



**Excellence Plus XP**

High performance  
analytical balances

- Data security
- Sample security
- User safety

**That's the weigh!**

**Security  
Knows No Alternative**

**METTLER TOLEDO**

**We understand  
your security  
concerns.**



And we have  
the solution:

# SmartSens SmartGrid SmartScreen



METTLER TOLEDO is changing the world of analytical balances. SmartSens, SmartGrid and SmartScreen – three innovations combined in one balance – ensure comprehensive weighing security. They provide optimal user protection, unprecedented 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.

# Hazardous material? Valuable substances? Contamination risk?



# SmartSens for handsfree 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 the 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.



**Adjustable height inner draft shield:** The smaller the weighing chamber, the less air turbulence, and the faster you get stable results. Samples can also be safely acclimatized on top of the inner draft shield.



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



# Assorted tare containers?

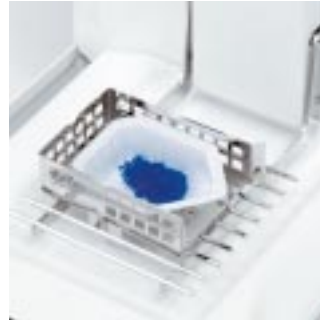
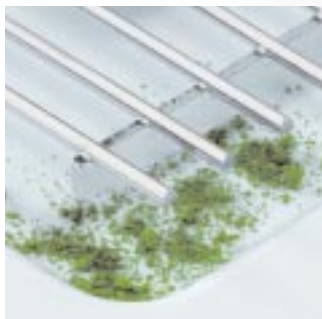


# SmartGrid for fast and secure weighing

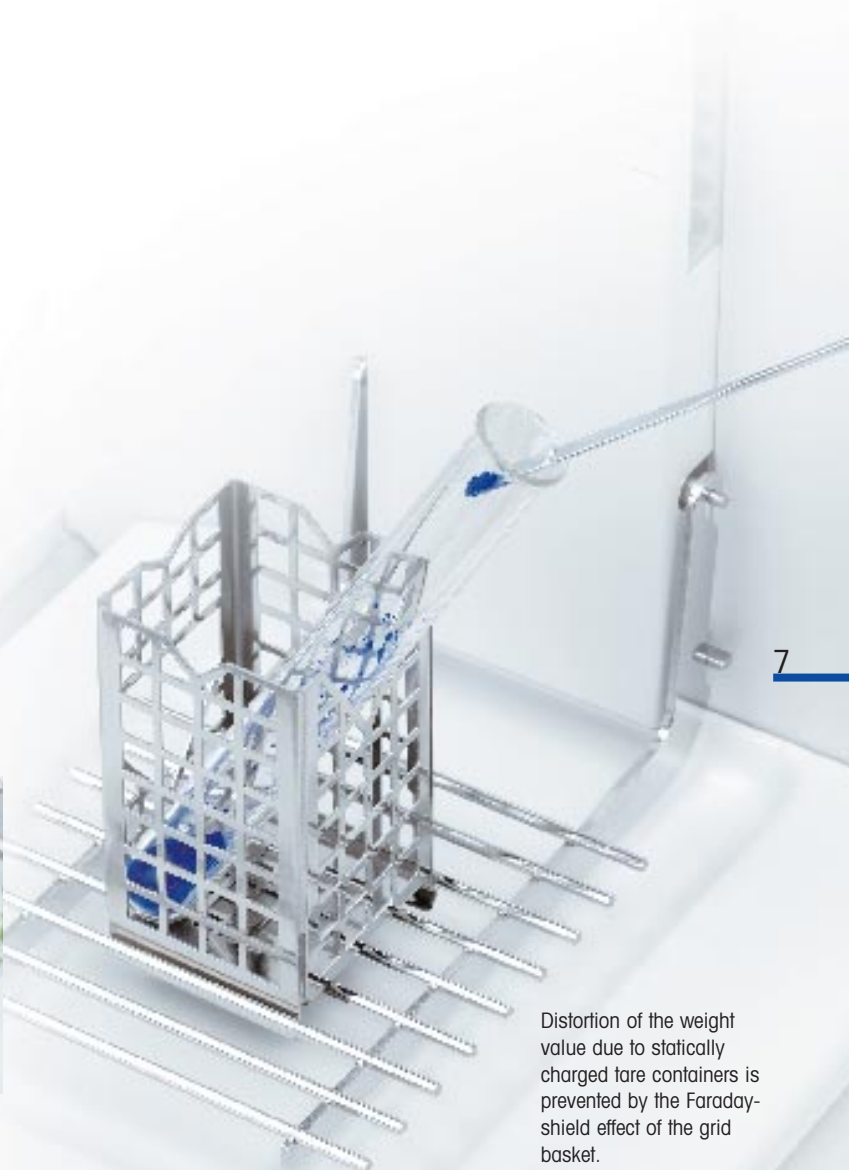
SmartGrid, the unique grid weighing pan, successfully minimizes the effects of air turbulence in the weighing chamber. Stabilization times are dramatically shorter so you receive measuring results faster. Overfilling is easily avoidable and minimum weights are even smaller, which pays off when it comes to valuable substances. The ErgoClip holder allows you to securely fasten any type of tare container so that nothing 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.

