



Ultra-microbalances and microbalances

Micro Scale Measurement - Laboratory Applications

4Y Series Microbalances

Extraordinary precision and comfort of operation for small mass measurement performed with the highest accuracy

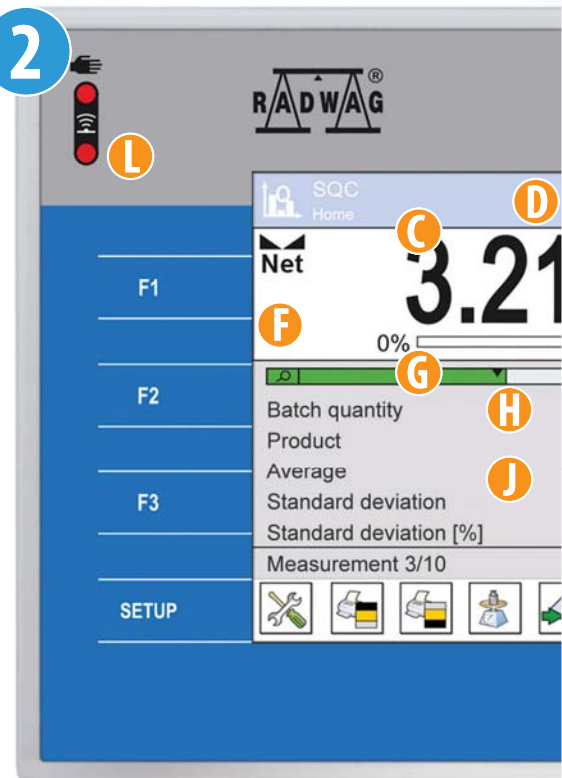
- 5.7" touch screen
- Interactive menu
- Wireless connection
- Conformity with regulations (GLP, GMP System)
- Database (weighing records, samples, operators, reports)
- Dynamic control of sample weight (bargraph)
- Statistics, SQC
- Printouts, reports (PCL standard)
- Multilingual menu
- Interfaces: Ethernet (network applications), USB, RS 232, IN/OUT
- Wide spectrum of use (industry, laboratories, universities, research and development centres)

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- 1 Weighing module
- A Automatically opening draft shield
- B Weighing pan
- 2 Terminal
- C Information on a selected working mode and on an adopted profile
- D Information on a logged in operator
- E Area for date, time, connection type information, battery state, etc.
- F Measurement indication area
- G Load bar graph
- H Checkweighing function bar graph (thresholds)
- I Pictograms for ambient conditions monitoring
- J Configurable area for extra information
- K Quick access bar
- L Proximity sensors (optimization of operation)

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Standard design of UYA 4Y Ultra-microbalance and MYA 4Y Microbalance



MYA 4Y.P Microbalance for pipettes calibration



MYA 4Y.F Microbalance and Ultra-microbalances UYA 4Y.F for filters weighing



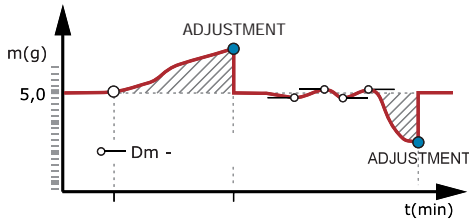
MYA 4Y.F1 Microbalance for weighing filters of large-diameter



Quality Built into the Product

Adjustment and an Automatic Cycle

Accuracy of indication for MYA 4Y microbalances is guaranteed owing to automatic adjustment process. This process takes into account the dynamics of temperature variation and time flow. It is possible to generate a report upon each completed adjustment.



Principle of operation for an automatic adjustment

| | |
|----------------------------------|------------|
| ----- Adjustment: Internal ----- | |
| Date | 2016.07.26 |
| Time | 09:12:38 |
| Balance type | MYA 4Y |
| Balance ID | 234986 |
| Operator | Smith |
| Level status | Yes |
| Difference | 0.000000 |
| Temperature | 25 °C |
| ----- | |
| Signature: _____ | |



| Adjustment history | | | |
|--------------------|------------|----------|--------------------|
| 239 | 2016.07.26 | 07:44:28 | Triggered by time |
| 240 | 2016.07.26 | 08:46:30 | Triggered by time |
| 241 | 2016.07.26 | 09:12:38 | Internal |
| 242 | 2016.07.26 | 09:29:07 | External |
| 243 | 2016.07.26 | 09:53:49 | Triggered by temp. |
| 244 | 2016.07.26 | 10:14:20 | Triggered by temp. |

