

MicroNet

MicroNet is a complete gage software package, including both Management and Measurement modules.

It has been developed for the **DMS 680 - universal length measuring system for gage inspection** - reflecting and matching the real calibration procedures used with the unit so to become its natural extension. It can also be used to retrofit other universal measuring systems (ex. **ULM 600**), allowing to update and enhance their functions.

MicroNet, together with a universal measuring system, is a comprehensive solution to the gage management and measurement needs, offering an unprecedented level of integration.

Main features are:

- ✓ **Solid Gages** and **instruments** are managed as required by the ISO 9001 series norms as well as ISO/IEC 17025, IATF 16949 (automotive) etc.
- ✓ **Management** and **Measurement** modules are integrated in a single package.
- ✓ **Direct reading** from the measuring machine or keyboard entry are available.
- ✓ **Master gages** management with automated due date notification.
- ✓ Full **Traceability** of measurements.
- ✓ **Calibration certificate** printout automatically at the end of the measurement.
- ✓ **Chart** of instrument calibration results.
- ✓ **Improves** the quality system allowing accurate, reliable and repeatable calibrations.
- ✓ **Customizable** calibration procedures.
- ✓ Colorful **Icons** and intuitive menus to access major functions.
- ✓ **Thread formulae** are integrated including non symmetrical and multi-start threads.
- ✓ **Easy** operability to reduce the calibration costs and prevent the errors.
- ✓ Standardized and proven methods for a good metrology practices.
- ✓ Optimization of the whole calibration process.
- ✓ Eliminate errors due to procedure interpretation.
- ✓ Works in **network** environment.
- ✓ Possibility to generate reports directly into Acrobat Reader (**PDF**).
- ✓ Date export to **Excel**.
- ✓ Support, updates and helpful information available via Internet.

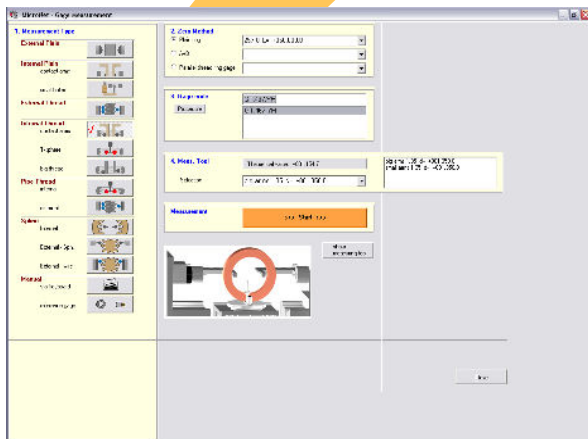
MicroNet can be purchased without the reading interface from the measuring system, so to be used as a stand-alone package or as a part of network together with other licenses.

To Comply with the Standards

MicroNet to manage and measure solid gages, instruments, measuring tools and masters, helping your operation to comply with the industry standards such as *ISO9001 series*, *ISO/IEC 17025*, *IATF 16949* and other norms. Due date listing and advanced retrieval functions to locate gages by due date, location, size, type, usage and many other relevant data.

Code	Date	Description	Location	Usage	Due date	Exp.	Supplier	Manufacturer	Quota	Contract	Location	Due date
100.001	10.10.2008	ALUM. 20.000	204.000.00	INSTR.	10.10.2008	10.10.2008	10000000	10000000	100			
100.002	10.10.2008	ALUM. 20.000	204.000.00	INSTR.	10.10.2008	10.10.2008	10000000	10000000	100			
100.003	10.10.2008	ALUM. 20.000	204.000.00	INSTR.	10.10.2008	10.10.2008	10000000	10000000	100			

from Management ...



Real Time Readings

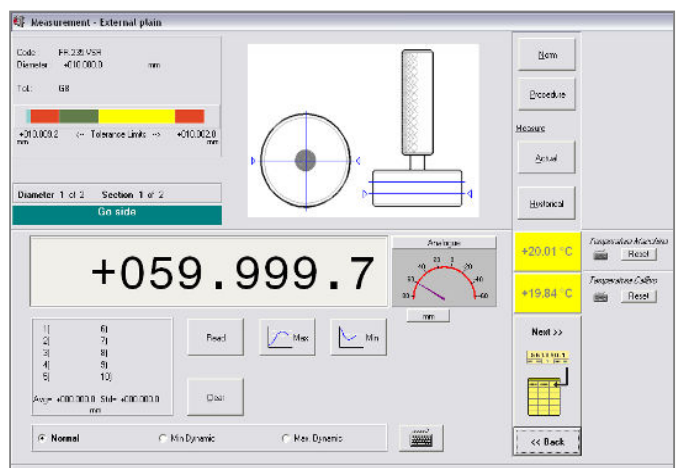
Direct reading of measurement value with automatic tolerances evaluation.

Measurement formulae and procedures integrated in the system.

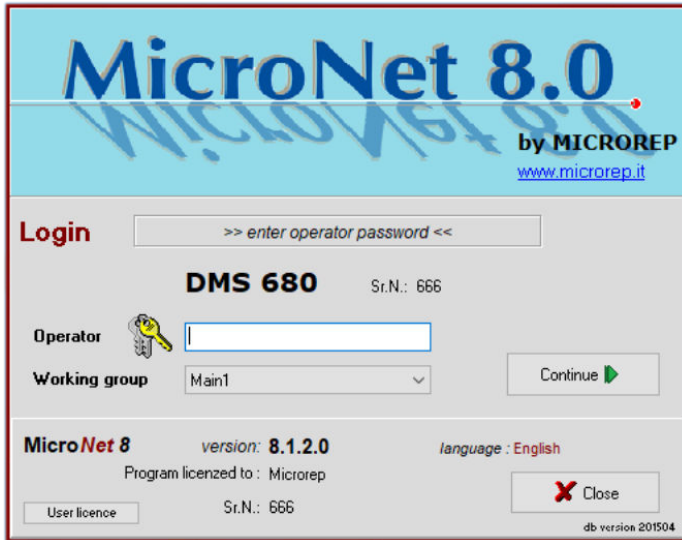
Real time temperature compensation¹ of the machine and the environment.

... to Measurement, in one click !

ALL integrated



¹ requires compatible hardware on the unit (see unit details).



Safe Data Storage

Protect your gage valuable information into a single safe point of storage.

