QMSOFT® | Version 7

QMSOFT®

QMSOFT® - more than 4000 installations

QMSOFT® - in more than 45 countries

QMSOFT® - in 10 languages

L&W offers you a CD-ROM with all QMSOFT® modules free-of-charge and unlimited time to test the entire QMSOFT® system to give you the possibility to experience its efficiency without any time pressure.

You will see how easy it is, for instance, to combine QMSOFT® with the various measuring devices of different manufacturers, thus creating a coherent system to perform your complete gauge inspection and management process.

QMSOFT® is a modular "building block" system - i.e. you only purchase the components you really need.

If your requirements grow you simply add new components at your individual wishes.

The integrated „laboratory management" function offers a central tool to manage all of your reference standards, instruments, traceability information and measuring uncertainties.

We hope you will find the demonstration of our QMSOFT® system useful. Should you require any further information or assistance, please do not hesitate to contact us.

QMSOFT® is a registered trade marke of the L&W GmbH.

The systematic inspection of all measuring tools and gauges in your company is essential for your quality assurance system. This is also one of the fundamental requirements of an **ISO 9000** certified system.

If that means for you:

- The gauge stock including all related information about stock-taking, gauge locations and calibration records has to be managed.

- The use of gauges has to be controlled and the adherence to recalibration periods must be guaranteed.

- The calibration process has to be carried out in a correct, repeatable and provable way.

This will produce constantly growing mountains of paper, tedious routine work and constant struggle with many standards.

We have the solution:

QMSOFT® (Quality Management Software) combines our practical experience in gauge inspection with the advantages of state-of-the-art computer technology. Furthermore, it is a powerful tool for managing all gauge data and checking measuring tools, all via one uniform user interface.

Simply jump in and start using QMSOFT®!
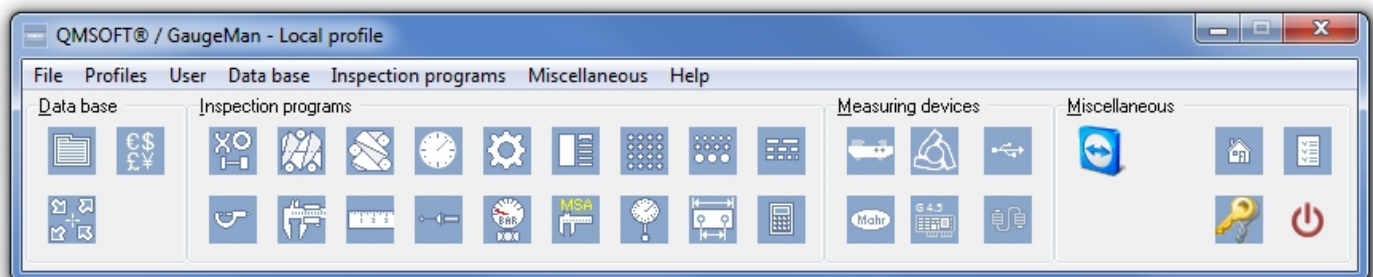
These are the features of QMSOFT®:

- All nominal sizes and tolerances for all related DIN or ISO standards as well as for ANSI standards, British standards and partly for Japanese, French or Korean standards are calculated by the program system.

- Gauge inspections will be started directly from the gauge management system and will be performed with inspection programs specially designed for the gauge type selected.

- Predefined inspection procedures follow exactly the given rules and standards. So no preparation will be necessary before starting a measurement.

- All inspection programs support the direct connection to measuring instruments for the online take-over of measuring values.

- Inspection certificates may be customised for individual presentation.

- A XML-file interface opens the QMSOFT® system to link any other application.

QMSOFT® uses a variety of special modules to provide you with optimal support for inspecting various kinds of tools and gauges. Each of these modules allows you to effectively carry out and record an inspection, thus enabling you to build a system according to your individual wishes.

The program **QM-MANAGE** provides all the functions you need to manage your complete stock of measuring tools and gauges. It also allows you to create identification cards, search and reminder lists, as well as histories of your measuring tools and gauges. A user defined data structure can be created for each type of gauge. The system also provides a flexible interface for database queries. The process of calibration is directly controlled by the system.

Important **functions** are:

- efficient "Client/ Server" SQL database

- field independent gauge management thanks to the free definition of data structures and the possibility to create new types of gauges.

- free definition of database reports to create various lists, gauge cards or barcode labels including free layout definition with the intergrated report designer.

- inclusion of nominal value generation and calculation of tolerances for all common gauges for length inspection.

- definition of dependendies between gauge status and gauge-related actions

- "Tool-in-Tool" features to handle depen-dendies between gauges

- inclusion of online measurements by intergration of separate measurement modules of any type of gauge.

- parallel administration of different gauge data stocks.

- external data exchange by a filebased XML interface.

