

# Excellence Balances



**Excellence Plus XP**

High-performance

Micro and Analytical balances

from METTLER TOLEDO

**Comprehensive Security**  
Has no Alternative

**METTLER TOLEDO**

# We Understand Your Safety Concerns And We Have the Solution

Three innovations provide comprehensive weighing security

- SmartSens
- SmartGrid
- SmartScreen

METTLER TOLEDO is changing the world of analytical balances. SmartSens, SmartGrid and SmartScreen – three innovations combined in a single balance – provide comprehensive weighing security. They provide maximum user protection, unparalleled measurement performance, full data security and seamless traceability.

The result is secure processes, higher speed and lower costs.

**Excellence Plus XP:** Improved performance with more security.





SmartSens



SmartGrid



SmartScreen

# Hazardous Material, Valuable Substances? Weigh Them Safely with no Loss.

## SmartSens for hands-free draft shield operation

Open sesame! Thanks to the SmartSens infrared sensors, you can weigh without touching the balance. Tare, open the door, close the door, weigh, print: Everything is done automatically with a wave of your hand. You can focus completely on the sample, and weigh valuable or toxic substances safely and without spilling.

## Excellence Plus XP with SmartSens:

Keeping you as safe as your samples.







**Height-adjustable inner draft shield:**  
The smaller the weighing chamber, the less air turbulence and the faster you get stable results. Samples can also be acclimatised in a protected area on top of the inner draft-shield.



**Minimum risk of contamination, maximum protection for your sample:**  
Each panel of the draft shield can be removed easily and is cleaned in a flash.



**SmartSens**  
Allows weighing without touching the balance. With complete focus on the sample, valuable or toxic substances are weighed safely and without spilling.

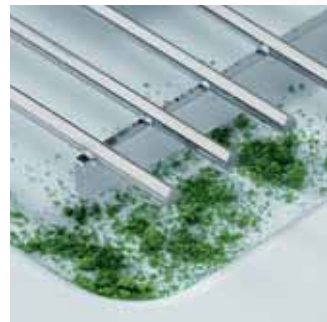
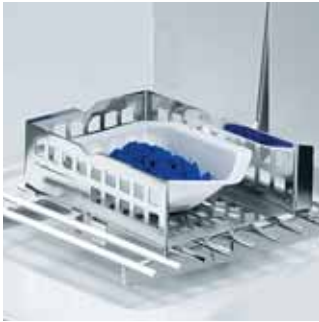
## Assorted Tare Containers? Weigh Directly and Fast.

**SmartGrid is the key to high speed and secure sample handling**

SmartGrid, the unique grid weighing pan, successfully minimizes the effects of air turbulence in the weighing chamber. Stabilization times are dramatically shorter so you receive measuring results faster. Overfilling is easily avoidable and minimum weights are even smaller, which pays off when it comes to valuable substances. The ErgoClips allow you to securely fasten any type of tare container so that none of your sample is wasted.

**Excellence Plus XP with SmartGrid:** Safe weighing and fast results. Double your savings thanks to higher sample yield and higher productivity.





But if anything ever does go wrong, SmartGrid ensures that spilled substances simply fall into the tray underneath. Spills will not falsify your weighing result and can simply be thrown away.

Distortion of the weight value due to statically charged tare containers is practically prevented by the Faraday-shield effect of the grid basket.

ErgoClips allow secure placement of volumetric and round-bottom flasks, glass and plastic test tubes as well as disposable weighing pans.



# Secure Operation Guaranteed – for Smooth Processes and Flawless Data

## SmartScreen guarantees complete control

SmartScreen is the brain behind the Excellence Plus XP. Multilingual and color-coded. Easy-to-use and self-explanatory. With touchscreen and profiles configured individually for up to eight users or jobs, SmartScreen saves time and helps prevent mistakes.

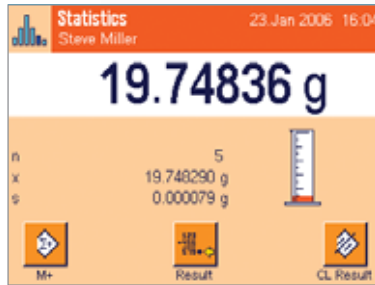
**Excellence Plus XP** with SmartScreen: Extremely easy to operate.  
For the highest data security and full regulatory compliance.