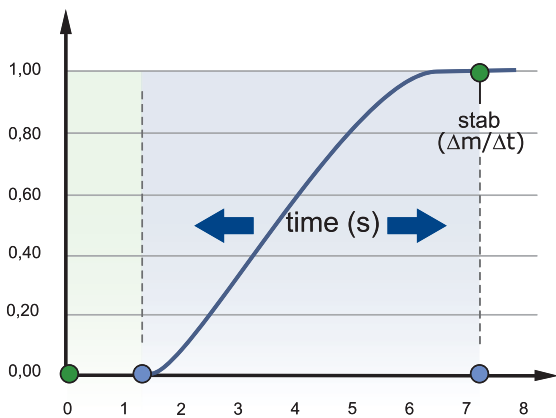
| Adjustment history | | |
|--------------------|-----------------|------------------------|
| 1 | Date | 2016.07.26 09:12:38 |
| 2 | Adjustment mode | Internal |
| 3 | Working mode | Weighing |
| 4 | Operator | Smith |
| 5 | Level status | Yes |
| 6 | Nominal mass | 4.897654 |
| 7 | Current mass | 4.897653 |
| 8 | Difference | 0.000000 |
| 9 | Temperature | 25°C |

Printout or export of a report on adjustment

Result of each adjustment is recorded in microbalance memory, it can be previewed

Fast Measurement for any Sample

System designed to control process of opening the draft shield provides instant access to the weighing pan. Determining weight of a particular sample takes just a few seconds.



Conformity with USP Conventions

General Chapters, Apparatus for Tests and Assays <41, 'BALANCES'>
General Information, <1251, 'WEIGHING ON AN ANALYTICAL BALANCE'>

Applied design solutions provide the best possible micro scale measurement accuracy. MSW-dedicated software features programmable thresholds for low limit of a weighing range wherein variable tare loads can be used.

Auto-Level an On-line Control of Balance Level

Each sample requires level control for every single weighing performance, only then precise weighing is guaranteed. Any balance deviation from permissible level tolerance is immediately recorded and signalled by means of respective messages and colour scheme. Monitoring and level recording are fully automatic facilities.



Universal and Specific Solutions

Micro and Ultra-micro Scale Measurement

When it comes to standard solutions, RADWAG offers series of microbalances (MYA 4Y) and ultra-microbalances (UYA 4Y) comprising devices varying in terms of max. capacity, readability and weighing pan size. Each balance features glass draft shield comprising automatically opened door.



Using MYA 4Y microbalance for liquid weight measurement

Filters Weight Measurement Differential Weighing

Owing to special design of a weighing chamber, precise absorption level may be determined by means of filter weight measurement. F series balances and ultra-microbalances intended to weigh filters comprise specific weighing chamber characterized by airtightness and featuring an open work weighing pan.



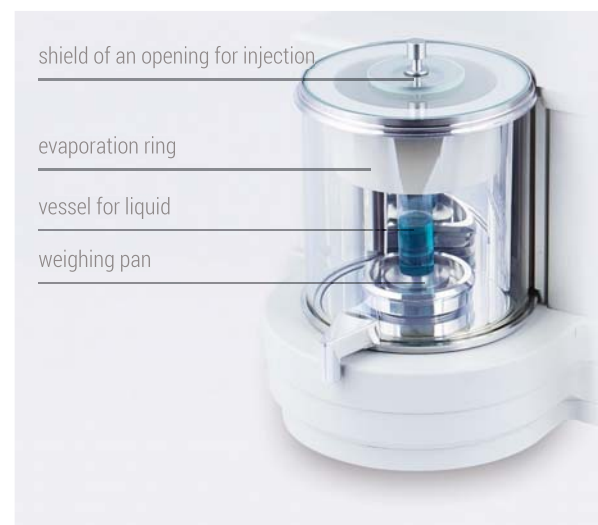
Using MYA 4Y.F microbalance for filters weight measurement

Pipettes Calibration Gravimetric Method for Control of Volume

Dedicated set, installed inside the weighing chamber, allows a microbalance operator to check piston pipettes volume. The procedure is performed in accordance with the respective standard, ISO 8655.

Used evaporation ring limits the effect of particular liquid evaporation, this considerably improves measurement accuracy.

MYA 4Y.P series microbalances provide functionality also when it comes to mass measurement.