- network and multi-user capability
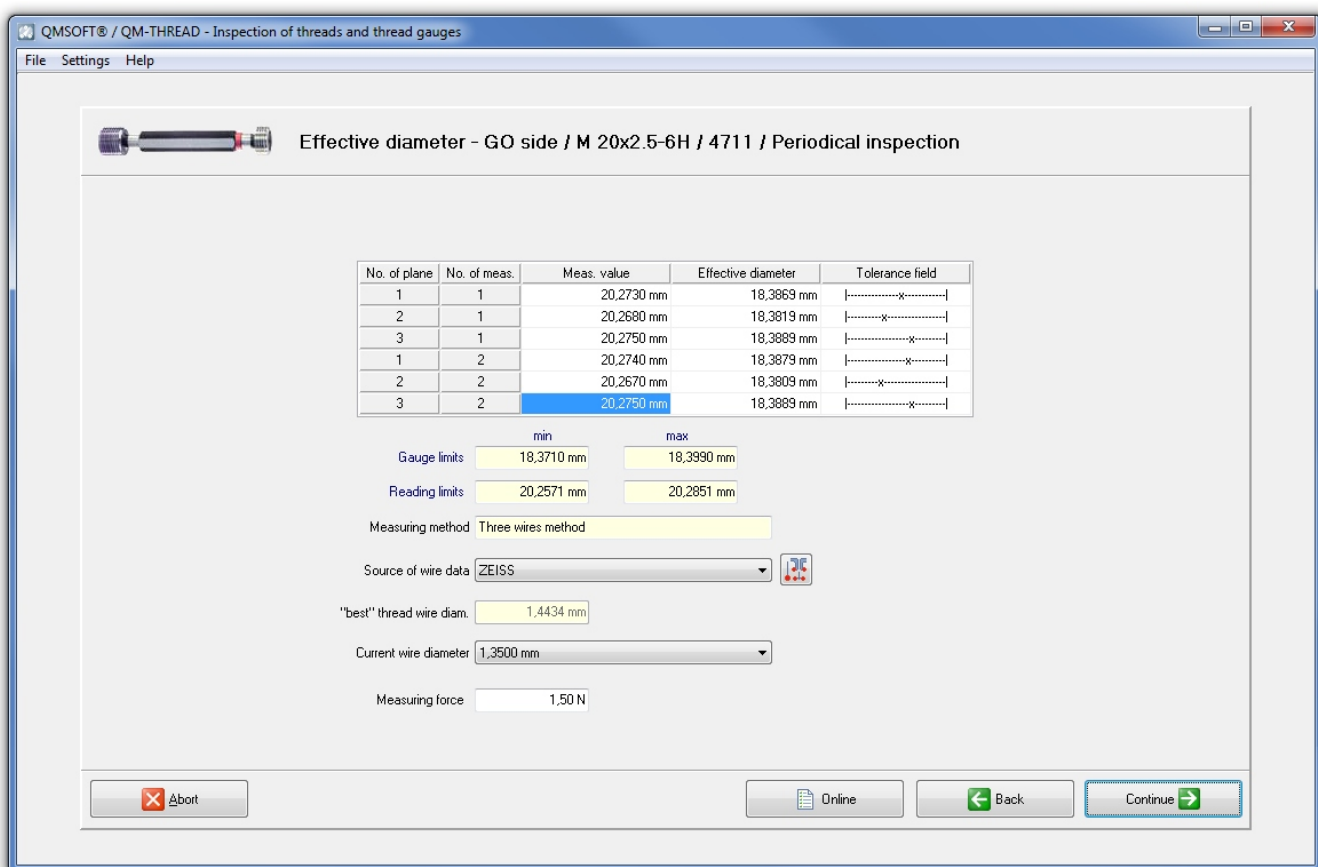
- integration of RFID-hardware support

In case you do not dispose of a special "calibration program" for a gauge, the system provides an efficient internal editor tool and an interface to MS-WORD to create certificates.

QM-THREAD is an effective tool for the measurement and calculation of all kinds of cylindrical thread gauges. The program calculates the expected measures over wires or balls and the pitch diameter depending on the measurement method. These calculations can also be done in accordance to the ANSI standard specifications. International surveys have established, that QM-THREAD has the highest precision for the different screw anatomies.

The automatic selection of measuring wires or balls from predefined or user defined size tables - including the calculation of the best wire size - facilitates your work and helps to minimize errors.

The program supports the calculation of nominal sizes and tolerances for various international thread standards. The implemented standards will be constantly extended and updated.

Here some examples for implemented standards:

- ISO Metric Threads acc. to DIN ISO 1502
- Unified Threads (UNC, UNF ...) acc. to ANSI/ASME B1.1/1.2 as well as acc. to BS919, Part 1
- ISO Metric Trapezoidal Threads acc. to DIN 103
- Pipe threads according to DIN ISO 228
- Whitworth Threads acc. to BS84/BS919 P.2
- ISO Metric Threads acc. to ANSI/ASME B1.16.M
- Unified HELICOIL threads acc. to MS 33537-1994 (ANSI B 18.29.1-2010)
- NPSF - Cyl. Dryseal Pipe Threads acc. to ANSI B1.20.3-1976

- Buttress Threads acc. to ANSI B1.9 and DIN 513
- Gauges for wire thread inserts (HeliCoil) acc. to DIN 8140 or Böllhoff
- NPSM pipe threads acc. to ANSI/ASME 1.20.1
- Threads for valves and tyres acc. to DIN 7756 respective ETRTO V.7
- Steel conduit threads acc. to DIN 40431
- ACME and Stub ACME thread ANSI B 1.5 and ANSI B 1.8
- ISO metric thread acc. to BS919-3-2007

QM-PLAIN - inspection of Plain Gauges

The program supports the inspection of master rings and ring gauges, plug gauges and snap gauges, master plugs or master disks. It calculates the gauge allowances and tolerances using the gauge type selected and the nominal value provided (e.g. 20H9 or 1.002/1.005 inch). The tolerances may be calculated according to:

