							
28	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
29	Diameter	11.9992	12	0.004	-0.004	-0.0024	0.0006	
30	Circularity	0.0002		0.0005			0.0012	0.0012
31	Circle (7)							
32	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
33	Diameter	11.9993	12	0.004	-0.004	-0.0024	0.0006	
34	Circularity	0.0005		0.0005			0.0004	0.0004
35	Circle (8)							
36	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
37	Diameter	59.3961	59.4	0.005	-0.005	-0.0041	0.0009	
38	Circularity	0.0002		0.0005			0.001	0.0005
39	Circle (9)							
40	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
41	Diameter	59.3954	59.4	0.005	-0.005	-0.0048	0.0002	
42	Circularity	0.0002		0.0005			0.0005	0.0005
43	Circle (10)							
44	Circle	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL	
45	Diameter	15.9997	16	0.001	-0.001	-0.0003	0.0003	
46	Circularity							



Feature	Nom. [mm]	Mess. [mm]	Up. Tol. [mm]	Low. Tol. [mm]	Dev. [mm]	Out Tol.
Circle 1						
Diameter	12.0000	11.9979	0.0040	-0.0040	-0.0024	
Circularity	-	0.0017	0.0005	-	-0.0012	
Circle 2						
Diameter	12.0000	11.9979	0.0040	-0.0040	-0.0024	
Circularity	-	0.0007	0.0005	-	-0.0002	
Circle 3						
Diameter	12.0000	11.9993	0.0040	-0.0040	-0.0024	
Circularity	-	0.0010	0.0005	-	-0.0005	
Circle 4						
Diameter	12.0000	11.9979	0.0040	-0.0040	-0.0024	
Circularity	-	0.0009	0.0005	-	-0.0004	
Relation circle 5/circle 6						
Concentricity	-	0.0032	0.0020	-	-0.0012	
Relation circle 3/circle 4						
Distance ΔX	59.4000	59.3967	0.0040	-0.0040	-0.0033	
Distance ΔY	59.4000	59.3959	0.0050	-0.0050	-0.0041	
Distance ΔZ	59.0000	59.3962	0.0050	-0.0050	-0.0017	
Plane 1						
Flatness	-	0.0016	0.0005	-	-0.0011	
Relation plane 1/point 1						
Perpendicular distance	16.0000	16.0000	0.0010	-0.0010	0.0000	

1. Data are automatically sent to the computer (through the serial port)
2. A *.txt file is automatically created
3. The *.txt file is imported manually in the 'data' sheet of an Excel file
4. The report template placed in the 'report' sheet of the Excel file is filled automatically by the imported values.
5. The user can see at first sight if the part is good or not.

A report template example is available on TESA portal (for more information contact your area manager)

Possibility 2: Datadirect



Circle (1)	MEASURED	NOMINAL	UPPER TOL	LOWER TOL	DEVIATION	OUTTOL
Circle	11.999	12	0.002	-0.004	-0.002	0.000
Diameter	0.001		0.000		0.001	0.000
Roundness						

Feature	Nom. [mm]	Meas. [mm]	Up. Tol. [mm]	Low. Tol. [mm]	Dev. [mm]	Out Tol.
Circle 1						
Diameter	12.0000	11.9978	0.0040	-0.0040	-0.0022	Green
Circularity	-	0.0017	0.0000	-	-0.0012	Green
Circle 2						
Diameter	12.0000	11.9976	0.0040	-0.0040	-0.0024	Green
Circularity	-	0.0007	0.0000	-	-0.0002	Green
Circle 3						
Diameter	12.0000	11.9960	0.0040	-0.0040	-0.0020	Green
Circularity	-	0.0010	0.0000	-	-0.0005	Green
Circle 4						
Diameter	12.0000	11.9976	0.0040	-0.0040	-0.0024	Green
Circularity	-	0.0009	0.0000	-	-0.0004	Green
Relation circle Circle 6						
Concentricity	-	0.0032	0.0020	-	-0.0012	Red
Relation circle Circle 3						
Distance AX	68.0000	69.3957	0.0040	-0.0040	<<-0.0003	Red
Distance AY	58.0000	59.2969	0.0000	-0.0000	-0.0001	Green
Distance AX/Y	84.0000	83.9953	0.0000	-0.0000	-0.0017	Green
Plane 1						
Flatness	-	0.0016	0.0000	-	-0.0011	Red
Relation plane 1point 1						
Perpendicularity	16.0000	16.0000	0.0010	-0.0010	0.0000	Green

1. Data are automatically sent to the computer (through the serial port)
2. Datadirect gets the data and sends them automatically in the 'data' sheet of an Excel file
3. The report template placed in the 'report' sheet of the Excel file is filled automatically by the received values.
4. The user can see in real time if the part is good or not.