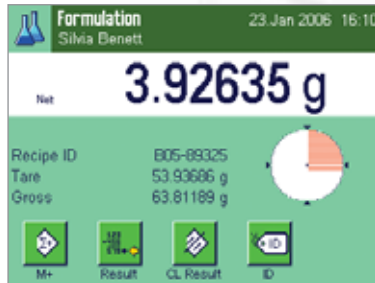




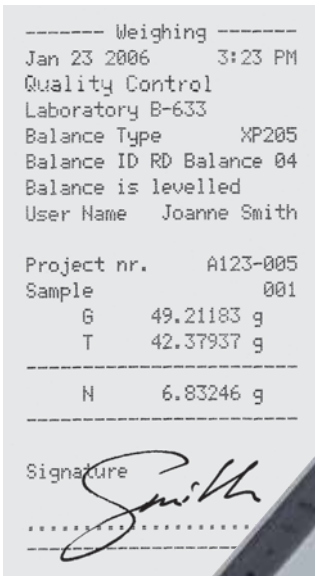
**More personalized in every way.**  
Up to eight users can save their individual settings in their own languages, including color profile, and protect them against unauthorized access.



**Preconfigure up to eight jobs.**  
With defined fault tolerances for each job and password protection. We have eliminated the danger of unwanted modifications. You can also change quickly from job to job, to avoid unproductive time.



**Clear documentation for perfect traceability.** What is weighed, when, how and by who can be completely configured and documented, protecting users, data and processes.



# XP Analytical Balance – Synergies par Excellence

Measurement certainty, user safety  
and data security combined with  
high-speed and maximum operating  
convenience.

Communication is everything.  
Menu guidance, input and  
output in seven languages:

German  
English  
French  
Spanish  
Italian  
Russian  
Japanese



► [www.mt.com/XP-analytical](http://www.mt.com/XP-analytical)



**Flexible interfaces.**

Equipped as standard with a sealed RS232 interface and a slot for a second, optional interface:

- Bluetooth
- Ethernet
- LocalCan
- RS232
- PS/2
- USB (with USB Converter cable)



**30% smaller sample sizes.**

Repeatability is increased by 30% thanks to the integrated temperature control system (ITC).



**Spills contained.**

Spilled substances are caught by the tray underneath the weighing pan and are easy to dispose of.



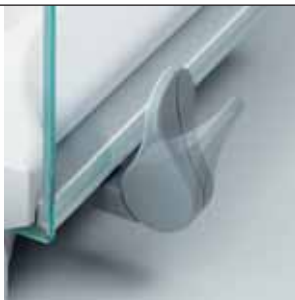
**Completely protected.**

Thanks to the fastening of the grid weighing pan at the rear of the weighing chamber, the two adjustment weights are completely protected against contamination by a chrome steel cover.



**Individual operation.**

The top panel and each side panel of the glass draft shield is motorized and can be opened individually.



**Status display.**

The green illuminated symbol shows that SmartSens is activated and set to "Print".

# XP Micro Balance – for the Smallest Sample Quantities

- World-leading measurement performance: 52 g x 1 µg
- Minimum sample weight according to USP as low as 2.1 mg
- Direct-dosing of small samples into large tare containers
- No sample transfer means no loss of valuable substances

When it comes to weighing small samples, we leave nothing to chance. Our XP56 micro balance, offering a world-leading capacity of 52 g with 1 µg readability, allows minimum sample weights according to USP as low as 2.1 mg – for maximum yield of your substances and substantial cost savings.

Moreover, XP Microbalances enable you to dose your samples directly into the tare container which helps avoid sample transfer errors. The result: maximum measurement certainty and reduced contamination risk.

#### SmartSens

Infrared sensor for the automatic and hands free operation of the inner and outer draft shield. The outer draft shield opens horizontally, the inner one vertically.



#### Easy cleaning

The inner draft shield is quick and easy to dismantle.







**ErgoClip Basket micro and ErgoClip Flask micro**

For secure positioning of various reagent test tubes and measuring flasks. The ErgoClips can be turned to any angle on either side making it easier to dose directly into narrow container openings.