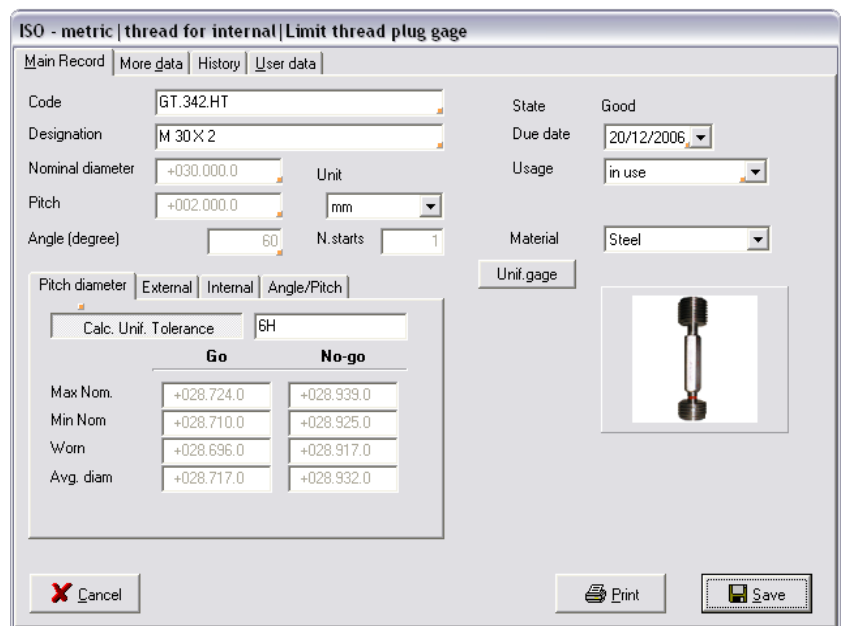
A personal password is required to access the software so to increase data security.

Trough the password, MicroNet will also detect the current user name and level (granting different rights) so to build a traceable history.

Gages Information

All gages relevant data are maintained into the system. Each record contains a variety of information such as:

- code
- size
- tolerances
- material
- next due date
- user
- location
- procedure
- manufacture
- supplier
- etc.



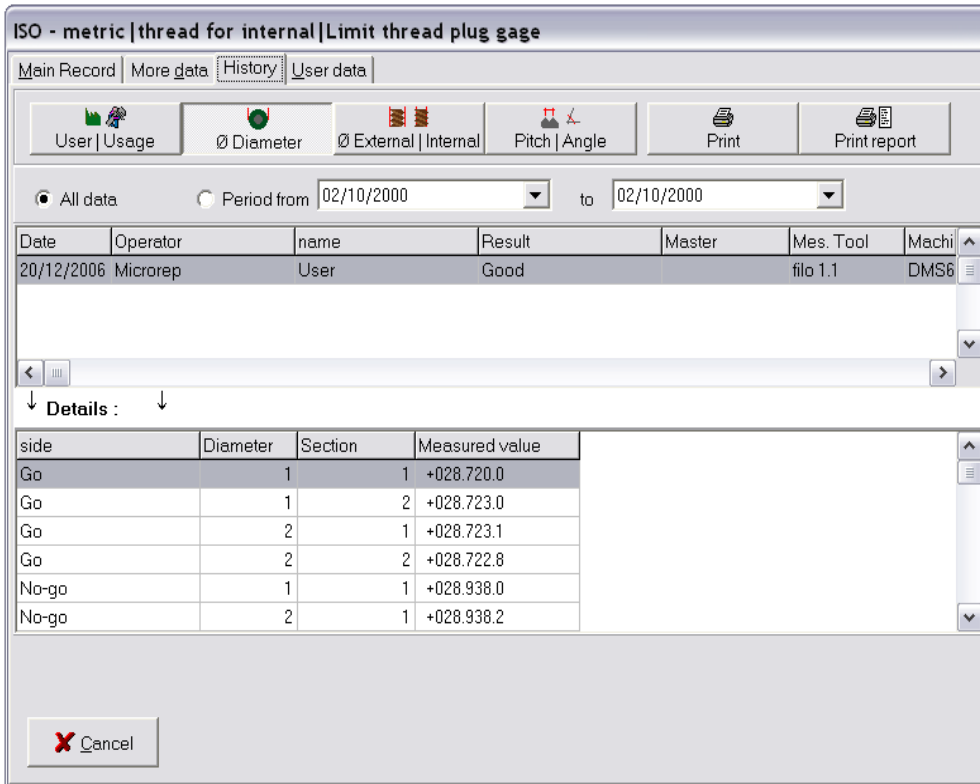
Automatic Tolerance Calculation

Tolerance limits are automatically calculated by the software according to the selected standard. Different modules are available¹¹, between which Iso norms, Ansi/Asme, British Standards, DIN, etc.

¹¹ please enquiry for cost and availability.

Historical Data and Traceability

Measurement history is provided, with a list of all acquired measurement data as well as all the information needed for a correct metrology traceability.



The screenshot shows the 'History' tab of the software interface. It includes a toolbar with icons for 'User | Usage', 'Diameter', 'External | Internal', 'Pitch | Angle', 'Print', and 'Print report'. Below the toolbar, there are radio buttons for 'All data' (selected) and 'Period from' with date pickers set to '02/10/2000' to '02/10/2000'. A table displays the measurement history with columns: Date, Operator, name, Result, Master, Mes. Tool, and Machi.

Date	Operator	name	Result	Master	Mes. Tool	Machi
20/12/2006	Microrep	User	Good		filo 1.1	DMS6

Below the main table, a 'Details' section is expanded, showing a table with columns: side, Diameter, Section, and Measured value.

side	Diameter	Section	Measured value
Go	1	1	+028.720.0
Go	1	2	+028.723.0
Go	2	1	+028.723.1
Go	2	2	+028.722.8
No-go	1	1	+028.938.0
No-go	2	1	+028.938.2

A 'Cancel' button is located at the bottom left of the window.