A report template example and a *Datadirect* trial version are available on TESA portal (for more information contact your area manager)

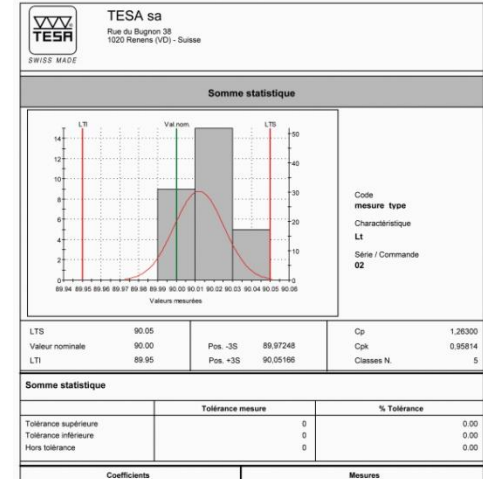
New

Possibility 2: StatExpress



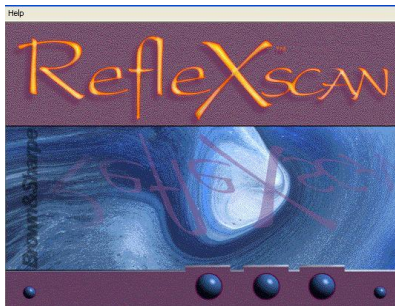
1. Data are automatically sent to the computer (through the serial port)
2. Statexpress collects the data
3. Different reports can be generated automatically concerning the measured characteristics, the user can have in real time statistics about his previous measurements.

A StatExpress trial version is available on TESA portal (for more information contact your area manager)



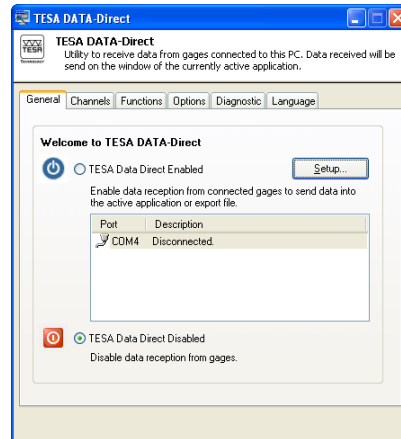
Additional applications

ReflexScan



- Reverse engineering
- Sending cloud of points to computer
- Format converting
- Files readable by famous applications

DataDirect



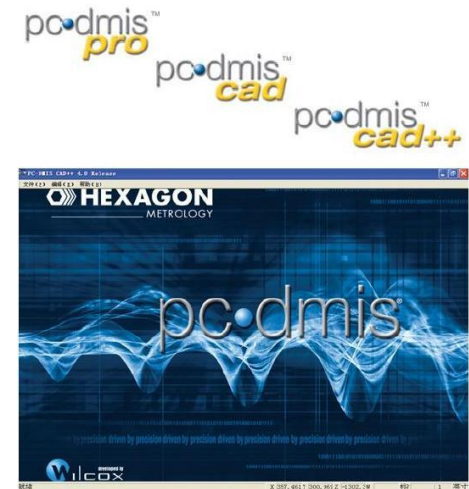
- Gets the data from panel
- Forward them to a MS application
- Several formats of data management

StatExpress



- Gets data from the panel
- Calculates in real time the statistics
- Automatically creates reports