MYA 4Y.P microbalance for pipettes calibration

Automatic Cycle Optimization

Autotest GLP Automatic Control of Accuracy

Auto-test function provides the user with possibility of manual confirmation of the performed measurements quality (record, export). Autotest GLP is a perfect solution used in quality management systems (ISO, GMP, GLP, USP, ICH Q10, SOP).

| ----- Autotest GLP: Report ----- | |
|----------------------------------|-------------|
| Balance type | MYA 4Y |
| Balance ID | 544121 |
| User | Admin |
| Software revision | L1.4.15 K |
| Date | 2016.07.30 |
| Time | 13:42:13 |
| ----- | |
| Number of measurements | 10 |
| Reading unit | 0.000001 g |
| Internal weight mass | 17.673852 g |
| Filter | Slow |
| Value release | Reliable |
| Temperature: Start | 23.99 °C |
| Temperature: Stop | 23.96 °C |
| Humidity: Start | 58 % |
| Humidity: Stop | 58 % |
| ----- | |
| Deviation for Max. | 0.000004 g |
| Repeatability | 0.0000017 g |
| ----- | |
| Signature | |
| ----- | |

Autotest Filter Automatically Performed Selection of Working Parameters

Some weighing operations need accuracy, other require speed. An indispensable help for both features, speed and accuracy, is Autotest FILTER application. The Autotest FILTER is offered by every 4Y series laboratory balance.

| | | |
|----|-------------------|-----------|
| 10 | Slow | 0.00005 g |
| | Fast | 3.179 s |
| 11 | Slow | 0.00007 g |
| | Fast and reliable | 4.392 s |
| 12 | Slow | 0.00006 g |
| | Reliable | 8.340 s |

Autotest Filter operation consists in determining standard deviation value and weighing time needed for all possible combinations of settings for Filter/Value release parameter. Upon Autotest Filter procedure completion, the balance presents its results, allowing the user to select the most optimal options, i.e. such that provide the shortest time of weighing or the best repeatability.

On-line Monitoring of Ambient Conditions

Mechanisms implemented in a microbalance are used to facilitate automatic monitoring of elementary ambient conditions (temperature, humidity). Specifying limit values and dynamicity of changes for these values, combined with visualization, provide ergonomic and efficient means of operation.

| Ambient conditions | | | |
|--------------------|----------|--------|-------------------------|
| IS T1: | 24.26 °C | THB H: | 59% |
| IS T2: | 24.26 °C | THB T: | 24.26 °C |
| IS H: | 59% | THB P: | 994 hPa |
| ISP: | 994 hPa | P: | 1.161 kg/m ³ |
| THB T: | 23.9 °C | | |



Ergonomics and Comfort of Operation

Customization of Balance Settings and Access Level

Unique user profiles with modifiable settings and access permissions provide flexibility of balance customization. Each profile comprises information, pre-set settings and a quick access shortcut dedicated for a particular operation. Number of operators and profiles is not limited.

| User | Mode | Quick launch bar |
|--------|-----------------------|---|
| User 1 | DIFFERENTIAL WEIGHING | Weighing, Batch, Sample, Weighing A, Weighing B |
| User 2 | DOSING | Weighing, Header printout, Product, Tolerance, Checkweighing thresholds |

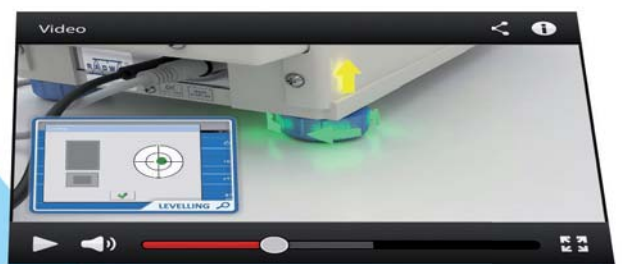
Databases As Support for the Weighing Process

Complex databases are a distinctive feature of the 4Y series. The databases size is dynamically shared within 32 GB memory.

4Y balances offer unlimited databases management options, plus they enable record of advanced reports and graphs carried out for series of weighings.



Option of databases import and export enables ease of databases management as well as their copying and archiving.



Video-Guidance and an On-screen Manuals

4Y balances feature "Media" module providing you with complex guidance, i.e. direct assistance in operating the device. With easily accessed context help you are fully supported when it comes to operation of particular functions and applications. The help is offered in a form of an on-screen displayed user manual, text and drawing instruction and short video guides.