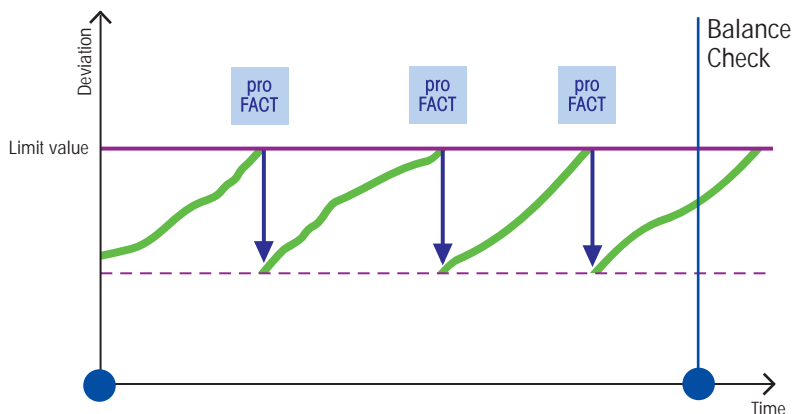
# Regulatory Compliance Through Built-in Warning Functions

- Eliminate risk factors with Balance Check
- User Management
- proFACT automatic internal adjustment
- MinWeigh
- LevelControl

Precise weighing is the backbone of many laboratory processes. Non-compliance with defined maximum limits can have disastrous consequences in regulated areas. Measurement series must be repeated, and valuable substances are wasted. Inaccurate values can even cause production to stop. Unnecessary costs are incurred.

Thanks to the built-in warning functions MinWeigh and LevelControl, the User Management function and proFACT automatic internal adjustment, risk factors are eliminated, keeping you within regulatory limits.

**Excellence Plus XP:** Ensuring your security.



#### Balance risk factor?

BalanceCheck and proFACT automatic adjustment.

Receive automatic prompts to validate the measuring accuracy with an external weight – whenever the SOP calls for it. Between test intervals, proFACT automatic adjustment ensures that you never exceed your maximum limits. It also stores the last 50 adjustments in the History File.



#### OIML weights

For the systematic control of inspection, measuring, and test equipment we offer a comprehensive assortment of METTLER TOLEDO OIML weights. (ASTM weights available in the USA.)

► [www.mt.com/weights](http://www.mt.com/weights)



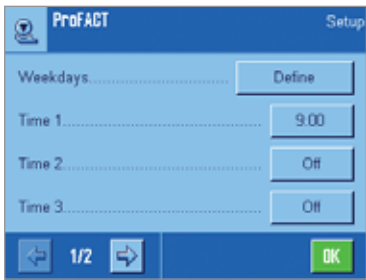
#### Human risk factor?

MinWeigh warning function. Does your weighing result fall below the defined fault tolerance? MinWeigh uses the unmistakable red-colored display to warn you that the result is invalid.



#### User Management

Individual access rights can be provided for each application and up to eight users. Applications and users that are not being used can be disabled. Faulty operation is ruled out.