PcDmis



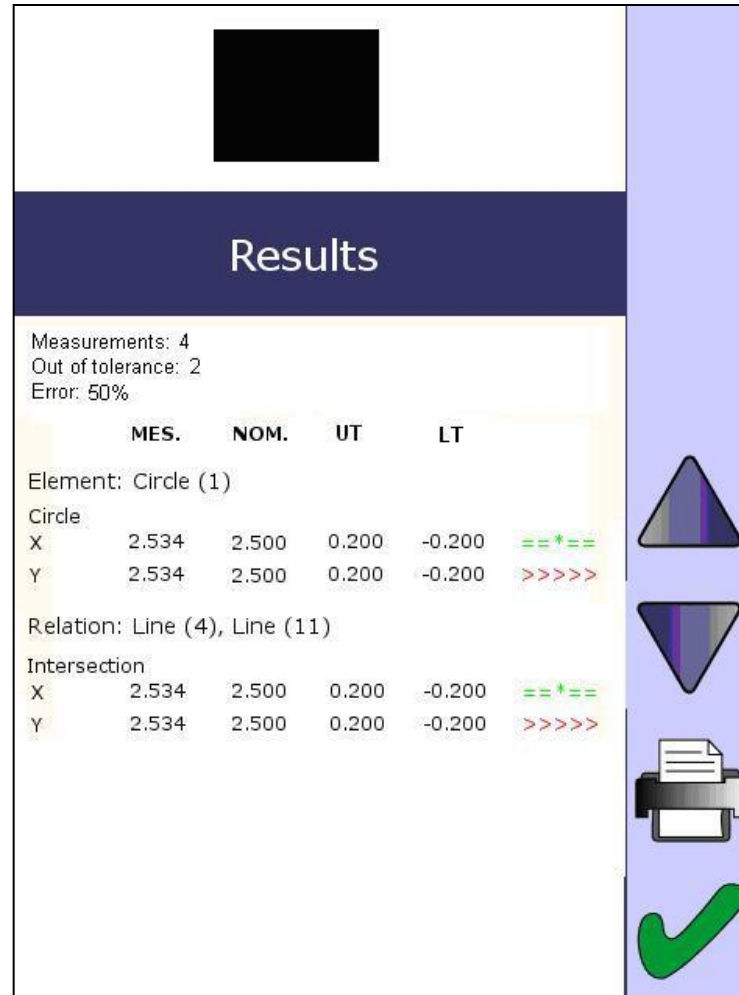
- CAD file importation
- CAD comparison

Available through Hexagon channel only

Go/NoGo Report

New

- When recalling a program saved or not
- Measurement overview automatically displayed on the screen
- Global figures results available quickly
 - Number of measures in the report
 - Number of measures out of tolerance
 - Percentage of out of tolerance values
- Possibility to print all displayed values at the same time



Results

Measurements: 4
Out of tolerance: 2
Error: 50%

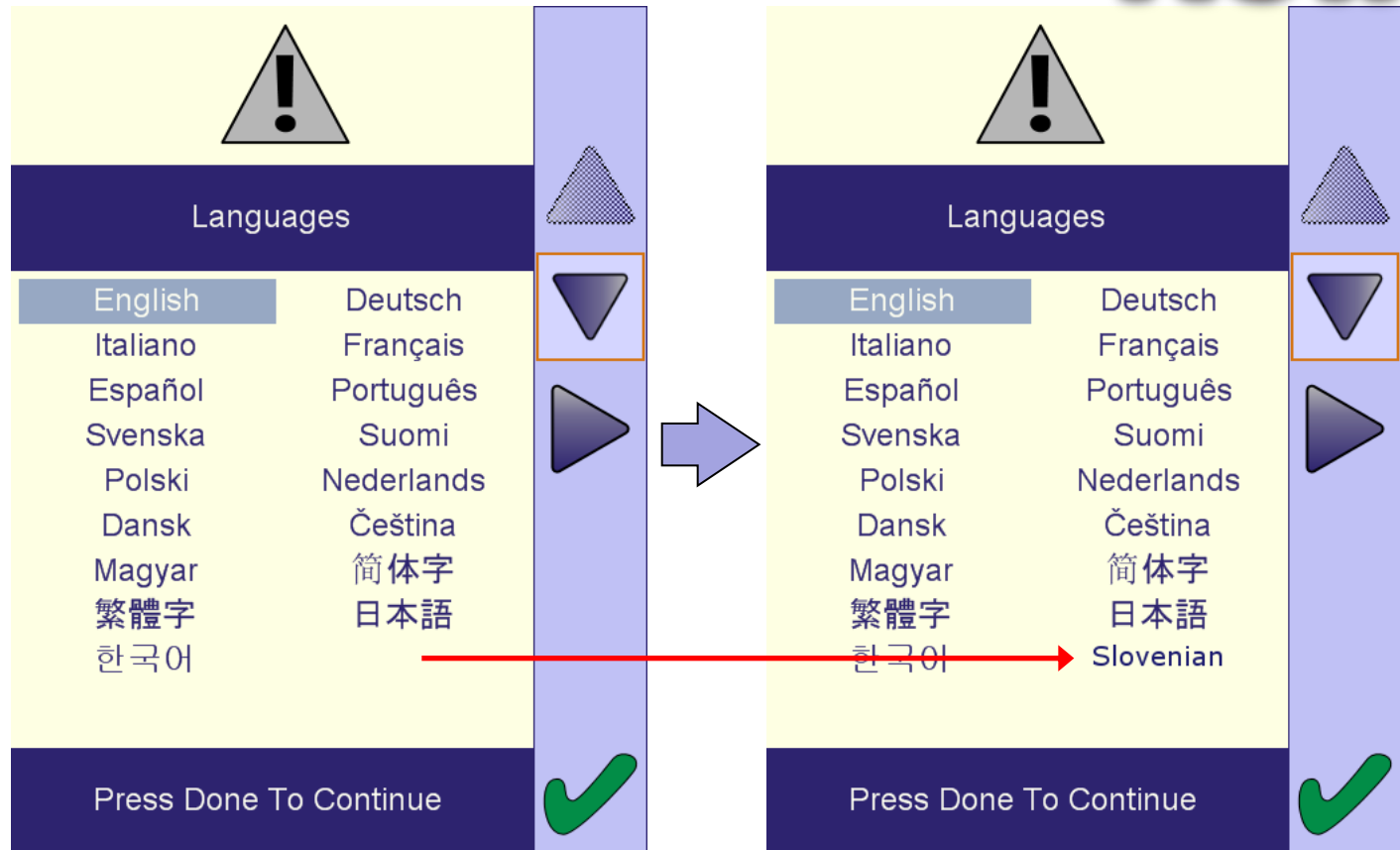
	MES.	NOM.	UT	LT	
Element: Circle (1)					
Circle					
X	2.534	2.500	0.200	-0.200	==*==
Y	2.534	2.500	0.200	-0.200	>>>>>
Relation: Line (4), Line (11)					
Intersection					
X	2.534	2.500	0.200	-0.200	==*==
Y	2.534	2.500	0.200	-0.200	>>>>>