Programmable Proximity Sensors

Manual abilities of an operator may be limited by characteristics of a workplace or by a required testing methodology (suit, gloves etc.). Owing to proximity sensors, microbalances and ultra-microbalances can be operated hands-free regardless of the said limitations.



Radwag Connect Cooperation with Portable Devices

Radwag Connect software enables communication between any 4Y series balance and a portable user-owned device. The software allows online transfer of various information, recorded by a balance, to any device featuring iOS or Android system.

The communication is established via Wireless Module or Ethernet interface.



Portability: Balance - Terminal Wireless Communication

Wireless communication provides possibility of placing the terminal in the vicinity of up to 10 meters distant from a balance. Battery-powered terminal allows 8-hour-long, continuous operation. This is especially convenient solution when placing a balance inside fume cupboard or Glove Box type of chamber.

Standard cable connection is an optional solution allowing for balance-terminal communication.



Data Monitoring and Safety

Protecting Data User Authorization Levels

When there is a need for one balance to be operated by several users, the option of customizing access rights for particular functions may turn out to be indispensable. Four access levels ensure many possibilities of supervision over users and provide important data protection (e.g. formulas).



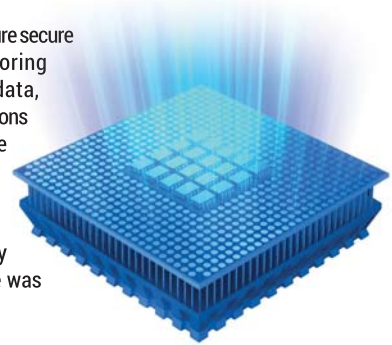
Numerous operations such as defining language of the menu, selecting a desired working mode or personalizing main screen layout may be limited according to the access level, with respective password protection.

| Access level | | Edit record | |
|-----------------------|---------------|--------------------|---------------|
| 1 Anonymous operator | Guest | 1 Name | Admin EN |
| 2 Date and time | Administrator | 2 Code | |
| 3 Printouts | Administrator | 3 Password | ***** |
| 4 Database | | 4 Access level | Administrator |
| | | 5 Language | English |
| | | 6 Default profile | Fast filters |

Possibility of associating a given profile with a particular user allows such balance personalization, that upon log in, a given working mode and filters are automatically selected

Alibi Secure Data Storage Partition

4Y series balances feature secure partition for data storing where all weighing data, reports, ambient conditions measurements are recorded and secured for a specified amount of time. All these can be easily restored in case there was such a need.



Data Archiving and Exchange

The 4Y series offers complex archiving of databases, user profiles and data stored in the memory. All the data can be exported, imported, copied and transferred between balances.



Exemplary information to be found in a weighing record

| WEIGHING RECORD | |
|---------------------------|--------------|
| Date | Operator |
| Mass | Customer |
| Tare | Working mode |
| Air buoyancy compensation | Warehouse |
| Product | Packaging |



Exchange of databases between balances via USB port by means of standard storage devices

Reports and Printouts

Reports Database

Upon completion of each process, a respective report is generated and recorded in a proper report database. The users have possibility to preview, print, export or archive reports but not only. They can also freely configure them.

| ----- Weighing ----- | |
|----------------------|-------------|
| Date | 2016.07.19 |
| Time | 14:48:50 |
| Balance type | MYA 4Y |
| Balance ID | 392543 |
| Level status | Yes |
| Product | Calcium |
| Net weight | 0.1118071 g |
| Tare | 0.5000000 g |
| Gross weight | 0.6118071 g |
| ----- | |
| Signature | |

Printouts Flexibility of Configuration

There are two printout types for 4Y series balances: standard (generated according to a fixed template) and non-standard, customized ones.