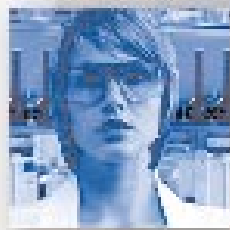


ErgoClips allow secure placement of volumetric and round-bottom flasks, glass and plastic test tubes as well as disposable weighing pans.



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

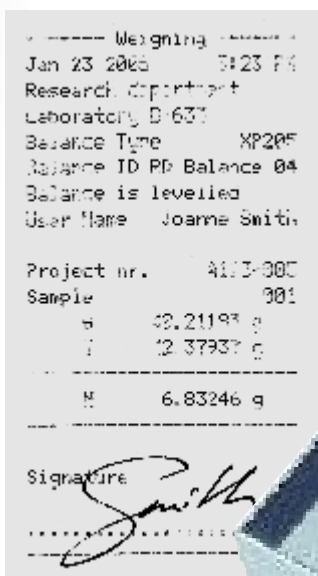
**Safe operation?  
Seamless processes?  
Flawless data?**



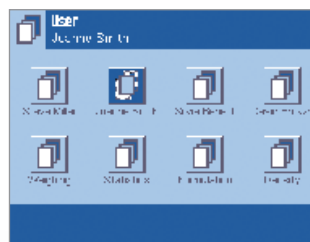
# SmartScreen guarantees complete control

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.

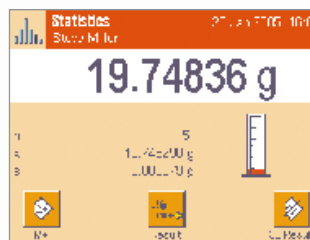
**Excellence Plus XP** with SmartScreen:  
Extremely easy to operate. For the highest data security and full regulatory compliance.