Navigation icons: Up arrow, Down arrow, Print, Checkmark

Custom Language

New

Option that gives to a customer, the possibility to upgrade his panel with a customized language



What is new with the TESA-REFLEX panel II?



Panel Type	TESA-REFLEX I	TESA-REFLEX II
Color screen	✗	✓
Screen size	89 x 118 mm	116 x 154 mm
Resolution	0.001	0.0001
Printers type compatibility	Matrix	USB
USB dongle	✗	✓
Data saving on USB dongle	✗	✓
Data through serial port	✓	✓
Data sending to printer	✓	✓
Measurement Programs saving	On Pcmcia cards	On USB dongle
Measurement Programs sharing/backup	✗	✓
ReflexScan / PcDmis / DataDirect / StatEx.	✓	✓
Report Header Management (picture)	✗	✓
Go/NOGo Report	✗	✓
Customisable Language	✗	✓
Software upgrade process	With Pcmcia card upgrade at TESA	With USB dongle at customer place

Is the TESA-REFLEX panel II usable with previous machine versions?



Derby



MS343



Micro-Hite 3D

Yes Older machine types can be retrofitted with the new TESA-REFLEX panel II

Machine type	Panel version	Retrofitting this machine with a new panel implies the use of
Prior to Micro-Hite 3D	DERBY panel	An upgrade kit
Prior to Micro-Hite 3D	TESA-REFLEX panel I	A modified TESA-REFLEX panel II
Micro-Hite 3D	TESA-REFLEX panel I	A standard TESA-REFLEX panel II

References

	MH3D MH3D RC	MH3D Recorder	Multi-Gage	Derby, Gage2000	MS343, 454
Standard version panels					
03960281	✓	✗	✗	✗	✗
03960303	✗	✓	✗	✗	✗
03862000	✗	✗	✓	✗	✗
03960284*	✗	✗	✗	✓	✓
Exchange version panels					
03960281E	✓	✗	✗	✗	✗
03960303E	✗	✓	✗	✗	✗
03862000E	✗	✗	✓	✗	✗
03960284E*	✗	✗	✗	✓	✓
Second hand version panels					
03960281R	✓	✗	✗	✗	✗
03960303R	✗	✓	✗	✗	✗
03862000R	✗	✗	✓	✗	✗
03960284R*	✗	✗	✗	✓	✓
Retrofit kits including modified panel					
03960313	✗	✗	✗	✗	✓
03960312	✗	✗	✗	✓	✗

* 03960281 modified for old machines = 03960284

* Only for old machines already retrofitted with a TESA-REFLEX panel I, can not be used on Micro-Hite 3D