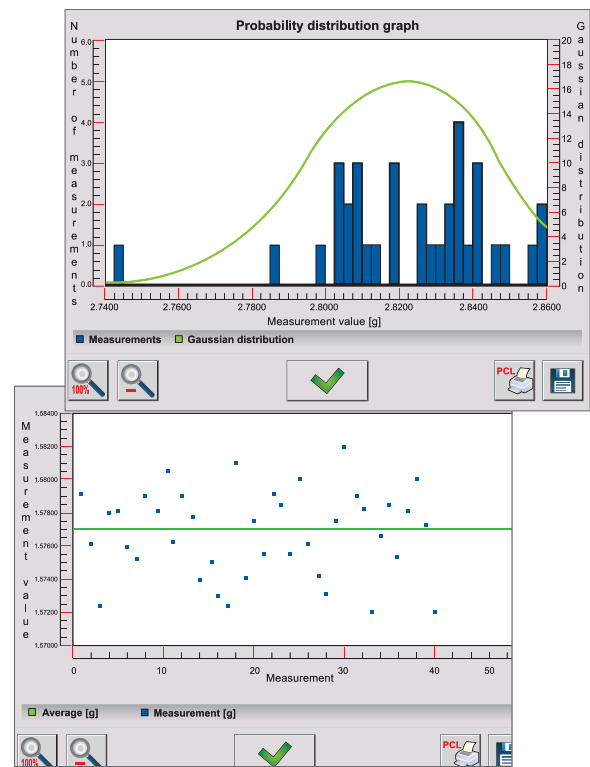
Standard printout comprises three sections: header [A], weighing data [B] and footer [C].

Each section can be freely adjusted by a user, it can also be extended with a non-standard printout.

| ----- Weighing ----- | |
|----------------------------------|--------------|
| Date | 2016.07.02 |
| Time | 14:07:43 |
| Balance ID | 419036 |
| Operator | Admin |
| Level status | Yes |
| Product | Calcium |
| Packaging | Blister |
| ----- | |
| Temperature during measurements: | 26.79 °C |
| Humidity during measurements: | 24 % |
| Pressure during measurements: | 994 hPa |
| ----- | |
| Net weight | 0.1118376 g |
| Tare | 0.5000000 g |
| Gross weight | 0.6118376 g |
| Supplementary unit | 0.5591880 ct |
| Minimum sample status | OK |
| ----- | |
| Net weight | 0.1118071 g |
| Tare | 0.5000000 g |
| Gross weight | 0.6118071 g |
| Supplementary unit | 0.5590355 ct |
| Minimum sample status | OK |
| ----- | |
| Net weight | 0.1118071 g |
| Tare | 0.5000000 g |
| Gross weight | 0.6118071 g |
| Supplementary unit | 0.5590355 ct |
| Minimum sample status | OK |
| ----- | |
| Signature | |

Graphs Measurements Visualization and Statistics

Selected working modes (Statistics, SQC) apart from generating report offer possibility of creating a chart for a particular completed weighing. The balance allows to generate weighing graphs (with mean value calculated) and probability distribution graph out of series of measurements. Each graph can be freely scaled, printed or saved to BMP file.



Graph of probability distribution (Gaussian distribution)

Operating the Printouts Import, Export and Printing

Technology used for 4Y series enables free exchange of printouts and labels (TXT or LB file format) between balances. The balances are compatible with vast range of PCL printers and label printers, wherein connection between printers and balances is established by RS 232, USB, Ethernet.

SQC Statistics on a Micro Scale

SQC Automatic Data Analysis

SQC statistics module is an excellent operating mode for complete control over measurement series of a particular sample. The control may be carried out in the course of a manufacturing process (warning and critical limits) and during other tests.



SQC Reports Homogeneous and Clear Information

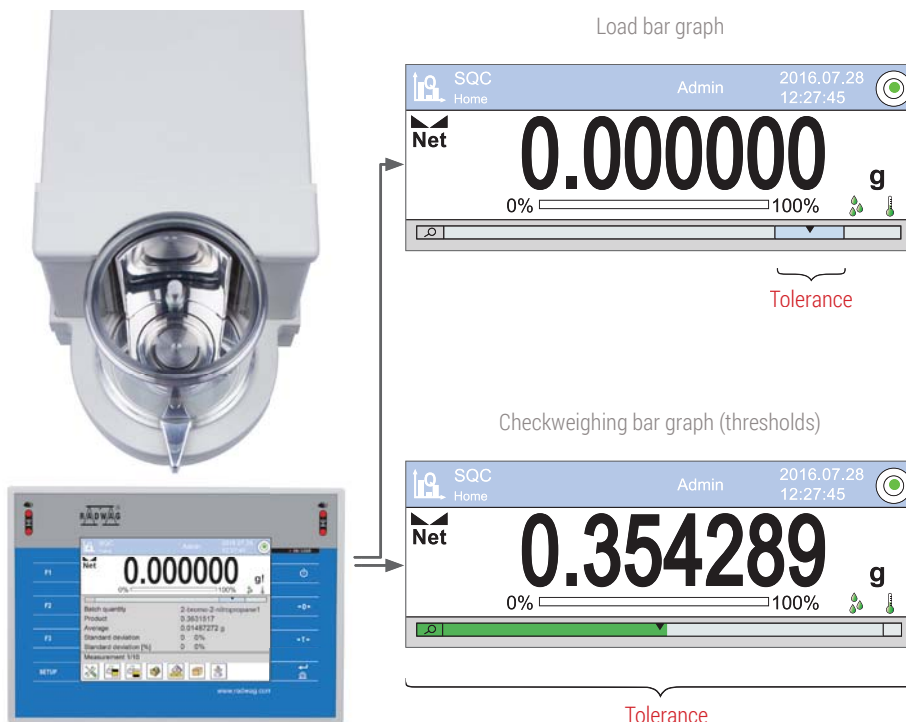
SQC Reports is a modern tool for collecting information on carried out measurements, measurement numbers, names, statistic data, information data etc. The collected data is recorded in a database.