#### proFACT

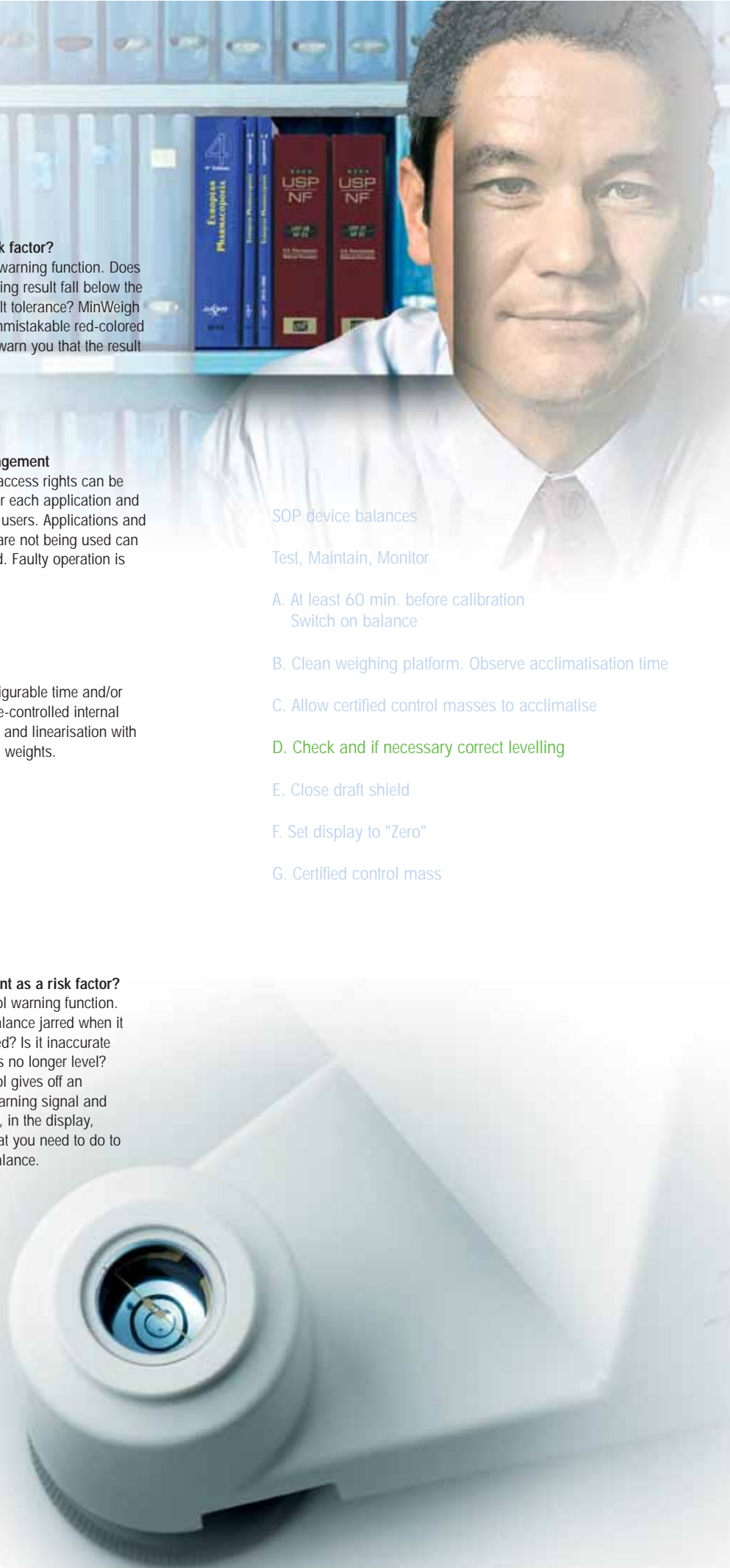
Freely configurable time and/or temperature-controlled internal adjustment and linearisation with two built-in weights.



#### Environment as a risk factor?

LevelControl warning function. Was the balance jarred when it was cleaned? Is it inaccurate because it's no longer level?

LevelControl gives off an acoustic warning signal and shows you, in the display, exactly what you need to do to level the balance.



SOP device balances

Test, Maintain, Monitor

A. At least 60 min. before calibration  
Switch on balance

B. Clean weighing platform. Observe acclimatisation time

C. Allow certified control masses to acclimatise

D. Check and if necessary correct levelling

E. Close draft shield

F. Set display to "Zero"

G. Certified control mass

# LabX Software – the Weighing Assistant

- Easy data collection
- Full user guidance
- Calibration management
- Full traceability
- Export to Excel, LIMS...



## LabX pro supports 21 CFR Part 11 and network integration

LabX pro balance is a powerful, PC-based solution for managing and controlling balances. The software allows all balances to be fully networked and enables seamless integration into laboratory information systems (LIMS). LabX pro collects all relevant data and allows access to the settings and status of all balances from any PC in the network. Thanks to rapid access, users can login to the system directly from the balance and carry out weighing jobs without touching a PC. Of course LabX also fully supports compliance with 21 CFR part 11.

## LabX light – Weighing data management made easy

LabX light balance is a user-friendly solution for connecting a single balance to a PC. In addition to the many data collection options, LabX light balance also offers convenient functions to set and control balance settings. If the collected data needs to be processed further in another application such as Excel, of course LabX offers the appropriate interfaces.

Differential Weighing Template				
Filter	Filter	Date / Time		Initial
ID 1	ID 2	Initial weighing		weight (
1	11745803	5.10.05	10:01:37 AM	50.093
2	11745804	5.10.05	10:02:09 AM	50.103
3	11745805	5.10.05	10:03:01 AM	50.053
4	11745806	5.10.05	10:03:50 AM	50.093
5	11745807	5.10.05	10:04:47 AM	51.073
6	11745808	5.10.05	10:05:43 AM	49.163
7	11745809	5.10.05	10:06:28 AM	49.168
8	11745810	5.10.05	10:07:28 AM	50.000
9	11745811	5.10.05	10:08:20 AM	51.000
		05	10:09:16 AM	49.163

Weight Gain in %

Filter ID 1





Integrable anti-static kit



## Eliminates electrostatic charges

### Integrable anti-static kit

The same weighing sample but different weight values in the display? The phenomenon is well-known and the explanation is usually a simple one: electrostatically-charged samples lead to inaccurate results. The integrable ioniser immediately neutralises the electrostatically-charged object. The forces that give false weighing results are eliminated.