- ISO 286-1 (DIN 7150)
- DIN 2250-1:October 2008
- British Standard BS969:2008,
- ASME/ANSI B89.1.6M-1984
- British Standards BS4064:1966 and BS4065:1966
- French standards NF E 02-202, NF E 11-011 and NF E 11-012
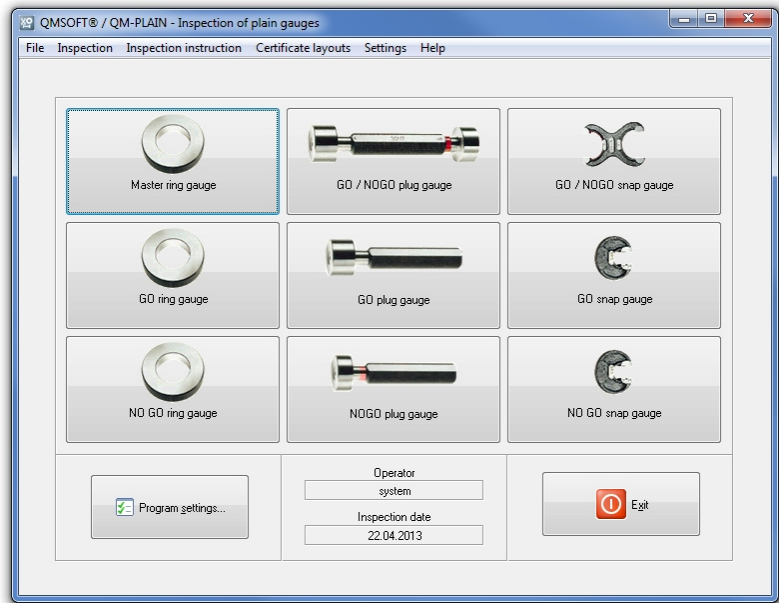
QM-DIAL - inspection of Dial Gauges and Indicators

QM-DIAL supports the inspection of dial gauges, dial indicators and dial testing indicators by means of dial gauge testing instruments or horizontal measuring machines. The inspection may be performed in accordance with various international standards (EN ISO 463, ANSI, DIN, British Standard, Japanese or Korean standards).

The results can be displayed in a graphical and numerical form.
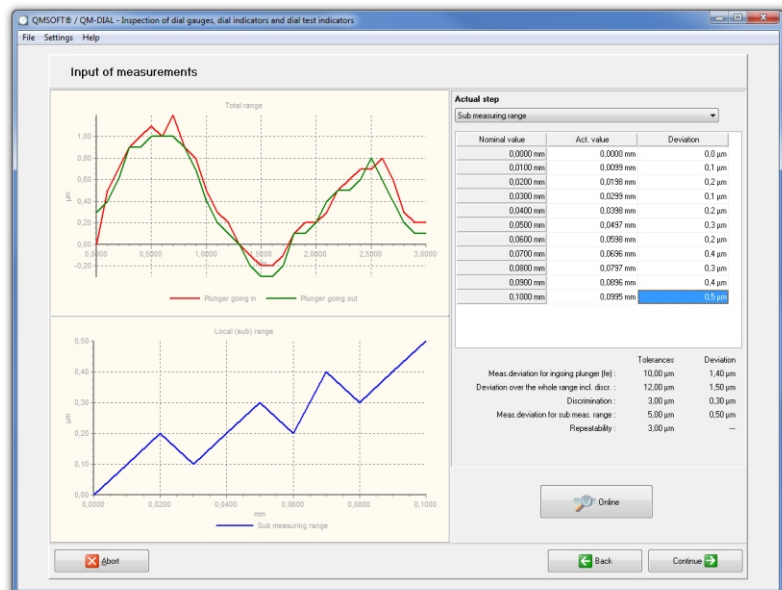
QM-MICRO supports the inspection of micrometers according to various standards. Micrometer inspection may performed according to DIN 863-1999 (Part 1-4), BS 870, BS 959, BS 6468, BS 1734 and the Federal specification GGG-C-105C respective according to customised factory standards.

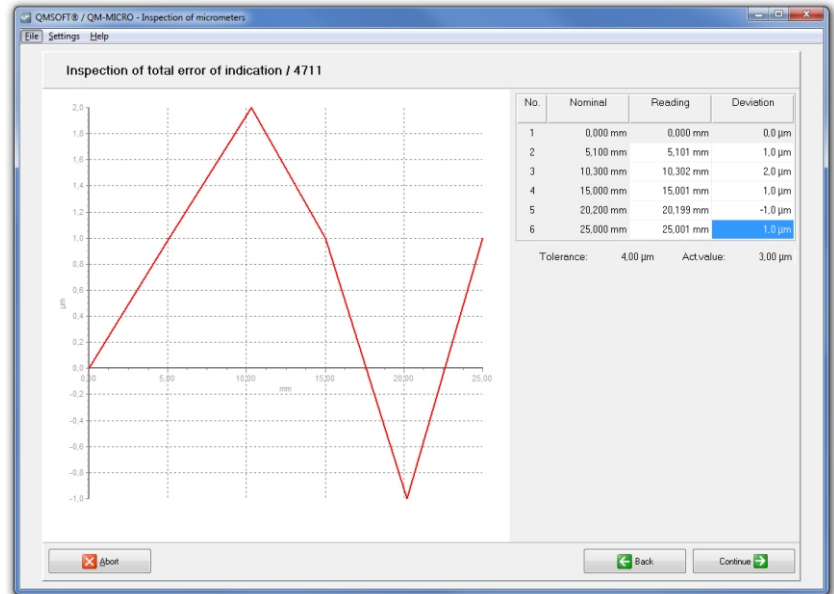Depending on the micrometer type and the evaluation mode selected the program determines the maximum error in indicated measurement, the error of the micrometer screw, the error in alignment or the zero deviation. Also the inspection of masters and inspection rods can be made.