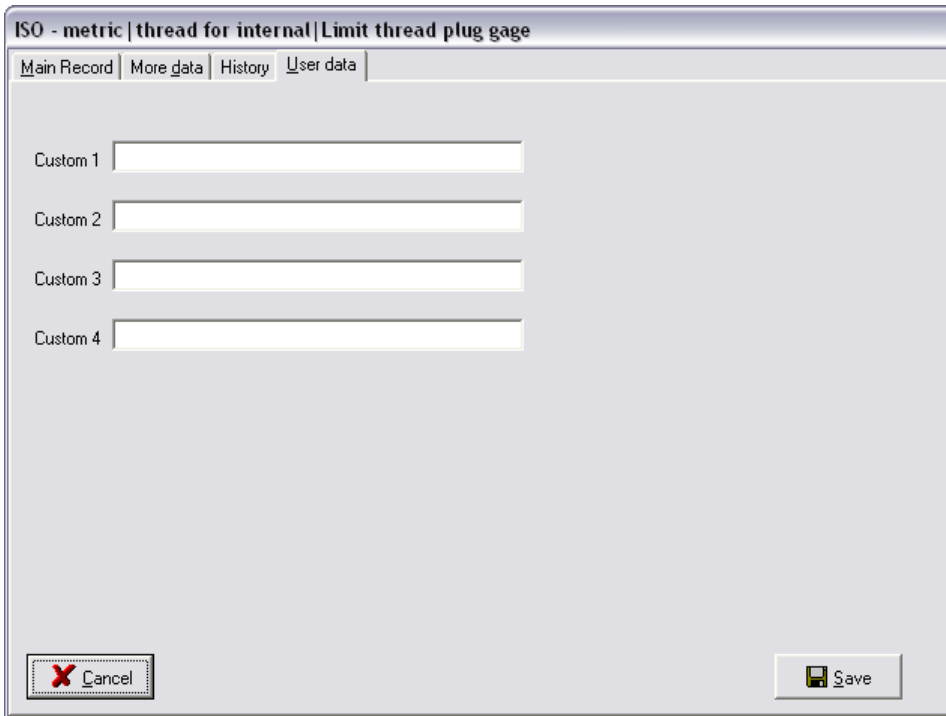
It is possible to browse through all measurements done in the past as well as check the list of data acquired during each measurement section.

All users (locations) and usages (in-use, non-in-use, lost, etc.) that have been associated to the specific code, are also stored in the gage history.

Customizable

MicroNet can be adapted to match the user's need: gages tag can be customized as well as up to 10 new instrument types added to the list so to match specific needs.

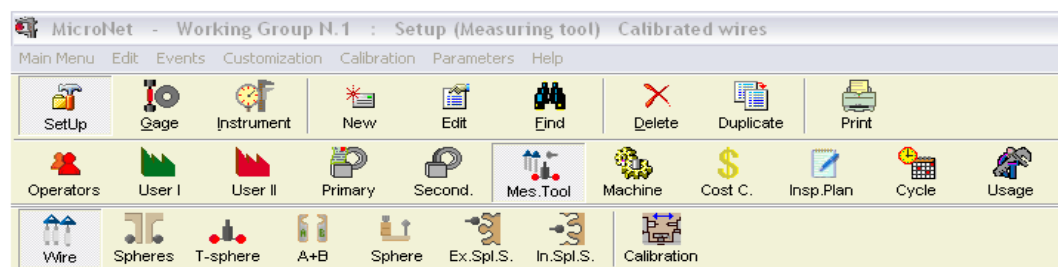
Each gage has an additional page, *User Data*, available to input user own data. Four fields labels are customizable and retrievable.



Easy to Use

User-friendly buttons facilitate the program navigation reducing the time to calibration.

Colorful icons are easily recognized by the user, improving the learning curve.



All procedures have been studied to optimize the number of steps needed to accomplish a task (reduced click through).

Visual indications guide the operator during measurement procedures.

Inspection Plans

Gage inspection plan

Name: 2 x 2 Procedure:

Gage: Thread for internal Norm:

Meas. time: min.

INSPECTIONS

Diameter

Go	No-go
Diameter: 2	2
Section: 2	1

External diameter

Go	No-go
Diameter: 1	1
Section: 1	1

after pitch diam postponed

Internal diameter

Go	No-go
Diameter: 1	1
Section: 1	1

after pitch diam postponed

Semi-Angle

Go	No-go
Measure: 1	1

Pitch

Go	No-go
Measure: 1	1

postponed

Dispersion limit:

Detailed inspection plans can be created for solid gages and instruments.

Inspection plans can be created according to the standards or customized in relation to the real calibration needs.

Data acquisition can be directly from the measuring system DMS 680 or via keyboard, so to allow the inspection of various types of instruments.

Instrument inspection plan can consist of both quantitative (measurement steps) and qualitative (visual inspections) checks.

Instrument inspection plan

Description: 10 mm | 0.01 res Procedure:

Instrument: Comparator Types: Analogue Norm:

Measuring field from: +000.000.0 to: +010.000.0 Meas. time: min.

Clock - travel: Resolution: +000.010.0 Unit: mm

Uncertainty: + L x

INSPECTIONS

Return way

Measures	Upper Tol.	Lower Tol.
+003.900.0		
+004.900.0		
+005.900.0		
+006.900.0		
+007.900.0		
+008.900.0		
+009.900.0		

Master gage:

Global tolerance

Fu: +000.003.0

Fmax: +000.017.0

Repeatability:

Dispersion limit:

Data acquisition mode

Direct reading from DMS 680

Keyboard measurement driver RS232

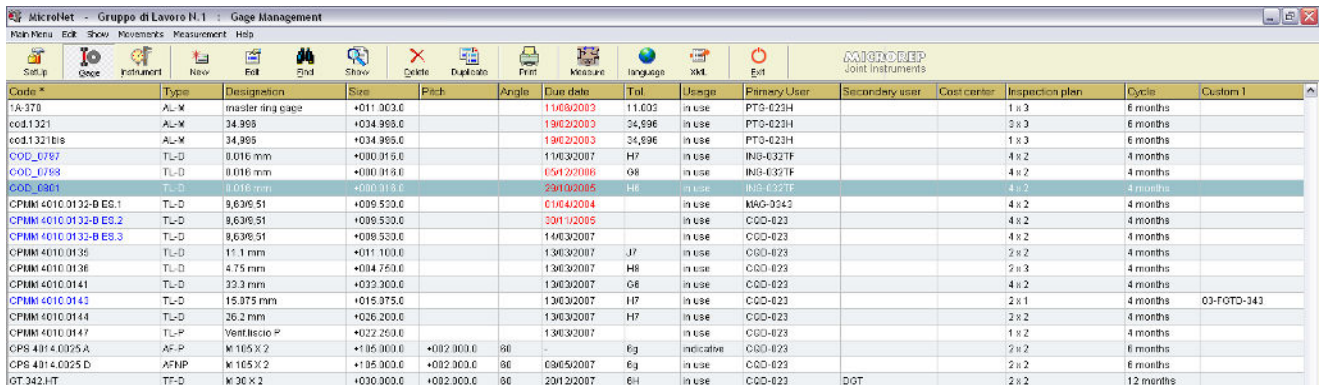
via RS-232

via RS232 with master evaluation

via Keyboard with master evaluation

Gage Management

MicroNet provides a complete solution for managing solid gages and instruments, helping operation to comply with the standards' requirements.