### Fully integrable, no swirling, extremely fast

The fully integrable ioniser generates positively and negatively-charged ions. These immediately eliminate the electrostatic charge that causes the interference. The system does not swirl any of the weighing material as may be the case with other products available in the market. Toxic substances no longer pose a threat to the user. Cross-contamination of samples is prevented. The anti-static kit guarantees precise weighing under the most severe conditions.

## Standard equipment

- SmartSens, Sensor for hands free operation
- SmartGrid, grid weighing pan for fast and stable results
- SmartScreen, color display for safe and user-friendly operation
- ErgoClip Basket small, or ErgoClip Basket micro (with models XP56/XP26). Holder for tare containers for ergonomic weighing
- MinWeigh warns if the minimum weight is not reached (Minimum weight determined on site by service technician)
- User Management for granting access rights
- LevelControl warns when the balance is not levelled
- BalanceCheck, prompts automatically for validation with external weights
- ProFACT, fully-automatic temperature and/or time-controlled internal adjustment and linearisation
- Seven different applications with user guidance (incl. density determination, statistical analysis, formulation and differential weighing)
- Individual reports can be defined with up to 4 IDs
- Built-in RS232 interface and two auxiliary outlets
- Slot for second interface (7 options)
- Height-adjustable inner draft shield
- Motor-driven draft shield doors
- Completely dismantlable draft shield for easy cleaning
- Terminal can be positioned separately from the balance
- Protective cover for the terminal
- Production certificate

### ErgoClips for XP Analytical balances



ErgoClip Round Bottom Flask 11106746



ErgoClip Basket Small 11106747



ErgoClip Weighing Boat 11106748



ErgoClip Flask 11106764



ErgoClip Tube 11106784



ErgoClip Titration Basket 11106883

## XP Analytical balances

Technical data (Limit Values)	XP105DR	XP205	XP205DR	XP204	XP504
Maximum capacity	120 g	220 g	220 g	220 g	520 g
Maximum capacity, fine range	31 g	—	81 g	—	—
Readability	0.1 mg	0.01 mg	0.1 mg	0.1 mg	0.1 mg
Readability, fine range	0.01 mg	—	0.01 mg	—	—
Repeatability – (at nominal load)	0.06 mg (100 g)	0.03 mg (200 g)	0.06 mg (200 g)	0.07 mg (200 g)	0.12 mg (500 g)
– (at low load)	0.05 mg (10 g)	0.015 mg (10 g)	0.05 mg (10 g)	0.05 mg (10 g)	0.1 mg (10 g)
– (at low load), fine range	0.015 mg (10 g)	—	0.015 mg (10 g)	—	—
Linearity	0.15 mg	0.1 mg	0.15 mg	0.2 mg	0.4 mg
Excentric load deviation (test load) <sup>1)</sup>	0.2 mg (50 g)	0.2 mg (100 g)	0.25 mg (100 g)	0.25 mg (100 g)	0.4 mg (200 g)
Sensitivity offset	4x10 <sup>-6</sup> .Rnt	2x10 <sup>-6</sup> .Rnt	2.5x10 <sup>-6</sup> .Rnt	3x10 <sup>-6</sup> .Rnt	3x10 <sup>-6</sup> .Rnt
Sensitivity temperature drift <sup>2)</sup>	1x10 <sup>-6</sup> /°C.Rnt	1x10 <sup>-6</sup> /°C.Rnt	1x10 <sup>-6</sup> /°C.Rnt	1x10 <sup>-6</sup> /°C.Rnt	1x10 <sup>-6</sup> /°C.Rnt
Sensitivity stability <sup>3)</sup>	1x10 <sup>-6</sup> /a.Rnt	1x10 <sup>-6</sup> /a.Rnt	1x10 <sup>-6</sup> /a.Rnt	1x10 <sup>-6</sup> /a.Rnt	1x10 <sup>-6</sup> /a.Rnt
Interface update rate	23/s	23/s	23/s	23/s	23/s