QM-CALIP - inspection of Calipers

This program supports the inspection of calipers in compliance with various standards. If the caliper has a digital interface, measurement data can be entered directly from the caliper. The program determines the errors of external, internal and depth measurement. The evaluation results can be reproduced on the screen and/or the printer. Tolerance excesses will be shown.
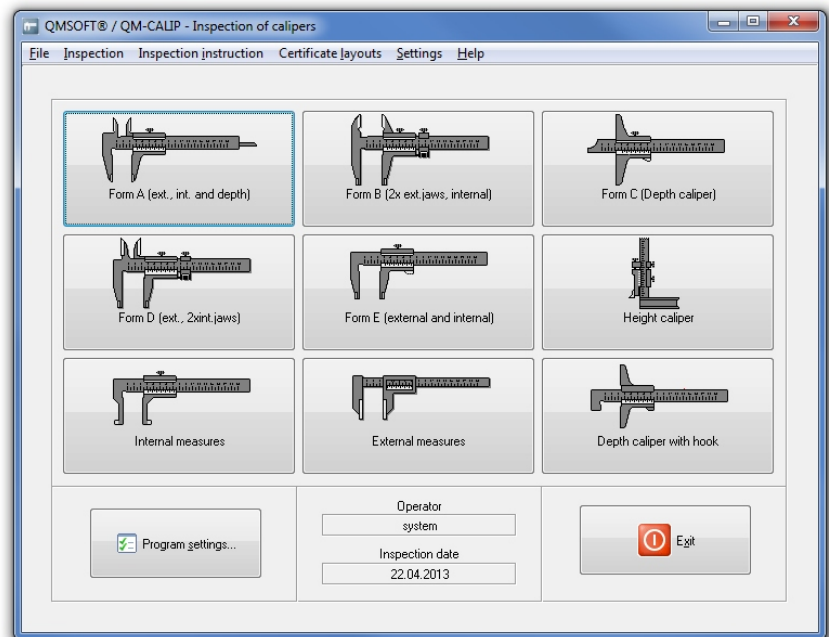
QM-BLOCK - Inspection of Gauge Blocks

The program QM-BLOCK is designed for computer supported inspection of gauge blocks used as single gauge blocks or as gauge block sets. Different evaluation methods are possible (centre length deviation, deviation range combined with centre length). Basically the evaluations and tolerances are related to the ISO 3650 standard, the ANSI/ASME B89.1.9. or the BS 4311. However, it is also possible to define your own tolerance tables and classes of accuracy. The management of all of the gauge blocks has to be done inside of the QM-MANAGE Gauge management system (lite or professional editon), the „lite edition"-licence is automatically a part of the QM-BLOCK delivery package.
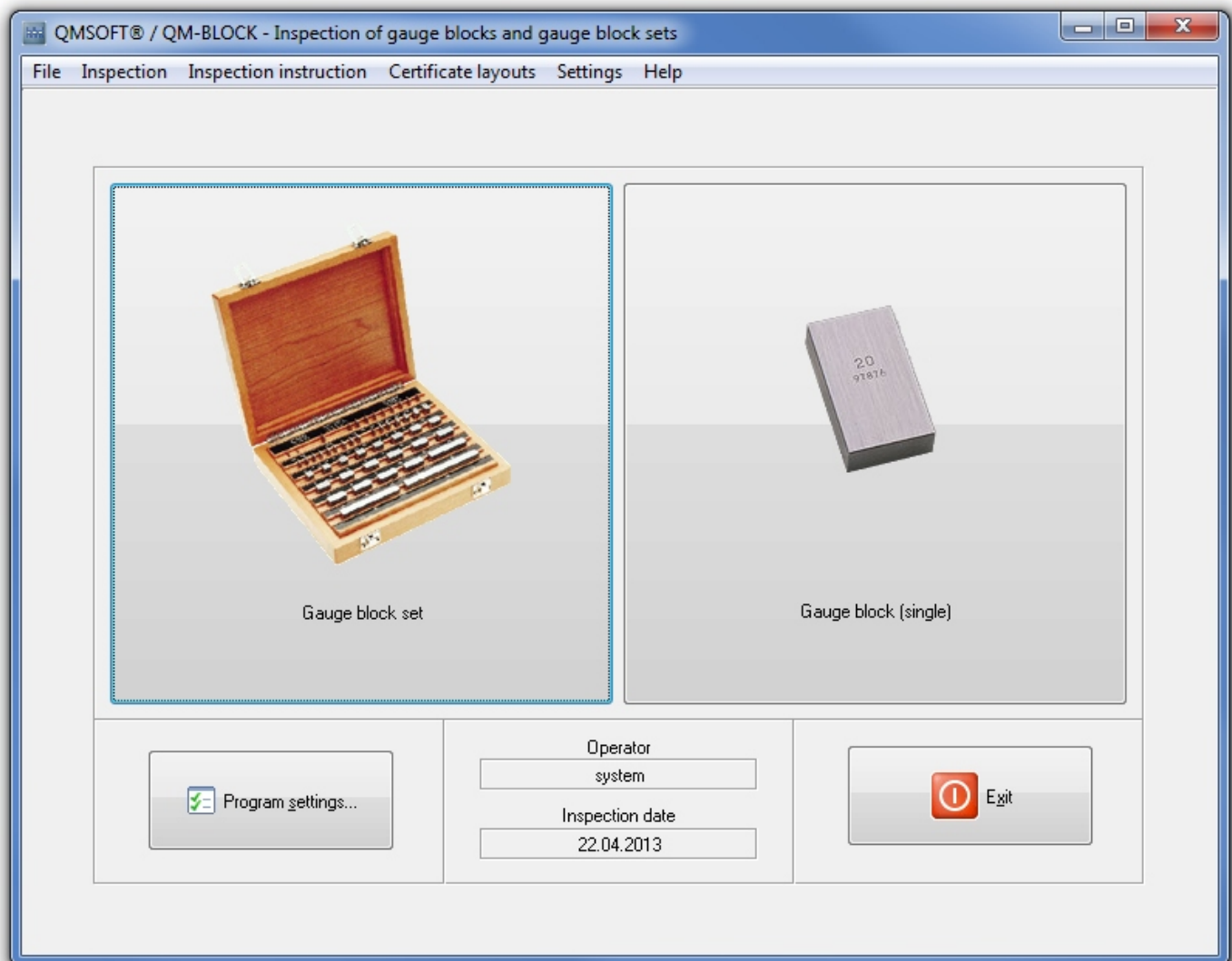
Most gauge block inspections are performed under the application of the method of "difference measurement", i.e. comparing the known actual size of a reference gauge block with the size of the gauge block which is to be inspected.