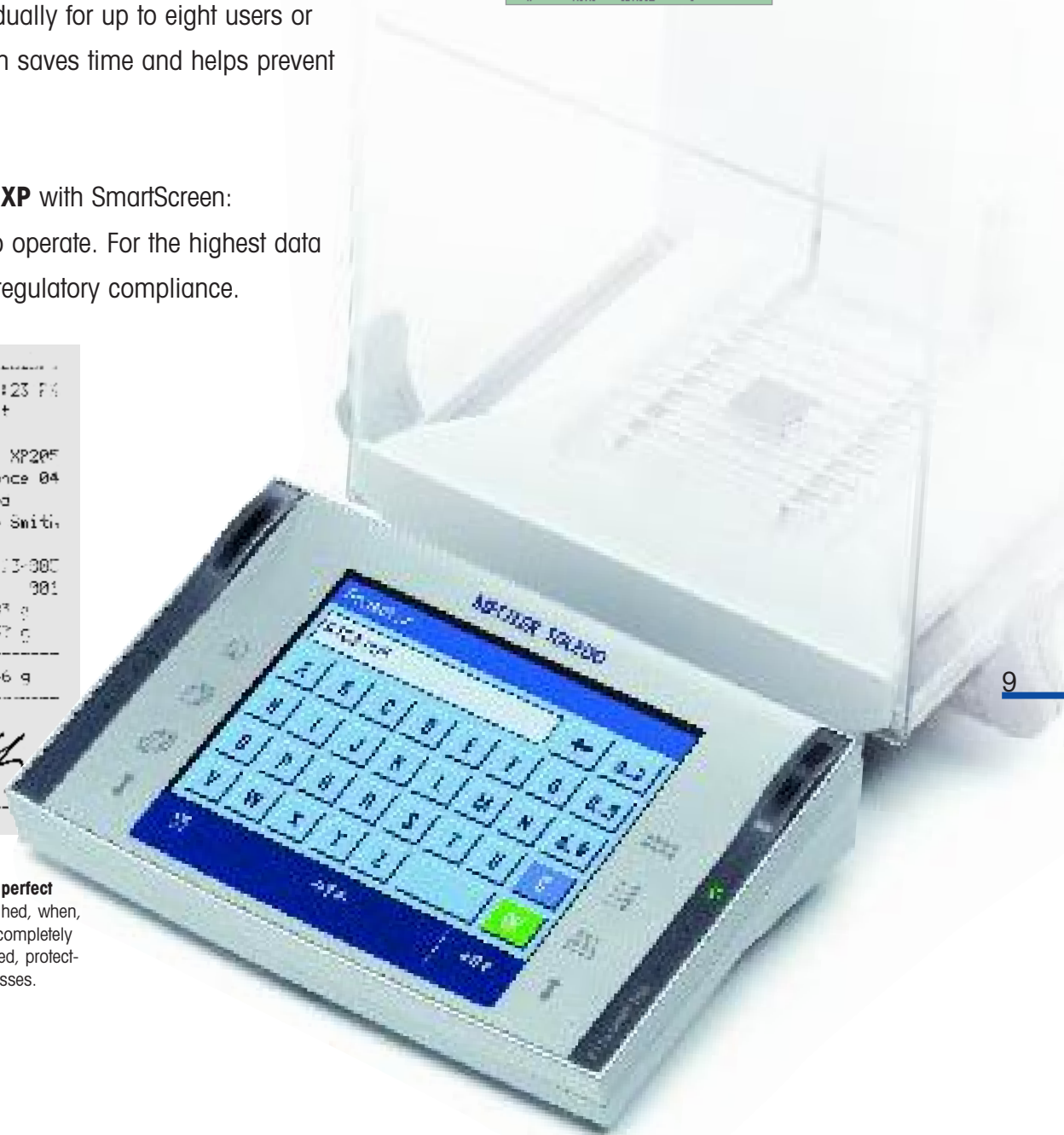
**Clear documentation for perfect traceability.** What is weighed, when, how and by who can be completely configured and documented, protecting users, data and processes.



**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 access.



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



Security for your measurements, users and data, combined with high speed and maximum operating convenience.

The lab's shining star:

# Synergy par excellence!

## Communication is everything.

Menu guidance, input and output in seven languages:

German  
English  
French  
Spanish  
Italian  
Russian  
Japanese



## Status display.

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



#### Flexible interfaces.

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

- Bluetooth
- Ethernet
- USB
- LocalCan
- RS232
- PS/2



#### 30 percent smaller sample size.

Thanks to the Integrated Temperature Compensation System (ITC), repeatability is improved by 30 percent. Minimum weights according to United States Pharmacopoeia as low as 15 mg are typical.