Code *	Type	Designation	Size	Pitch	Angle	Due date	Tol.	Usage	Primary User	Secondary user	Cost center	Inspection plan	Cycle	Custom 1
1A-370	AL-X	master ring gage	+011 903.0			11/06/2003	11.033	in use	PTD-023H			1x3	6 months	
cod.1321	AL-X	34.395	+034 965.0			19/02/2003	24.836	in use	PTD-023H			3x3	6 months	
cod.1321bis	AL-X	34.395	+034 965.0			19/02/2003	24.836	in use	PTD-023H			1x3	6 months	
COD_0797	TL-D	0.016 mm	+000 315.0			11/03/2007	H7	in use	INS-032TF			4x2	4 months	
COD_0798	TL-D	0.016 mm	+000 315.0			09/12/2006	G8	in use	INS-032TF			4x2	4 months	
COD_0801	TL-D	0.016 mm	+000 315.0			20/02/2005	H6	in use	INS-032TF			4x2	4 months	
CPMM 4010.0132-B ES.1	TL-D	9.636 51	+009 530.0			01/04/2004		in use	MAG-3543			4x2	4 months	
CPMM 4010.0132-B ES.2	TL-D	9.636 51	+009 530.0			30/11/2005		in use	COD-023			4x2	4 months	
CPMM 4010.0132-B ES.3	TL-D	9.636 51	+009 530.0			14/03/2007		in use	COD-023			4x2	4 months	
CPMM 4010.0135	TL-D	11.1 mm	+011 103.0			13/03/2007	J7	in use	COD-023			2x2	4 months	
CPMM 4010.0136	TL-D	4.75 mm	+004 750.0			13/03/2007	H8	in use	COD-023			2x3	4 months	
CPMM 4010.0141	TL-D	33.3 mm	+033 300.0			13/03/2007	G6	in use	COD-023			4x2	4 months	
CPMM 4010.0143	TL-D	15.875 mm	+015 875.0			13/03/2007	H7	in use	COD-023			2x1	4 months	03-FOTD-343
CPMM 4010.0144	TL-D	26.2 mm	+026 200.0			13/03/2007	H7	in use	COD-023			2x2	4 months	
CPMM 4010.0147	TL-P	Ventaccio P	+022 250.0			13/03/2007		in use	COD-023			1x2	4 months	
CPS 4314.0325 A	AF-P	M 165 X 2	+185 900.0	+002 300.0	90			6g	indicator	COD-023		2x2	6 months	
CPS 4314.0325 D	AFNP	M 165 X 2	+185 900.0	+002 300.0	90			03/05/2007	6g	in use	COD-023	2x2	6 months	
GT.342.HT	TF-D	M 30 X 2	+030 900.0	+002 300.0	90			20/12/2007	6H	in use	COD-023	DOT	2x2	12 months

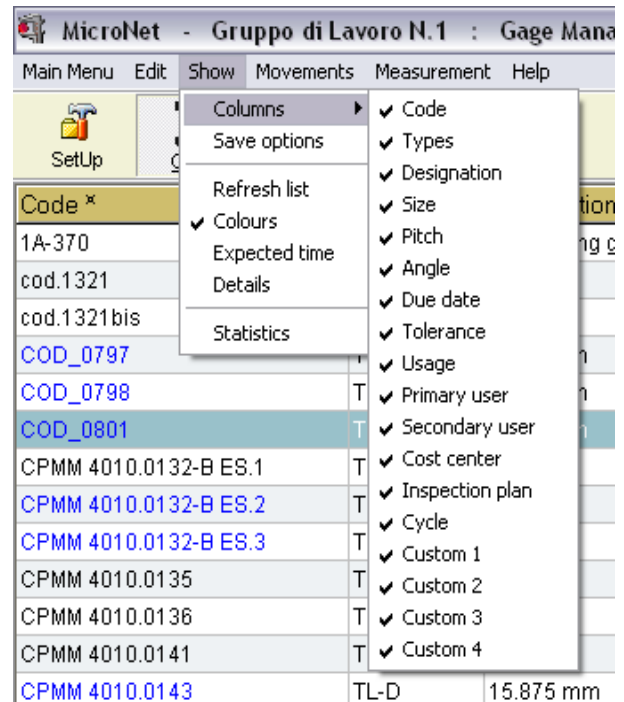
Trough a flexible user interface it is possible to define the set of data to display as well as the listing criteria to use (such as code, due date, size, type, etc.).

Powerful **retrieval functions** help organizing the calibration activities.

It is possible to list gages according to the due date, location, size, type, usage and many other data.

Listing can be based on a single field or done matching multiple parameters at the same time.

Measurement history is provided, with list of all acquired data as well as all the information required for a correct metrology traceability. All users (locations) and usages (in-use, non-in-use, etc.) that have been associated to the code are also stored in the history section giving an helpful support during the fault analysis process.



The screenshot shows the 'Columns' menu in the MicroNet software. The menu is open, and the following options are checked:

- Code
- Types
- Designation
- Size
- Pitch
- Angle
- Due date
- Tolerance
- Usage
- Primary user
- Secondary user
- Cost center
- Inspection plan
- Cycle
- Custom 1
- Custom 2
- Custom 3
- Custom 4

The background shows a list of gages with columns for Code, Type, Designation, Size, Pitch, Angle, Due date, Tol., Usage, Primary User, Secondary user, Cost center, Inspection plan, Cycle, and Custom 1.