You will get the nominal size and center length deviation of your reference gauge blocks from the calibration certificate of this reference set.

To inspect a gauge block you set, as a rule, 5 measuring points on the gauge block's surface. The order of the measuring points depends on the standard selected. The program also enables you to define your own "measuring point pattern".

Measurement data can be taken over through an online measuring instrument or entered on the keyboard. It is possible to customise the record listings using a user defined certificate layout file.

QM-SCALE

Program to inspect graduated steel rules according to DIN 865, DIN 866 or according to British Standard BS 4372. The program may also be used to inspect measuring tapes according to DIN 6403 and EG 73362. Further, it offers the possibility to inspect a tape in sections enabling you to inspect tapes with a long range on a shorter inspection device.

QM-INSPECT

Program is designed to create „Inspection schedules" to inspect special – usually non standardized – gauges (e.g. inspection fixtures). An "Inspection schedule" does consist of a consequence of gauge characteristics to be inspected. Such characteristics may be simple texts (e.g. the gauge designation), selection lists or numerical values. For "numerical values" it is possible to define a nominal value and the related tolerance limits.

QM-PRESS

Program to inspect pressure gauges, process pressure gauges and pressure switches according to DIN EN 837. The gauges may be designed for different measuring principles (bourdon tube gauges, diaphragm or capsule gauges etc.), for different working and inspection mediums (air, water, oxygen, fuel oil etc.) or may differ in the way they are build (without pointer stop, pointer stop at zero position etc.).

QM-TORQUE

This program does support the inspection of different types of indicating and setting torque tools. The valuation is based on the international standard ISO 6789 or can be made according to factory standards. The possibility to take over measuring values directly from a torque testing instrument ensures a precise and efficient inspection.

QM-SPLINE

Program to inspect gauges for involute splines in compliance with DIN 5480, DIN 5481 and of gauges for serrated splines in compliance with DIN 5482 (more implemented standards: ANSI B92.1-1996, ANSI B92.2M-1980).
The program also offers you the possibility to enter your spline parameters according to a factory standard and to calculate the respective measurement results over or between pins.

QM-PIN

Management and inspection of pin gauges, pin gauge sets, thread wire sets and thickness gauge sets. The program ist able to create and manage all nominal sizes of a pin set and also the results of an unlimited number of measures including all measuring values for each pin or wire. Implemented standards include DIN 2269:1998-11, ANSI/ASME B89.1.6M, BS 5590:1978, DIN 2275:1977 and IS:11103-1984.

QM-TAPERTHREAD

Program to inspect taper pipe threads and taper thread gauges. All thread nominal values can be generated in accordance with the standards. Note: the inspection requires a special hardware environment for the calibration device.

In addition to the programs mentioned above we offer **other modules for the inspection** of the most varied types of gauges. Additional standards or inspection programs will be implemented at **customer's request** and costs!

QMSOFT® can be run as a **stand-alone** system or in a **client-server** evironment. Supported platforms are from Windows 2000 up to Windows 8 (both 32- and 64-bit versions).

QM-DeviceServer - Integration of measuring devices

Efficient and convenient measurement means the online take-over of measurements from a connected measuring device. QMSOFT supports a wide range of measuring hardware by using a progressive driver technology: the **QM-DeviceServer** is a specialiced tool to perform the online communication between QMSOFT and all of the common measuring instruments.

This communication can be used either at your local PC or also over a network connection, so it is possible to integrate proprietary hardware interfaces into Terminal Server environments, which normally cannot support such special hardware.