#### Spills contained.

Spilled substances are completely caught by the tray underneath the grid weighing pan and can simply be thrown away.



#### 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.



# Excellence Plus **XP**

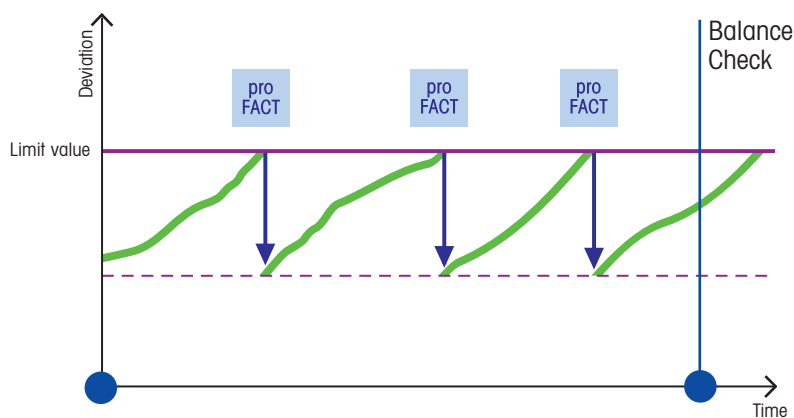


# Guarantee secure results?

Instruments SOP balances

Test, maintain, monitor

- A. Switch on the balance at least 60 minutes before starting adjustment
- B. Clean the weighing pan. Allow the specified acclimatization time
- C. Allow certified control masses to acclimatize
- D. Check balance is level, correct if necessary
- E. Close draft shield doors
- F. Set display to zero
- G. Certified control mass



#### 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 weight available in the USA)

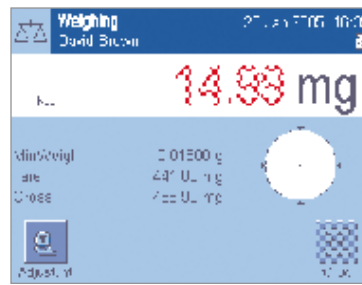
[www.mt.com/weights](http://www.mt.com/weights)

## Through built-in warning functions, BalanceCheck and proFACT automatic adjustment

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.

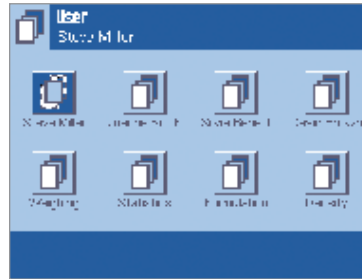
Thanks to the built-in warning functions MinWeigh and LevelControl, the UserManagement function and proFACT automatic internal adjustment, risk factors are eliminated, keeping you within regulatory limits.

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



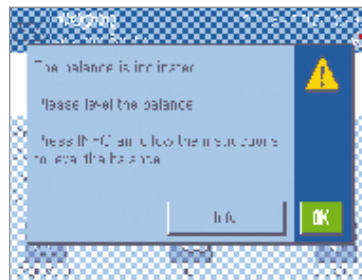
### Human risk factor?

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.



### UserManagement!

Individual access rights can be provided for each job and each function. Functions and users that are not being used can be disabled. Faulty operation is ruled out.



### Environmental 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 shrill warning signal and shows you, in the display, exactly what you need to do to level the balance.



# ServiceXXL

Because you want results,  
not promises.

ServiceXXL assures the daily operating certainty and constant performance of your balance for years. Our global service network employs 1200 highly trained and experienced service technicians to provide inexpensive service solutions. Our goal is to ensure the availability of your balances and guarantee the traceability of your processes, results, and regulatory compliance. METTLER TOLEDO ServiceXXL – tailored service solutions for your success.