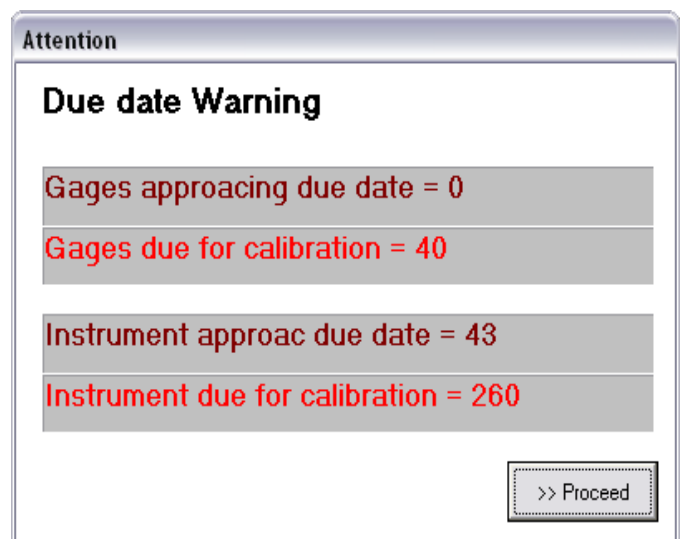
Default fields: to facilitate and expedite the gage introduction into the system, it is possible to predefine the content of some of the required fields.

In particular it is possible to pre-determine the content of the *inspection cycle* (such as one year), the *inspection plan* (such as the number of measurements) and the *usage* (such as in use).

Therefore, each time a new code is entered into the system, default values are automatically loaded into the record: the user can confirm those data with a simple "click" or change them according to his needs.

Automatic due date notifications: at program startup, it is possible to program an automatic check of the due dates.

In such case, the user is warned for solid gages or instruments due for calibration. A forewarning time can be customized to evidence codes going to expire in a given period of time.



Instrument Graph

Measurement result graph is provided for instrument.



Measurement module

The reading interface is integrated into the software, offering comprehensive functions to the user.

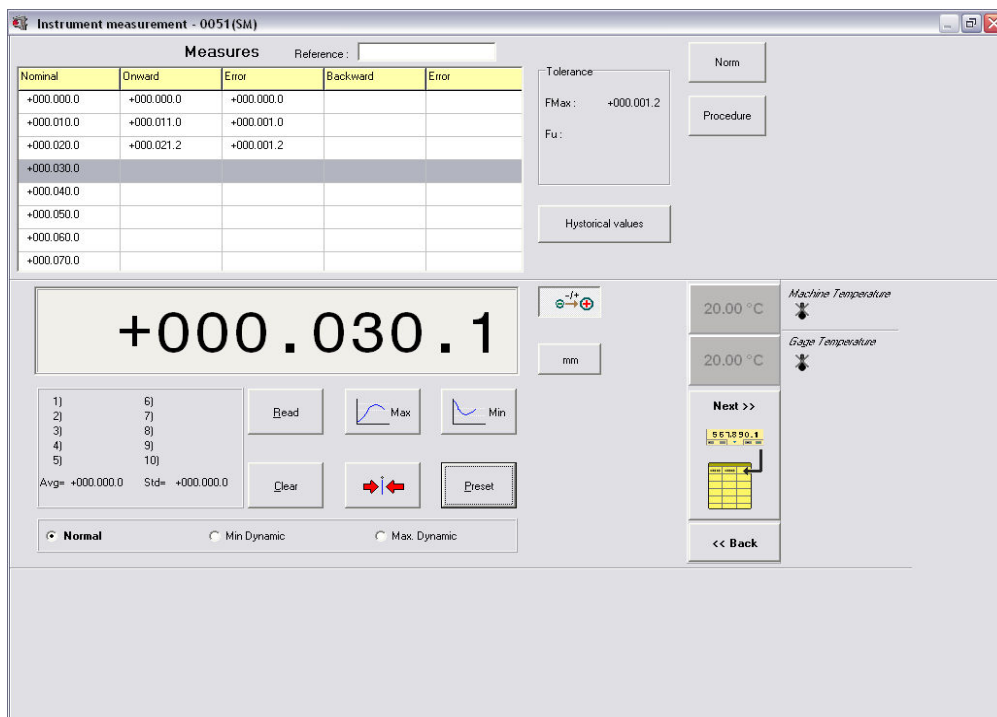
The periodical inspection of gages is accomplished directly from the system and all required information are **automatically updated** and stored into the software.

MicroNet is **fully integrated** with the measuring unit **DMS 680** and all its measurement procedures are built into the system.

Data acquisition can also be done via keyboard for special needs. Data input and display might both be metric and inches.

MicroNet already contains some of the measurement procedures for solid gages and instruments (comparator, micrometer, caliper, bore gage, etc.) according to the more common practices and standards used in the mechanical industry.

Procedures might be changed and customized by the user or created according to company specifications.



The software **guides the operator** through the measurement procedures and calculates the instrument limits in terms of maximum deviation, error at each step, hysteresis, repeatability and reproducibility of the measures.

The measurement activity is easy, repeatable and moreover conforms to the norms prescriptions.

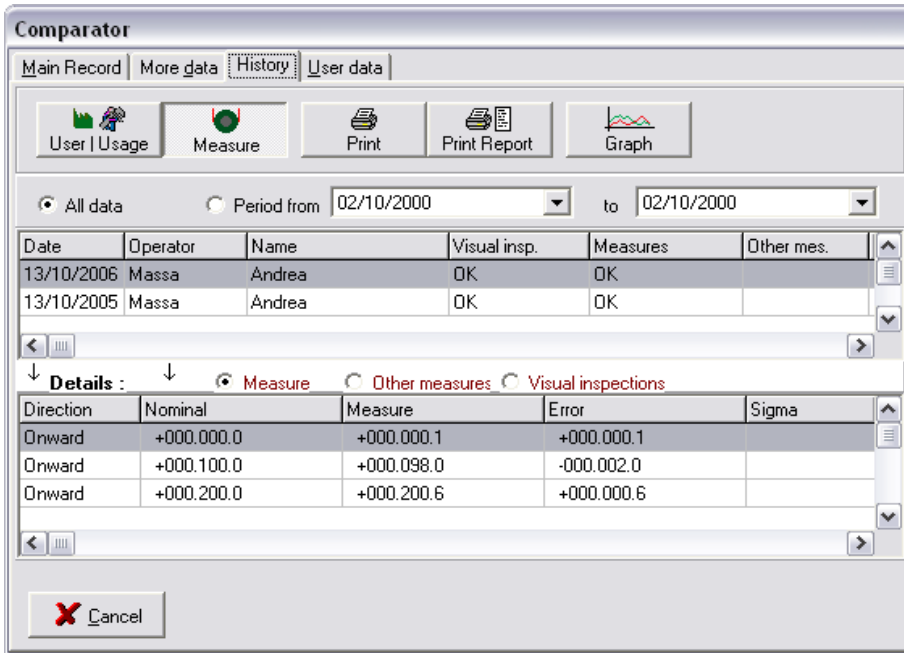
Thread solid gage measurement **formulae** are built into the software and provide pitch diameter automatic calculation according to the Berndt's method.