QM-DeviceServer also can be used as a stand-alone-tool for retrofit of older length measuring machines or to integrate your hardware into your own IT environment.
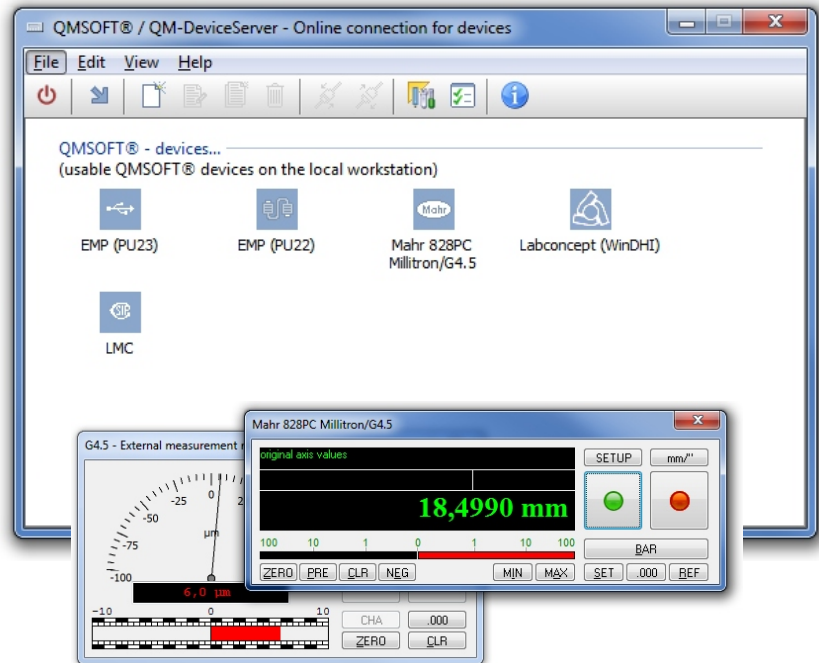
QMSOFT® - Centralized laboratory management

Centralized management tools and features allow efficient workflow in the calibration laboratory. You can handle all of your reference normals and all of the treacability and uncertainty informations with one central tool in one central database.

The integration of additional work-places into an existing QMSOFT® system is really simple: install the software QMSOFT®, load a profile with all of the database connection and licence information, and now you are READY to START!
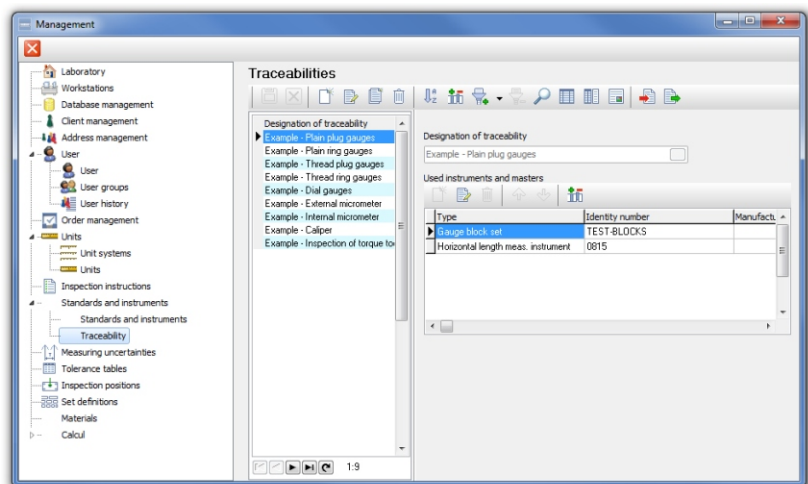
Selection of implemented standards in QMSOFT®

QM-THREAD (Thread gauges)

- ISO Metric threads, DIN ISO 1502 (DIN 13)
- ISO Metric threads, ANSI B1.16M
- Metric ISO Trapezoidal threads, DIN 103
- Unified threads/thread gauges, ANSI/ASME B1.1 u. B1.2
- Thread gauges for Unified threads, BS 919 (Part 1)
- Gauges for pipe threads, DIN ISO 228
- Steel conduit threads, DIN 40430, 40431
- Knuckle threads, DIN 405
- Buttress threads and gauges, DIN 513/ Factory standard
- Gauges for wire thread inserts for metric threads, DIN 8140
- Gauges for screw threads of Whitworth form, British standard BS 84 / BS 919 (Part 2)
- NPSM pipe threads, ANSI/ASME 1.20.1
- Aerospace MJ threads, DIN ISO 5855
- Gauges for Metric and Unified thread inserts, Böllhoff factory standard
- Threads for valves and tyres, DIN 7756 and ETRTO V.7
- Metric threads, NF E 03-152/153 (GE40-010N)
- Unified threads, CNOMO GE40-008N (PSA, Renault)
- ACME threads, ANSI B1.5 - 1988
- Stub-ACME threads, ANSI B1.8 - 1988
- Buttress threads $7^0/45^0$, ANSI B1.9 - 1973
- Hot-dip galvanized threads, DIN ISO 965:2002

Program QM-PLAIN (Plain rings/plugs/snap gauges)

- DIN-ISO 286 - 1
- DIN-ISO 286 - 2
- British Standard BS 969
- ANSI/ASME B89.1.6M - 1984
- French Standard NF E 02-202 (GE40-001N)
- Master rings, BS 4064 : 1966 and BS 4065 : 1966
- Master rings, French Standard NF E 11-011

QM-DIAL (Dial gauges and indicators)

- Dial gauges, DIN 878 - 1983
- Dial indicators, DIN 879 - 1999
- Dial test indicators, DIN 2270 - 1985
- Dial gauges, ASME/ANSI B89.1.10M
- Dial gauges, French Standard NF E 011-50
- Dial test indicators, French Standard XP E 11-053 : 2000
- Dial gauges, Japanese Standard JIS B 7503 - 1992
- Dial gauges, British Standard BS 907 - 1965
- Dial test indicators, British Standard BS 2795 - 1981
- Dial gauges and Test indicators, Australian Standard AS 2103
- Dial gauges (0,01 mm Graduation), Korean Standard KS B 5206-1984
- Dial gauges (0,001 mm Grad.), Korean Standard KS B 5207 - 1984
- Dial test indicators, Korean Standard KS B 5238 - 1976

Program QM-CALIP (Calipers)