[www.mt.com/servicexxl](http://www.mt.com/servicexxl)

1



## **DQ – make the right choice**

- Invest purposefully
- Choose a competent partner

The importance of the Design Qualification is often underestimated. Because we know the potential negative consequences, we have developed decision aids that make it easier for you to choose the right balance. Contact your sales representative and let yourself be guided through the DQ process.

2



## **IQ/OQ/PQ – ensure professional installation**

- Save startup costs
- Attain regulatory compliance

With the new IPacs you ensure professional installation and Initial Qualification of your balance. IPacs are especially suitable for subsequent integration of your balance into an existing quality management system. In addition, activation of MinWeigh ensures that you always stay within defined limits.

3



## **MQ – attain regulatory compliance**

- Protect your investment
- Optimize your productivity

Regular servicing by a METTLER TOLEDO service technician guarantees high availability of your balance and seamless traceability of your measurement results. It also ensures that your balance documentation is regularly updated and that you benefit from effective control of costs.

# Eliminate charges?



## Integrate an antistatic kit

Same weighing sample, but different weight values in the display? It's a well-known phenomenon, and the explanation is simple: Electrostatically charged samples lead to inaccurate results.

Thanks to the integrated ionizer, the electrostatically charged object is immediately neutralized. The forces that falsify the weighing are eliminated.

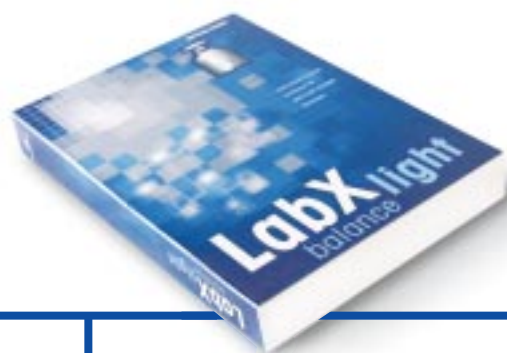
### **Can be fully integrated, no swirling, extremely fast.**

The fully integrable ionizer generates positive and negative ions which are absorbed by the electrostatically charged object. The unwanted electrostatic charge is immediately neutralized. The system will not swirl weighing samples as may be the case with other products available in the market. Toxic substances no longer pose a threat to users. Cross contamination of samples is prevented and there's no interference with the precision of the XP's weighing process.





[www.mt.com/labx](http://www.mt.com/labx)



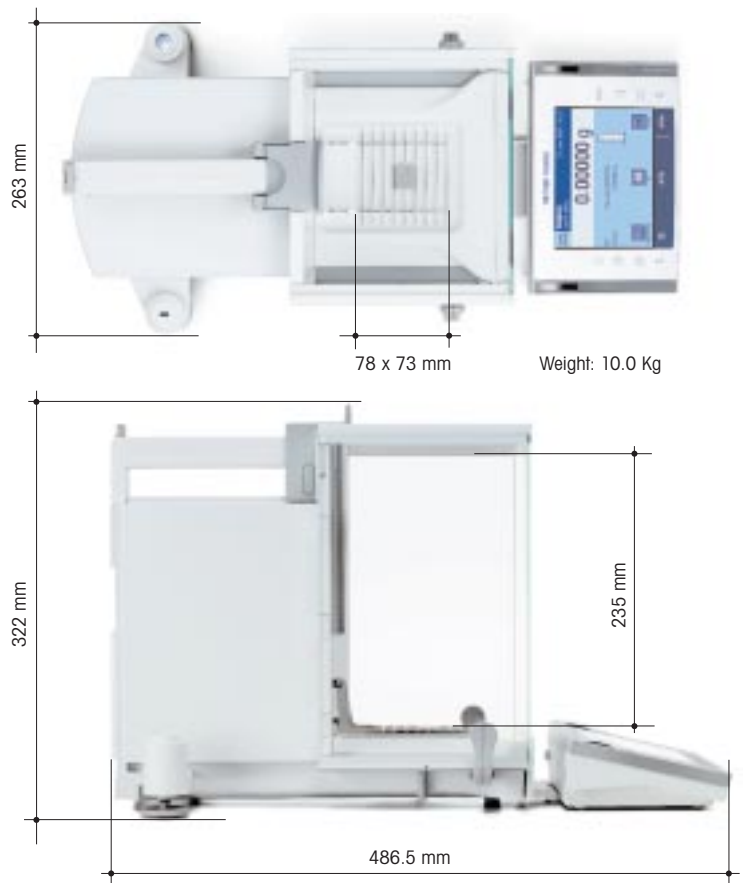
**LabX pro balance** is a powerful PC-based management solution. Balances can be connected over the network, serial connections or even wireless. LabX pro collects all the relevant data and allows access to the settings and status of all balances from any PC in the network. Thanks to RapidAccess, users can directly log-in at the balance and do not have to use the PC to initiate weighing jobs. The software of course fully supports compliance with 21 CFR part 11.