Wire and ball measurements are support with automatic selection of the best measuring tool (wire or ball) to be used for the measurement.

All data required for a **correct metrology traceability** are automatically recorded into the software: date, operator, machine used for the inspection, master gage and measuring tool (if any).

At the end of the measurement procedure a calibration report can be issued.



All calibration values are retrievable into the gage record.

Reports

A variety of different reports is available and ready to use into MicroNet, including:

- gages due for calibration list
- overdue gage list
- gage list by size and type
- gages list by locations
- statistics on gages due dates
- list of gages in use, lost, etc.
- list by calibration procedures
- list by cost centers
- instruments charts
- etc.

It is also possible to automatically issue a calibration report at the end of the measurement procedure.

MicroNet by Microrep

Gage card with Measurement History

Code	CPMM 4010.0143		ISO - metric	Limit plain plug gage	
Description	15.875 mm		Plain gage for internal		
Diameter	+015.875.0 mm				
Tolerance mm					
	go	no-go			
max	15.87900	15.89450			
min	15.87900	15.89150			
worn	15.87300				
Measure mm					
measure date	machine	operator	state	ref.master	meas.tool
9/13/2006	DMS680	Materani	Worn		
side diameter section measure temp. °C					
Go	1	1	+015.758.1	20.00	
Go	1	2	+015.758.4	20.00	
No-go	1	1	+015.998.1	20.00	
No-go	1	2	+015.998.4	20.00	

Instruments List

Code	Description
1117(sm)	comparatore
mcc 3.33140 b es.1	Forcella
cod_1540	micrometro per esterni
cod_1585	micrometro per esterni
1107(SM)	truschino
1481(SM)	Micrometro per interni
cod_1480	Spessore da 0,136mm
Cod_0576	Spessore da 0,054mm
0149(SM)	Calibro a corsoio
MU-0019	Micrometro per esterni
M-0022	Calibro a corsoio
ce-0037	calibro a corsoio
CA1-0026	asta di riscontro
Cod.1392	micrometro per esterni
MCC 3.34134_12-A	anello di riscontro
cod.1305	calibro a corsoio
Cod.1393	Calibro a corsoio con comparat
1461(SM)	micrometro per esterni
1471(SM)	micrometro per esterni
19474	micrometro per esterni
1460(SM)	micrometro per esterni
sm-0056	micrometro per esterni
M-0011	micrometro per esterni
cod.1396	asta di riscontro
M-0020	asta di riscontro
CA1-0053	micrometro per esterni
CA1-0054	asta di riscontro
1467(SM)	Micrometro per esterni
1463(SM)	micrometro per esterni
CA1-0024	micrometro per esterni
1115(SM)	Blocchetti pianparalleli
cod_2367	Blocchetti pianparalleli
cod.1430	blocchetti pianparalleli
cod.1319	Micrometro per esterni
cod.1240	calibro a corsoio
cod.1182	micrometro per interni
cod.1180	micrometro per interni
cod.1194	calibro a corsoio
CA1-0051	micrometro per esterni
CA1-0052	asta di riscontro
cod.1257	blocchetti pianparalleli
cod.1290	calibro di profondità
T-0020	micrometro di profondità
cod.1293	micrometro per interni
CA1-0057	micrometro per interni
cod.1292	micrometro per interni
11654	calibro a corsoio

MicroNet by Microrep

Gage List

Code	Description	User I:	Due date
HT.3423.SD	0.016 mm	ING-032TF	26/11/2011
COD_0801	0.016 mm	DFT.235	26/11/2011
GT.324.FSD	0.016 mm	GYU.3453	05/12/2006
MCC 3.39610	2.5 mm	CQD-023	01/04/2004
mcc 3.34617 es.4	spine	CQD-023	10/05/2005
mcc 3.34617 es.3	spine	CQD-023	10/05/2005
mcc 3.35846	M 3 X 0.5	CQD-023	13/10/2005
mcc 3.34617 es.2	spine	CQD-023	10/05/2005
mcc 3.34617 es.1	spine	CQD-023	-
mcc 3.33143	M 3.545 X 0.7	CQD-023	14/12/2006
mcc 33132	Tampone liscio PNP	CQD-023	14/03/2007
mcc 3.37223	M 4.48 X 0.8	CQD-023	27/02/2007
CPMM 4010.0136	4.75 mm	CQD-023	13/03/2007
mcc 3.37222 sp.1	spine	CQD-023	27/02/2007
mcc 3.37222 sp.2	spine	CQD-023	27/02/2007
sm-0094	riscontro cilindrico	GYU.3453	04/01/2012
CV.2314.GT	M 5 X 0.8		30/04/2011
mcc3-34783 ES.2	M 5 X 0.8	PTG-023H	22/02/2007
mcc3-34783	M 5 X 0.8	CQD-023	13/10/2005
mcc 3.33131	5.3 mm	CQD-023	-
mcc 3.34654 P	thread plug gage	CQD-023	18/02/2005
mcc 3.34654 NP	thread plug gage	CQD-023	18/02/2005
MCC 3.39611	6 mm	CQD-023	01/04/2004
N 105.119-2/1	M 6 X 1	CQD-023	23/09/2006
N 105.119-2/2	M 6 X 1	CQD-023	23/09/2006
MCC 3.39654	Limit plain plug gage	MAG-0343	25/11/2005
mcc 33128	6.8 mm	CQD-023	14/03/2007
mcc 3.33791 sp.1	spine	CQD-023	16/06/2005
mcc 3.33791 sp.3	spine	CQD-023	16/06/2005
mcc 3.33791 sp.4	spine	CQD-023	16/06/2005
mcc 3.33791 sp.2	spine	CQD-023	16/06/2005
mcc 33127	M 7.25 X 1.058	CQD-023	14/12/2006
mcc 33900	Tamp.liscio PNP	CQD-023	14/03/2007
mcc 33130	8.75 mm	CQD-023	14/03/2007
MCC 3.34968	plug		19/11/2004
CPMM 4010.0132-B ES.1	9,63/9,51	Testing	01/04/2004
SD.4234.FD	9,63/9,51	DFT.235	-
CPMM 4010.0132-B ES.3	9,63/9,51	CQD-023	14/03/2007
ASF.34543.SFR	master ring gage	Testing	11/06/2003
ASF.34543.SFR222222	master ring gage		26/05/2011
CPMM 4010.0135	11.1 mm	Testing	13/03/2007
0000000000	bbbbbbbb		07/09/2011
MCC 3.39609	0.47244"	CQD-023	01/04/2004
mcc 33901-A	Tamp.liscio PNP	CQD-023	14/03/2007
mcc 33129	14.5 mm	CQD-023	14/03/2007
CPMM 4010.0143	15.875 mm	CQD-023	-
XXXXXX	M 18 X 2		30/01/2007