Viewer Graph Automatic Tolerance Scaling

Viewer graph facilitates automatic scaling of checkweighing thresholds online, thus providing possibility of comparing current sample weight to a reference value. This tool permits safe and quick sampling wherein optimal accuracy is maintained.

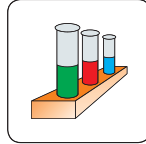
| SQC | |
|----------------------------|---------------------|
| User | Lab |
| Product | caps |
| Start date | 2016.07.02 10:10:18 |
| End date | 2016.07.02 10:14:41 |
| Batch number | 1\A |
| Batch quantity | 10 |
| Nominal mass | 0.361 g |
| Limit T2- | 0.0361 g 10 % |
| Limit T1- | 0.01805 g 5 % |
| Limit T1+ | 0.01805 g 5 % |
| Limit T2+ | 0.0361 g 10 % |
| ----- Measurement 1 ----- | |
| Net | 0.366185 g |
| ----- Measurement 2 ----- | |
| Net | 0.369271 g |
| ----- Measurement 3 ----- | |
| Net | 0.385184 g |
| ----- Measurement 4 ----- | |
| Net | 0.324771 g |
| ----- Measurement 5 ----- | |
| Net | 0.356942 g |
| ----- Measurement 6 ----- | |
| Net | 0.368712 g |
| ----- Measurement 7 ----- | |
| Net | 0.355558 g |
| ----- Measurement 8 ----- | |
| Net | 0.368694 g |
| ----- Measurement 9 ----- | |
| Net | 0.368100 g |
| ----- Measurement 10 ----- | |
| Net | 0.368100 g |
| Number of T2- errors | 1 10 % |
| Number of T1- errors | 1 10 % |
| Number of T1+ errors | 1 10 % |
| Number of T2+ errors | 0 0 % |
| Average | 0.3631517 g |
| Standard deviation | 0.01487272 g |
| ----- Signature ----- | |



Differential Weighing

Analysis of Sample Weight Variation

"Differential Weighing" module facilitates analysis of weight changes of a particular sample subjected to various processes. Two key components are of significant importance for the module operation, these are databases and methods.



Measurement Specification

Ambient conditions prevailing in the course of a particular measurement are recorded automatically. Comparison of respective data registered for various cycles lets the user prove conformity with standard guidelines.

Measuring Methods

Diversity of measuring methods requires maximum flexibility of differential weighing function. The said function has to do with measuring methods used for weighing samples, even those that are grouped within one batch.

Conformity with Regulations

OIML Legal Metrological Control

Legal metrology requirements concern verification scale interval (e), the lowest value of which is 0.001 g. For declared deviation value of ± 0.000003 g, resolution of microbalances is 0.000001 g. This allows to affirm that legal requirements are met.