**LabX light balance** is an easy-to-use tool to connect a single balance to a PC. Apart from flexible data collection functionality, LabX light balance also offers a comfortable interface to control and set balance settings. LabX balance is also the perfect interface to Excel or other applications on the PC.

# XP analytical balances

## Standard Equipment:

- SmartSens sensor for handsfree operation
- SmartGrid grid weighing pan for fast and stable results
- SmartScreen color display for safe and user-friendly operation
- ErgoClip taring container holder for ergonomic weighing
- MinWeigh warns if the minimum weight is not reached (minimum weight determined on-site by service technician)
- UserManagement for the assignment of authorization rights
- LevelControl warns you when the balance is not level
- BalanceCheck prompts automatically for validation with external weights
- ProFACT fully automatic, temperature-controlled adjustment and linearization
- Six different applications with user guidance (including density determination, statistical evaluation and formula 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
- Motorized draft shield doors
- Completely dismantlable draft shield for easy cleaning
- Terminal can be placed away from the balance
- Protective cover for the terminal
- Production certificate



Technical data (Limit values)	XP105DR	XP205	XP205DR	XP204	XP504	XP504DR
Maximum capacity	120 g	220 g	220 g	220 g	520 g	520 g
Maximum capacity, fine range	31 g	–	81 g	–	–	101 g
Readability	0.1 mg	0.01 mg	0.1 mg	0.1 mg	0.1 mg	1 mg
Readability, fine range	0.01 mg	–	0.01 mg	–	–	0.1 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)	0.6 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)	0.5 mg (10 g)
- at low load in fine range	0.015 mg (10 g)	–	0.015 mg (10 g)	–	–	0.1 mg (10 g)
Linearity	0.15 mg	0.1 mg	0.15 mg	0.2 mg	0.4 mg	0.5 mg
Eccentric 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)	0.5 mg (200 g)
Sensitivity offset	4x10 <sup>-6</sup>	2x10 <sup>-6</sup>	2.5x10 <sup>-6</sup>	3x10 <sup>-6</sup>	3x10 <sup>-6</sup>	4x10 <sup>-6</sup>
Sensitivity temperature drift <sup>2)</sup>	1x10 <sup>-6</sup> /°C	1x10 <sup>-6</sup> /°C	1x10 <sup>-6</sup> /°C	1x10 <sup>-6</sup> /°C	1x10 <sup>-6</sup> /°C	1x10 <sup>-6</sup> /°C
Sensitivity stability <sup>3)</sup>	1x10 <sup>-6</sup> /a	1x10 <sup>-6</sup> /a	1x10 <sup>-6</sup> /a	1x10 <sup>-6</sup> /a	1x10 <sup>-6</sup> /a	1x10 <sup>-6</sup> /a
Interface update rate	23 /s	23 /s	23 /s	23 /s	23 /s	23 /s