1 / 2

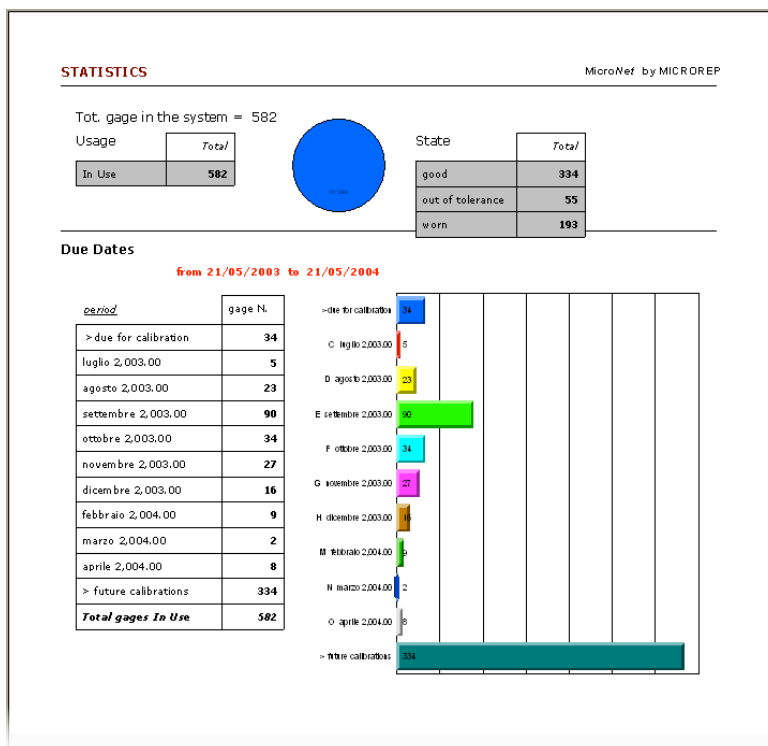
R&D	-
AMP-644	05/05/2004
AMP-644	05/05/2004
AMP-644	05/05/2004
AMP-644	05/05/2004

Export to PDF and Excel

All different printouts can be saved into Acrobat Reader (**PDF**) format. Calibration Reports can be generated directly into Excel: software send data directly into Excel cells of the calibration report template worksheet, so to be able to build the layout of the report right into Excel^{III}.

Statistic on gages

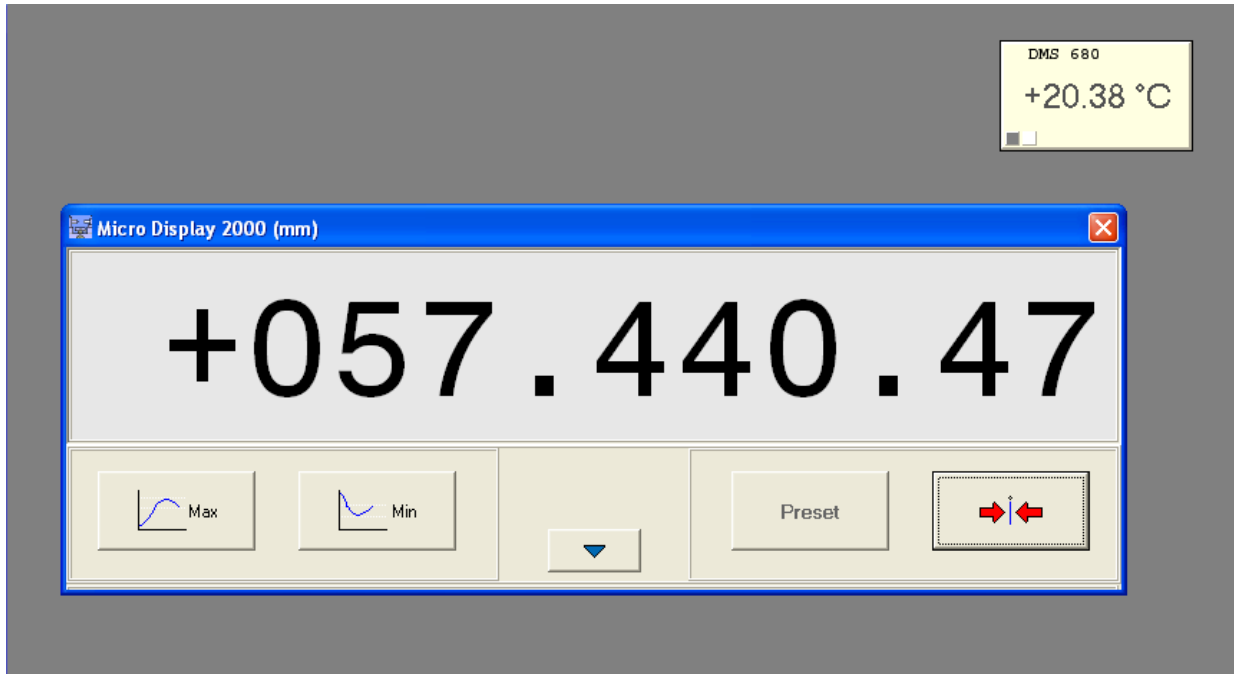
Gage statistics to evidence the number of gages to be calibrated in each month of the year or to show the amount of gages out of tolerances.