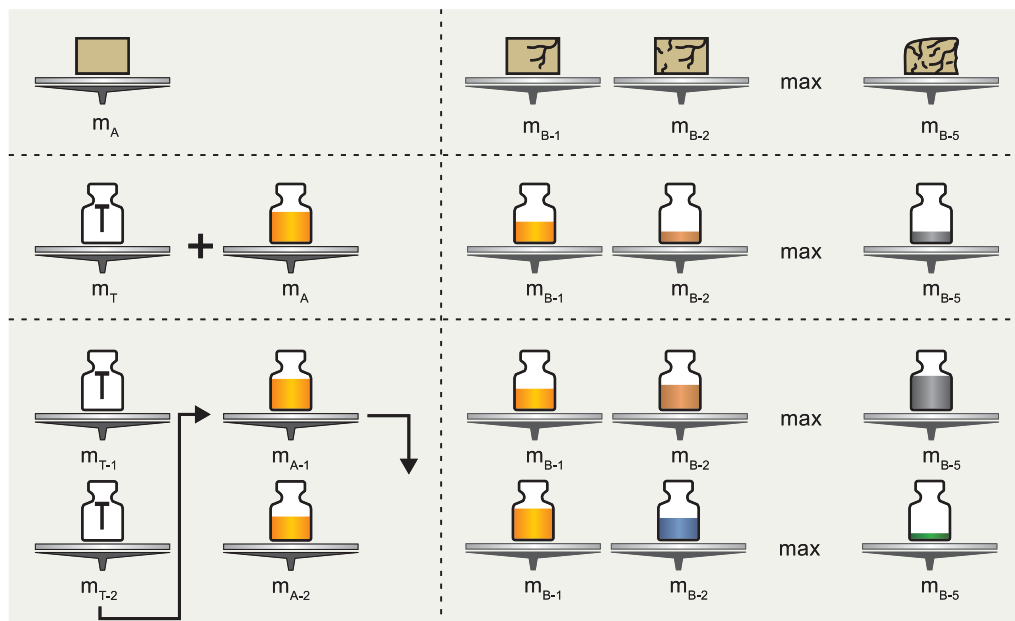
WELMEC 2.3 Software Reliability

Program responsible for managing microbalance applications has been designed in a way providing that any reliability and data safety requirements are met (e.g. ALIBI memory). The program is protected against unwanted intrusion. Its structure may be restored when it comes to usage and metrology aspects (RADWAG Quality Management System).



USP, CFR 21 Weight Measurement Accuracy

Internal system managing microbalance operation is accordant with respective requirements within the scope of which there is data safety, password protected access to the program menu, various user authorization levels, traceability of balance settings modification (Trail System) and weighing system structures. MYA microbalances efficiency is confirmed in course of validation process.



Methods are understood as sequence of steps. Any batches and samples may be selected and measured using any weighing cycle, e.g. mixed system

Technical Specification



| | UYA 2.4Y | UYA 6.4Y | MYA 0.8/3.4Y | MYA 2.4Y | MYA 5.4Y | MYA 11.4Y | MYA 21.4Y |
|----------------------------------|---|---|---|---|---|---|---|
| Max. capacity [Max] | 2.1 g | 6.1 g | 0.8 g / 3 g | 2.1 g | 5.1 g | 11 g | 21 g |
| Readability [d] | 0.1 µg | 0.1 µg | 1 µg / 10 µg | 1 µg | 1 µg | 1 µg | 1 µg |
| Tare range | -2.1 g | -6.1 g | -3 g | -2.1 g | -5.1 g | -11 g | -21 g |
| Repeatability * | 0.25 – 0.4 µg | 0.25 – 0.4 µg | 1 µg / 4.1 µg | 0.5 – 1 µg | 1 – 1.6 µg | 1.2 – 2.5 µg | 1.2 – 3 µg |
| Linearity | ±1.5 µg | ±1.5 µg | ±3 µg / ±10 µg | ±3 µg | ±5 µg | ±6 µg | ±7 µg |
| Eccentricity | 1.5 µg | 1.5 µg | 3 µg / 10 µg | 3 µg | 5 µg | 6 µg | 7 µg |
| Sensitivity drift | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) |
| Sensitivity stability ** | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ | $1 \times 10^{-6} / \text{Year} \times \text{Rt}$ |
| Sensitivity offset ** | $1.5 \times 10^{-6} \times \text{Rt}$ | $1.5 \times 10^{-6} \times \text{Rt}$ | $1.5 \times 10^{-6} \times \text{Rt}$ | $1.5 \times 10^{-6} \times \text{Rt}$ | $1.5 \times 10^{-6} \times \text{Rt}$ | $3 \times 10^{-6} \times \text{Rt}$ | $4 \times 10^{-6} \times \text{Rt}$ |
| Sensitivity temperature drift ** | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ | $1 \times 10^{-6} / \text{°C} \times \text{Rt}$ |
| Minimum sample weight | 0.06 mg | 0.06 mg | 0.2 mg | 0.1 mg | 0.2 mg | 0.24 mg | 0.24 mg |
| Minimum sample weight USP | 0.6 mg | 0.6 mg | 2 mg | 1 mg | 2 mg | 2.4 mg | 2.4 mg |
| Stabilization time | 10-20 s | 10-20 s | max 8 s | max 8 s | max 8 s | max 10 s | max 10 s |
| Adjustment | internal | internal | internal | internal | internal | internal | internal |
| Intended use | ultra-micro weighing | ultra-micro weighing | micro weighing | micro weighing | micro weighing | micro weighing | micro weighing |
| Display | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) |
| Communication interfaces | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) | USB (x2) RS 232 (x2) Wireless Module Ethernet IN (x 4) OUT (x 4) |
| Working temperature | +10 ÷ +30 °C | +10 ÷ +30 °C | +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +40 °C |
| Relative humidity *** | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% |
| Weighing pan dimension | ø 16 mm | ø 16 mm | ø 16 mm (+ ø 60 mm for filters) | ø 16 mm | ø 26 mm | ø 26 mm | ø 26 mm |