## Typical values for calculating the measurement uncertainty

	XP105DR	XP205	XP205DR	XP204	XP504	XP504DR
Settling time, typical <sup>4)</sup>	6 s	6 s	6 s	4 s	4 s	4 s
Repeatability (sd), typical	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	0.4 mg +2x10 <sup>-7</sup> ·Rgr
Repeatability (sd), fine range	0.008 mg +1.5x10 <sup>-7</sup> ·Rgr	–	0.008 mg +1.2x10 <sup>-7</sup> ·Rgr	–	–	0.04 mg +2x10 <sup>-7</sup> ·Rgr
Differential linearity deviation (sd), typical	√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	√8x10 <sup>-11</sup> g·Rnt
Differential eccentric load deviation (sd), typical	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	5x10 <sup>-7</sup> ·Rnt
Sensitivity offset (sd), typical <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	8x10 <sup>-7</sup> ·Rnt
Minimum weight (according to USP), typical	120 mg +3x10 <sup>-4</sup> ·Rgr	24 mg +1.8x10 <sup>-4</sup> ·Rgr	120 mg +1.5x10 <sup>-4</sup> ·Rgr	120 mg +1.5x10 <sup>-4</sup> ·Rgr	120 mg +1.8x10 <sup>-4</sup> ·Rgr	1200 mg +6x10 <sup>-4</sup> ·Rgr
Minimum weight (U=1%, 2 sd), typical	8 mg +2x10 <sup>-5</sup> ·Rgr	1.6 mg +1.2x10 <sup>-5</sup> ·Rgr	8 mg +1x10 <sup>-5</sup> ·Rgr	8 mg +1x10 <sup>-5</sup> ·Rgr	8 mg +1.2x10 <sup>-5</sup> ·Rgr	80 mg +4x10 <sup>-5</sup> ·Rgr

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

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

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

<sup>4)</sup> Including sample handling and stabilization time

sd: standard deviation  
 Rgr: gross weight  
 Rnt: net weight,  
 a: year (annum)

## Accessories

RS-P42 printer with RS232 connection	229265
BT-P42 printer with wireless Bluetooth connection	11132540
Foot-operated switch for balance functions	11106741
ErgoSens sensor for balance functions	11132601
Terminal extension cable 4.5 m	11600517
Moisture trap for pipette calibration	11106744
Density determination kit	11106706
Integrateable antistatic kit, complete/separate	11107761
Separate electronic evaluation equipment XP-SE	11106743
RS232 C (interface)	11132500
Bluetooth BTS single point (interface)	11132535
Bluetooth BT Multi point (Schnittstelle)	11132530
Ethernet (interface)	11132515
PS2 keyboard connection (interface)	11132520
LocalCAN (interface)	11132505
RS9-RS9 (m/f) cable, 1 m	11101051
LC-RS9 cable for LocalCAN	229065

You will find further information at  
[www.mt.com/XP-analytical](http://www.mt.com/XP-analytical)

# Weighing solutions that connect

To take full account of your needs, METTLER TOLEDO offers complete weighing solutions. Thanks to standardized interfaces, peripheral devices such as printers, auxiliary displays, bar-code readers and keypads are easily connectable. Problemfree integration into your company network is assured.



**Quality certification.** Development, production and auditing in accordance with ISO9001. Environmental management system in accordance with ISO14001.

**Worldwide service.** Our service network, among the best in the world, ensures the maximum availability and lifespan of your product.

**«Conformité Européenne».** This label is your guarantee that our products conform to the latest European guidelines.

**Now on the Internet.** You can find important information about our products and services, as well as our company, quickly and easily at <http://www.mt.com>

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Printed in Switzerland 11795509  
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## Wireless!

Wireless connection to your balance with the BT-P42 Bluetooth printer.

## Connectivity guaranteed!

No matter whether Bluetooth, Ethernet, USB, or ordinary RS232: the XP guarantees connectivity.

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