### Typical values for calculating the measurement uncertainty

Repeatability* (sd)	0.04 mg+1x10 <sup>-7</sup> .Rgr	0.008 mg+6x10 <sup>-8</sup> .Rgr	0.04 mg+5x10 <sup>-8</sup> .Rgr	0.04 mg+5x10 <sup>-8</sup> .Rgr	0.04 mg+6x10 <sup>-8</sup> .Rgr
Repeatability*, fine range (sd)	0.008 mg+1.5x10 <sup>-7</sup> .Rgr	—	0.008 mg+1.2x10 <sup>-7</sup> .Rgr	—	—
Differential linearity deviation (sd)	√2.5x10 <sup>-11</sup> g.Rnt	√5x10 <sup>-12</sup> g.Rnt	√1.2x10 <sup>-11</sup> g.Rnt	√2x10 <sup>-11</sup> g.Rnt	√5x10 <sup>-11</sup> g.Rnt
Differential eccentric load deviation (sd)	1x10 <sup>-6</sup> .Rnt	5x10 <sup>-7</sup> .Rnt	5x10 <sup>-7</sup> .Rnt	6x10 <sup>-7</sup> .Rnt	5x10 <sup>-7</sup> .Rnt
Sensitivity offset (sd) <sup>2)</sup>	1x10 <sup>-6</sup> .Rnt	5x10 <sup>-7</sup> .Rnt	8x10 <sup>-7</sup> .Rnt	1x10 <sup>-6</sup> .Rnt	6x10 <sup>-7</sup> .Rnt
Minimum weight (according to USP)	24 mg+4.5x10 <sup>-4</sup> .Rgr	24 mg+1.8x10 <sup>-4</sup> .Rgr	24 mg+3.6x10 <sup>-4</sup> .Rgr	120 mg+1.5x10 <sup>-4</sup> .Rgr	120 mg+1.8x10 <sup>-4</sup> .Rgr
Minimum weight* (U=1%, 2 sd)	1.6 mg+3.0x10 <sup>-5</sup> .Rgr	1.6 mg+1.2x10 <sup>-5</sup> .Rgr	1.6 mg+2.4x10 <sup>-5</sup> .Rgr	8 mg+1x10 <sup>-5</sup> .Rgr	8 mg+1.2x10 <sup>-5</sup> .Rgr
Settling time	1.5s	2.5s	1.5s	1.5s	1.5s
Settling time, fine range	4s	6s	4s	4s	4s

<sup>1)</sup> According to OIML R76

<sup>2)</sup> In temperature range 10 – 30 °C

<sup>3)</sup> Stability of sensitivity as from first installation with proFACT

sd: Standard deviation

Rgr: Gross weight

Rnt: Net weight (of sample)

a: Year (annum)



### Connection guaranteed

Whether Bluetooth, Ethernet or simply RS232: The XP guarantees connectivity.



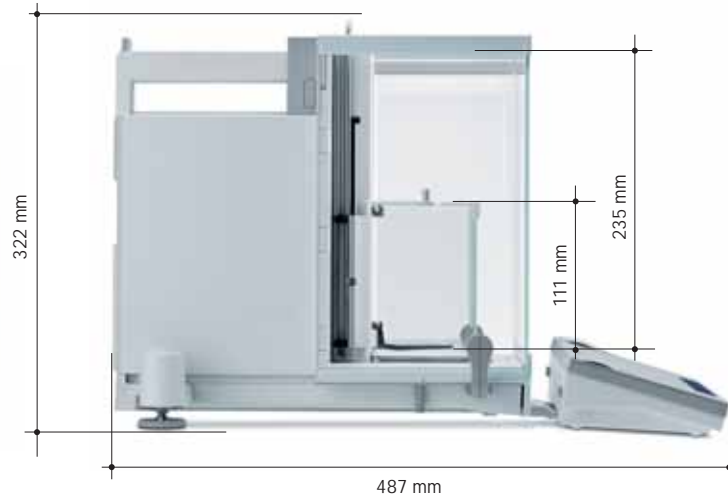
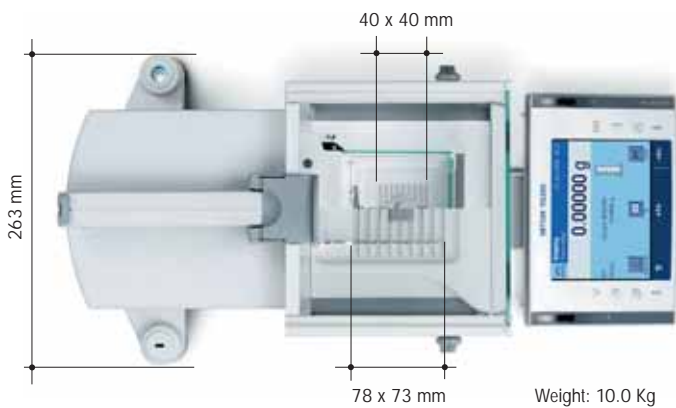
### Wireless connection