Scan and view complete technical specification



|  MYA 31.4Y |  MYA 11/52.4Y |  MYA 21/52.4Y |  MYA 52.4Y |  MYA 21.4Y.P |  UYA 2.4Y.F |  MYA 5.4Y.F |  MYA 5.4Y.F1 |
|--|--|--|---|---|---|--|---|
| 31 g | 11 g / 52 g | 21 g / 52 g | 52 g | 21 g | 2.1 g | 5.1 g | 5.1 g |
| 1 µg | 1 µg / 10 µg | 1 µg / 10 µg | 1 µg | 1 µg | 0.1 µg | 1 µg | 1 µg |
| -31 g | -52 g | -52 g | -52 g | -21 g | -2.1 g | -5.1 g | -5.1 g |
| 2 – 5 µg | 2 µg – 10 µg | 2 µg – 10 µg | 2 – 6 µg | 1.5 – 3 µg | 0.25 – 0.4 µg | 1 – 1.6 µg | 1 – 1.6 µg |
| ±8 µg | ±10 µg / ±30 µg | ±10 µg / ±30 µg | ±10 µg | ±7 µg | ±1.5 µg | ±5 µg | ±5 µg |
| 8 µg | 6 µg / 10 µg | 6 µg / 10 µg | 10 µg | 7 µg | 1.5 µg | 5 µg | 5 µg |
| 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) | 1 ppm / °C (temperature range +15 ÷ +35 °C) |
| 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt | 1 × 10 ⁻⁶ / Year × Rt |
| 4 × 10 ⁻⁶ × Rt | 4 × 10 ⁻⁶ × Rt | 4 × 10 ⁻⁶ × Rt | 4 × 10 ⁻⁶ × Rt | 4 × 10 ⁻⁶ × Rt | 1.5 × 10 ⁻⁶ × Rt | 1.5 × 10 ⁻⁶ × Rt | 1.5 × 10 ⁻⁶ × Rt |
| 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt | 1 × 10 ⁻⁶ / °C × Rt |
| 0.4 mg | 0.4 mg | 0.4 mg | 0.4 mg | 0.3 mg | 0.05 mg | 0.2 mg | 0.2 mg |
| 4 mg | 4 mg | 4 mg | 4 mg | 3 mg | 0.5 mg | 2 mg | 2 mg |
| max 10 s | max 10 s | max 10 s | max 10 s | max 10 s | 10-20 s | max 8 s | max 8 s |
| internal | internal | internal | internal | internal | internal | internal | internal |
| micro weighing | micro weighing | micro weighing | micro weighing | pipette calibration | filter weighing | filter weighing | filter weighing |
| 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) | 5.7" colour touch screen (resistive) |
| USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) | USB (×2) RS 232 (×2) Wireless Module Ethernet IN (×4) OUT (×4) |
| +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +40 °C | +10 ÷ +30 °C | +10 ÷ +40 °C | +10 ÷ +40 °C |
| 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% | 40% ÷ 80% |
| ø 26 mm | ø 26 mm ø 40 mm | ø 26 mm ø 40 mm | ø 26 mm | ø 26 mm | ø 50 mm | ø 100 mm ø 26 mm | ø 160 mm ø 26 mm |

* Repeatability is expressed as a standard deviation from 10 weighing cycles of a particular load | ** Rt - Net weight | *** non-condensing conditions.

Additional equipment

- Antivibration tables,
- Thermal and impact printers,
- Computer cables, printer cables,
- Laboratory ware holders,
- Ambient conditions modules,
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