^{III} Excel recent version is required for this function (not supplied).

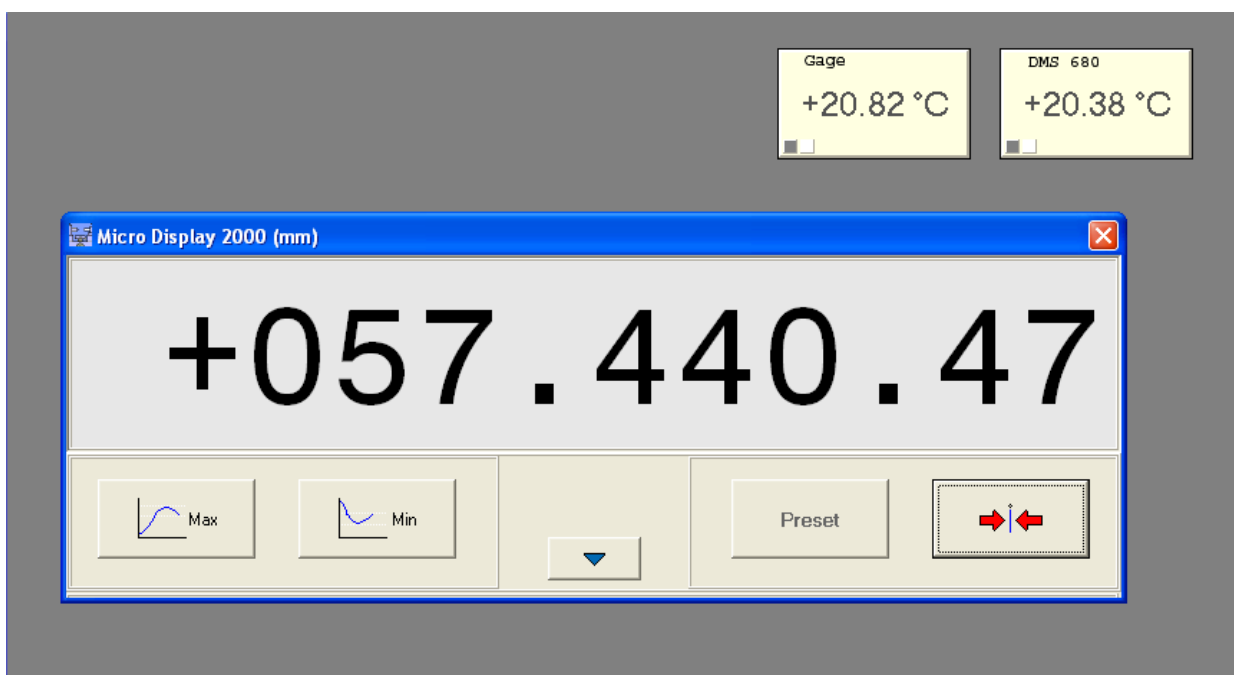
Real time Temperature Compensation

When used with the DMS 680 or other compatible system, a real time temperature compensation provides unprecedented thermal stability. Direct reading of the temperature on screen is provided¹.



Gage temperature compensation

Our proprietary USB interface, has a second optional channel to measure also the gage temperature and to make a real time temperature compensation¹ of the gage, too.



¹ requires compatible hardware on the unit (see unit details).

XML - Export | Import Data

To improve the integration with other software packages, MicroNet offers the optional possibility to communicate via XML files with other software packages.

MicroNet can generate an XML file to automatically send the calibration data to another software.

The XML files need to be customized according to each specific need: please enquiry for further details.

Non-Linear Correction for user

This optional module allows the user to compensate the measurement error by loading a non linear compensation (given at points).

Contact Deformation Compensation

This functions is available for DMS680 HA latest version only, allowing to reduce the possible sources of measurement error. This unique optional software module allow to compensate the measurement error due to the contact deformation.

Taking into account the contact tips shape, the gage type, material and the deformation coefficients, it can predict and compensate the contact deformation.

This will reduce the real measurement error and increase the machine accuracy in real working conditions.

General Characteristics

MicroNet is supplied standard with the DMS 680 in the following configuration:

Management software for gage and instrument	●
Measurement software for gage and instrument	●
Solid gages measurement procedures	●
Instruments measurement procedures	●
Master gage management	●
Measuring tools management	●
Direct reading of measurement value from the DMS 680	●
Keyboard (manual) measurement data entry	●
Real time temperature compensation of the environment (depending on hardware)	●
Real time temperature compensation of gage (depending on hardware)	○
Gage measurement procedures integrated into the system	●
Custom fields can be defined by the user	●
Two levels of user/location can be associated to each gage	●
Cost centre management	●
Instruments procedures can be composed of numerical and visual inspections	●
Thread formulae for automatic calculation of pitch diameter (including multi-start threads)	●
Wire/sphere size automatic selection according to the gage specification	●
All historical data are stored into the gage file	●
Full measurement traceability	●
Powerful retrieval functions with possibility to view and printout the resulting list	●
Variety of standard reports including gages due for calibration, overdue gages, etc.	●
Gage state active management (gages in use, non-in-use, lost, indicative, reparation, etc.)	●
Automated tolerances calculation for Iso-metric plain gage (detailed norms list available)	●
Automated tolerances calculation for Iso-metric thread gage (detailed norms list available)	●
Automated tolerances calculation for Ansi-Asme plain gage (detailed norms list available)	○
Automated tolerances calculation for Ansi-Asme thread gage (detailed norms list available)	○
Automated tolerances calculation for Ansi Pipe thread gage (detailed norms list available)	○
Automated tolerances calculation for Iso-Gas thread gage (detailed norms list available)	○
Automated tolerances calculation for Spline Gage (detailed norms list available)	○
Automated tolerances calculation for Whitworth thread gage (detailed norms list available)	○
Automated tolerances calculation for Buttress Gage (detailed norms list available)	○
Gage calibration cycle management	●
Works in network environment (addition licenses required and not included)	○
Automated calibration certificate printout	●
All reports can be saved in PDF	●
Custom procedure text can be recalled during measurement	●
Gage temperature compensation	○
Works under Windows 7	●
Colorful icons to increase software usability	●
XML data import and export	○
User defined non linear compensation	○
Contact deformation compensation	○
Gage calibration period can be modified according to the remaining tolerance	●

● **Standard component**

○ **Optional component**