- DIN 862 - 1988
- British Standard BS 887
- French Standard NF E 11 - 091

Program QM-MICRO (Micrometers)

- Micrometes (any type), DIN 863 - 1999 (Part 1 - 4)
- External micrometers, British Standard BS 870 - 1950
- Internal micrometers, British Standard BS 959 - 1950
- Depth micrometers, British Standard BS 6468 : 1984
- Micrometer heads, British Standard BS 1734 : 1951
- Micrometers (any type), Federal Specification (USA) GGG-C105 C-1987
- Expernal micrometers, Australian Standard AS 2102
- Internal micrometers, Australian Standard AS 2101 : 1978

QMSOFT® - deployed in calibration laboratories around the world

Today, a growing number of industrial users and calibration laboratories place their trust in our QMSOFT® technology. In fact, more than 30 DKD/DAkkS (German accreditation body) accredited laboratories make use of QMSOFT® programs. QMSOFT® modules are also employed as "third-party-components" to extend the functionality of other software products, e.g. the calculation of thread tolerances in a CAQ system. Several universities and technical colleges successfully utilize the QMSOFT® system for practical education in the field of gauge management and gauge calibration.

Countries in which QMSOFT® has already been installed:

Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Indonesia, Iran, Israel, Italy, Luxembourg, Malaysia, Marocco, Mexico, Netherlands, Norway, Pakistan, Poland, Sweden, Switzerland, Singapur, Slovenia, Slovakia, Spain, South Africa, South Korea, Taiwan, Turkey, USA

Calibration Certificate

Measurement Laboratory
< customize here your name and logo >

QM-DIAL

Inspection of Dial gauge acc. to BS 907 : 1965

Customer:	L&W
Identity number:	2871 KB-511

Standard:	BS 907 : 1965
Measuring range:	5,00 mm
Graduation:	0,01 mm

Start of inspection:	0,00 mm
End of inspection:	5,00 mm
Inspection step:	0,10 mm
Position for inspection of repeatability:	0,20 mm

Inspection results

Parameter	Nominal value [µm]	Actual value [µm]	Out of tolerance [µm]
Deviation – adjacent readings	5,00	1,50	-
Deviation over ½ revolution	7,50	2,20	-
Deviation over 1 revolution	10,00	3,10	-
Deviation over 2 revolutions	15,00	4,60	-
Deviation at any larger interval	20,00	5,50	-
Discrimination error	3,00	0,80	-
Repeatability	2,00	1,20	-

Valuation:	Gauge in tolerance
Inspection device:	Dial gauge testing instrument - No. 178164
	Gauge block set 314826 (Cal. report no. 0125454-2002)
Inspection date:	15 March 2004
Operator:	....
	(Mr. Smith)

Calibration curve

Calibration Certificate

Measurement Laboratory
< customize here your name and logo >

QM-THREAD

Periodical inspection of GO / NO GO thread plug gauge

Customer:	L&W
Identity number:	6386-B012

Thread designation:	M 20x2.5-6H
Standard:	ISO metric threads according to DIN ISO 1502 (DIN 13)
1. Flank angle:	30,00°
2. Flank angle:	30,00°
Pitch:	2,5000 mm
Thread starts:	1,0

Used wire diameter:	1,3500 mm
Measuring force:	3,0 N
Method of measurement:	Three wires method

Gauge nominal va lues	GO side	NO GO side
Major diameter (max):	20,0300 mm	19,1210 mm
Major diameter (min):	20,0020 mm	19,0930 mm
Effective diameter (max):	18,3990 mm	18,6140 mm
Effective diameter (min):	18,3850 mm	18,6000 mm
Effective diameter - Wear limit :	18,3710 mm	18,5920 mm
Minor diameter - maximum value:	16,9331 mm	16,9331 mm

Measuring values of Effective diameter   - GO Side

Meas. plane No.	Meas. value No.	Measure [mm]	Effective diameter [mm]	Out of tolerance [µm]
1	1	20,2574	18,3717	-
2	1	20,2582	18,3725	-
1	2	20,2565	18,3708	-0,20
2	2	20,2569	18,3712	-

Measuring values of Effective diameter   - NO GO side

Meas. plane No.	Meas. value No.	Measure [mm]	Effective diameter [mm]	Out of tolerance [µm]
1	1	20,4823	18,5967	-
2	1	20,4831	18,5975	-

Valuation:	Gauge out of tolerances
Inspection procedure:	VDI/VDE/DGQ 2618 (Page 23)
Measuring uncertainty:	U = 1,5 µm + 0,9 µm * L (Length L in m)
Inspection device and traceability:	Measuring device no. B181289
	Gauge block set no. 531826 (Calibr.-Certificate-No. 02/25454-A)
Inspection date:	16 March 2003
Operator:	.... (Mr. Smith)

Calibration Certificate

Measurement Laboratory
< customize here your name and logo >

QM-PLAIN

Periodical inspection of GO / NO GO plug gauge

Customer:	L&W
Identy number:	817241
Standard:	DIN-ISO 286

Nominal size:	30H7	
Upper deviation Es:	21,00 µm	30,02100 mm
Lower deviation Ei:	0,00 µm	30,00000 mm

Gauge nominal sizes

Upper deviation GO side:	5,00 µm	30,00500 mm
Lower deviation GO side:	1,00 µm	30,00100 mm
Wear limit GO side:	-3,00 µm	29,99700 mm
Upper deviation NO GO side:	23,00 µm	30,02300 mm
Lower deviation NO GO side:	19,00 µm	30,01900 mm