to balance with the Bluetooth Printer BT-P42.

For more information visit

▶ [www.mt.com/XP-analytical](http://www.mt.com/XP-analytical)

▶ [www.mt.com/micro](http://www.mt.com/micro)



MinWeigh Door  
for exterior draft shield  
11106749

### ErgoClips for XP Micro balances



ErgoClip Basket micro  
11107889



ErgoClip Flask micro, including extension  
11107879



MinWeigh Door micro  
for inner draft shield  
11107869

## XP Micro balances

XP504DR
520 g
101 g
1 mg
0.1 mg
0.6 mg (500 g)
0.5 mg (10 g)
0.1 mg (10 g)
0.5 mg
0.5 mg (200 g)
4x10 <sup>-6</sup> ·Rnt
1x10 <sup>-6</sup> /°C·Rnt
1x10 <sup>-6</sup> /a·Rnt
23/s

Technical data (Limit Values)	XP26	XP26DR	XP56	XP56DR
Maximum capacity	22 g	22 g	52 g	52 g
Maximum capacity, fine range	-	5.1 g	-	11 g
Readability	0.001 mg	0.01 mg	0.001 mg	0.01 mg
Readability, fine range	-	0.002 mg	-	0.002 mg
Repeatability - (at nominal load)	0.0025 mg (20 g)	0.008 mg (20 g)	0.006 mg (50 g)	0.014 mg (50 g)
- (at low load)	0.0015 mg (1 g)	0.005 mg (1 g)	0.0015 mg (1 g)	0.006 mg (1 g)
- (at low load), fine range	-	0.002 mg (1 g)	-	0.002 mg (1 g)
Linearity	0.006 mg	0.01 mg	0.02 mg	0.03 mg
Excentric load deviation (test load) <sup>1)</sup>	0.02 mg (10 g)	0.025 mg (10 g)	0.03 mg (20 g)	0.035 mg (20 g)
Sensitivity offset	4x10 <sup>-6</sup> ·Rnt	5x10 <sup>-6</sup> ·Rnt	2.5x10 <sup>-6</sup> ·Rnt	3x10 <sup>-6</sup> ·Rnt
Sensitivity temperature drift <sup>2)</sup>	1x10 <sup>-6</sup> /°C·Rnt	1x10 <sup>-6</sup> /°C·Rnt	1x10 <sup>-6</sup> /°C·Rnt	1x10 <sup>-6</sup> /°C·Rnt
Sensitivity stability <sup>3)</sup>	1x10 <sup>-6</sup> /a·Rnt	1x10 <sup>-6</sup> /a·Rnt	1x10 <sup>-6</sup> /a·Rnt	1x10 <sup>-6</sup> /a·Rnt
Interface update rate	23/s	23/s	23/s	23/s

### Typical values for calculating the measurement uncertainty

0.4 mg+2x10 <sup>-7</sup> ·Rgr	0.0007 mg+4x10 <sup>-8</sup> ·Rgr	0.004 mg+5x10 <sup>-8</sup> ·Rgr	0.0007 mg+6x10 <sup>-8</sup> ·Rgr	0.004 mg+6x10 <sup>-8</sup> ·Rgr
0.04 mg+2.0x10 <sup>-7</sup> ·Rgr	-	0.0012 mg+1x10 <sup>-7</sup> ·Rgr	-	0.0012 mg+1x10 <sup>-7</sup> ·Rgr
√8x10 <sup>-11</sup> g·Rnt	√1.2x10 <sup>-13</sup> g·Rnt	√3x10 <sup>-13</sup> g·Rnt	√5x10 <sup>-13</sup> g·Rnt	√1.2x10 <sup>-12</sup> g·Rnt
5x10 <sup>-7</sup> ·Rnt	3x10 <sup>-7</sup> ·Rnt	4x10 <sup>-7</sup> ·Rnt	3x10 <sup>-7</sup> ·Rnt	4x10 <sup>-7</sup> ·Rnt
8x10 <sup>-7</sup> ·Rnt	1x10 <sup>-6</sup> ·Rnt	1.2x10 <sup>-6</sup> ·Rnt	6x10 <sup>-7</sup> ·Rnt	8x10 <sup>-7</sup> ·Rnt
120 mg+6x10 <sup>-4</sup> ·Rgr	2.1 mg+1.2x10 <sup>-4</sup> ·Rgr	3.6 mg+3x10 <sup>-4</sup> ·Rgr	2.1 mg+1.8x10 <sup>-4</sup> ·Rgr	3.6 mg+3x10 <sup>-4</sup> ·Rgr
8 mg+4x10 <sup>-5</sup> ·Rgr	0.14 mg+8x10 <sup>-6</sup> ·Rgr	0.24 mg+2x10 <sup>-5</sup> ·Rgr	0.14 mg+1.2x10 <sup>-5</sup> ·Rgr	0.24 mg+2x10 <sup>-5</sup> ·Rgr
1.5s	3.5s	2.5s	3.5s	2.5s
3.5s	-	3.5s	-	3.5s

\* Repeatability and minimum weight capacity can be improved by the following measures:

Select suitable weighing parameters, choose a better location, use smaller weighing containers

<sup>1)</sup> According to OIML R76 <sup>2)</sup> In temperature range 10 – 30 °C <sup>3)</sup> Stability of sensitivity as from first installation with profACT

sd: Standard deviation Rgr: Gross weight Rnt: Net weight (of sample) a: Year (annum)

### Accessories:

Printer RS-P42 with RS232 connection	229265
Printer BT-P42 with wireless Bluetooth connection	11132540
Footswitch: switch for balance functions	11106741
ErgoSens: hands free sensor for balance functions	11132601
Terminal extension cable 4.5 m	11600517
Density determination add-on	11106706
Integrable anti-static kit, complete	11107761
RS232-C (interface)	11132500
Bluetooth BTS Single point (interface)	11132535
Bluetooth BT Multi point (interface)	11132530
Ethernet (interface)	11132515

PS/2 keyboard connection (interface)	11132520
LocalCAN (interface)	11132505
Cable RS9-RS9 (m/f), 1m	11101051
Cable LC-RS9 for LocalCAN	229065
Weighing Kit – ErgoClip Set	11106707
PC-Volume Option 1	21900791
Evaporation trap, PC-Volume Option 2 XS/XP	21901263
PC-Volume Option 3 XS/XP	21901264
Printer stand	11106730
SE-Kit XP-A separate electronics	11106743
USB Converter cable	11600610

# Conformity and Operational Reliability With Service XXL

Qualify your balances and work efficiently and safely from day one. METTLER TOLEDO offers customized solutions for working in a regulated environment.



## EQ-Pac – Conformity and efficiency all inclusive

The complete Equipment Qualification solution. All relevant IQ/OQ/PQ/MQ processes, the associated services and the necessary documentation are combined in a complete package. In order to perform the preliminary Design Qualification (DQ) competently and quickly, we recommend the use of the METTLER TOLEDO DQ protocol in addition to the EQ Pac.



## IPac – to ensure qualified installation

Ready for use straight away. With IPac, you ensure a professional installation and initial qualification. IPacs are ideal for integrating the weighing unit into an existing quality management system.

## XXL Service – more than just service

METTLER TOLEDO offers custom services for day-to-day operational reliability, to maintain the value and ensure fault-free operation of your weighing unit. Our global service network comprises over 1200 highly-trained and local engineers offering cost-effective service solutions. Contact your local METTLER TOLEDO partner.

**ServiceXXL**  
Tailored Services

[www.mt.com/micro](http://www.mt.com/micro)  
[www.mt.com/XP-Analytical](http://www.mt.com/XP-Analytical)

For more information

Mettler-Toledo GmbH,  
Laboratory & Weighing Technologies  
CH-8606 Greifensee, Switzerland  
Tel. +41-44-944 22 11  
Fax +41-44-944 30 60

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**Quality certificate**  
development, production  
and testing under ISO 9001



**Environmental management system**  
under ISO 14001



**“Communauté Européenne”**  
This mark guarantees that our  
products comply with the latest  
directives.