Actual values   – GO side

Meas. plane no.	Meas. value no.	Measure [mm]	Out of tolerance [µm]	Tolerance graphic
1	1	30,0021	-	|-------------x--------|
1	2	30,0027	-	|---------------x------|
2	1	30,0015	-	|------------x---------|
2	2	30,0018	-	|------------x---------|
3	1	30,0024	-	|--------------x-------|
3	2	30,0022	-	|--------------x-------|

Actual values   – NO GO side

Meas. plane no.	Meas. value no..	Measure [mm]	Out of tolerance [µm]	Tolerance graphic
1	1	30,0213	-	|------------x---------|
1	2	30,0208	-	|----------x------------|
2	1	30,0218	-	|----------------x------|
2	2	30,0214	-	|------------x---------|

Valuation:	Gauge in tolerances
Inspection procedure:	VDI/VDE/DGQ 2618 (Page 2)
Measuring uncertainty:	U = 0,6 µm + 0,9 µm * L (Length L in m)
Inspection device:	Measuring device no. 98374; (Certificate no. 030217-12) Gauge block set No. 549231 (Calibration cert. no. 3504-17)
Inspection date:	01 October 2002
Operator:	.... (Mr. Smith)

QMSOFT® has a built-in data exchange interface with the name **QmLink®**. This interface is designed as a universal tool to exchange gauge data between the different QMSOFT components as well as between QMSOFT® and "third-party" systems (e.g. a CAQ system) without loss of any of the collected gauge data items. The QmLink format is the best choice to exchange data between two QMSOFT® instances!

L&W offers a detailed description in order to provide the developers of other software components with easy access to the complete functionality of the **QMSOFT®** program system.

An other and also XML-based data exchange format is published by the Association of German Ingeneers: the VDI Guideline **VDI/VDE 2623** - „Format for data exchange in management of measuring and test equipment - Definition of Calibration Data Exchange-Format (CDE-Format)". This data format is supported more and more by many systems in the context of quality assurance. L&W GmbH is one of the active members of the VDI professional committee 3.14, which is responsoble for the guideline VDI/VDE 2623.

Based on this both data exchange technologies there are solutions available, which allow to use QMSOFT® in a enterprise ressource planning environment (ERP) as SAP or others. QMSOFT® users can stay connected also in the future!
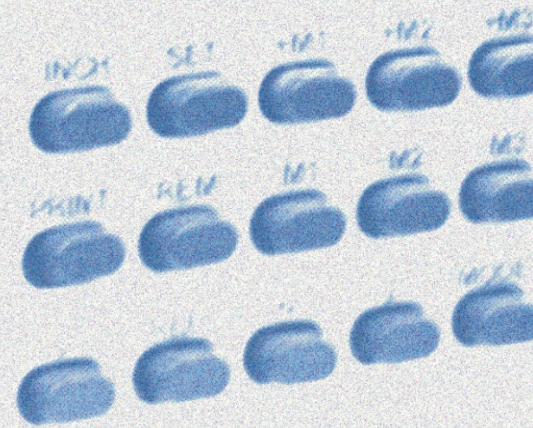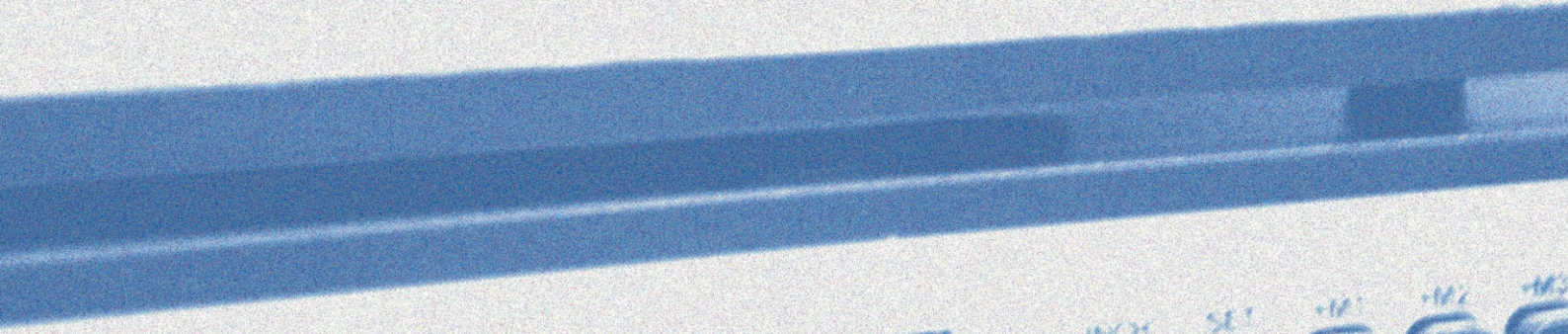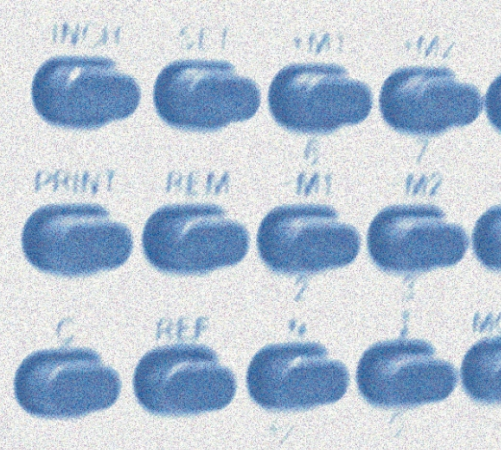
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