Piece counting

What really counts
in your processes?

METTLER TOLEDO

How can you find the right piece counting scales for your needs?

Did you know that even pieces that appear to be identical may have different weights? Although they may be minute, differences do arise due to production tolerances or the machine, day of the week or staff member involved in production. The average piece weight must therefore be determined with extreme accuracy using a suitable, precise scale. A small error in this value is multiplied when accumulating larger volumes. The following procedure will help you make the right selection.

1 **Determine the average single piece weight:**
First you must determine the mean value of the single piece weight. To do this, individually weigh 10 pieces of the parts to be counted and enter each of the individual piece weights into their own cell in MS Excel®. Calculate the average weight by adding all 10 weights up and then dividing by 10. Using Excel's function for standard deviation, you can then calculate the absolute in grams and the relative as a percentage.

2 **Define the maximum weighing range of your piece counting scales:**
Weigh the heaviest of the 10 pieces and multiply this by the maximum number of pieces to be counted in the same process. This will give you the maximum net weight. The maximum gross weight, i.e. the weighing range of the scales, is the sum of the maximum net weight and the weight of the heaviest tare container.

3 **Now find the right piece counting scales:**
Using the information on the weighing range, the smallest piece weight and its standard deviation, you can now find the right piece counting scales or the right two-scale system in the overview on the following page.

4 **Select the performance level of the display, keyboard and software:**
- If you require completely simple yet professional operation using one function for each key, then select an IND435 terminal or one of the compact scales BBA432 or BBK432.
- If you want to easily and safely count many identical portions, then select an IND445 or a BBA442/BBK442. This also allows you to enter the tare value using the keyboard.
- Compact scales BBA462 or BBK462 as well as IND465 and IND690count also include a graphic and plain text display for easy administration of up to 1500 memory locations (IND690count: 999 memory locations). They support printing of different labels or customized labels.
- The IND690count terminal provides easy operability and first-class functionality. The large and bright BigWeight® graphic display guides the user correctly through the counting process.

Details on the displays, keyboards and interfaces can be found on pages 4–5.

5 **Select the right-sized model:**
- The BBK4x2 and BBA4x2 models are space-saving compact scales.
- If you would like the display to be at the side, in front of or over the piece container, then select one of the IND terminals.
- Determine the size and model of the floor scale. Decide whether to install the weighing platform in a pit or if it is to be directly fixed to the floor.
- Select a Series 4 model if you wish to operate the scale with batteries and/or as a mobile unit, e.g. on a trolley.

Possible models and their details are given on pages 6–7.

Weighing range	0,0001 g	0,001 g	0,01 g	0,1 g	1 g	10 g
3000 kg						IND690 + BBA4x2-35LA + KE3000
1500 kg					IND690 + BBK4x2-6DSM + KE3000	IND690/IND4x5 + BBA4x2-35LA + PFA574-1500E
600 kg				IND690 + BBK4x2-6DXS + KCC600s	IND4x5 + BBK4x2-6DSM + PFA574-600C	IND4x5 + BBA4x2-35LA + PFA574-600C
300 kg			IND690 + BBK4x2-3DXS + KCC300S	IND690 + BBK4x2-6DXS + KCC300s		IND4x5 + PBA330-300BC
150 kg					BBK4x2-6DSM + PBA330-150CC	
60 kg			IND690 + BBK4x2-3DXS + KB60s	BBK4x2-6DXS + PBA330-60BB		
32 kg		IND690+ BBK4x2-0.6DXXS +KA32s BBK4x2-0.6DXXS +BBK4x2-35DLA	IND690 + BBK4x2-3DXS + KA32s	IND690 + KA32s BBK4x2-35DLA	IND690 + KA32s BBK4x2-35DLA	BBA4x2-35LA
15 kg						
6 kg				BBK4x2-6DXS	BBA4x2-6SM	
3 kg			BBK4x2-3DXS			
0,6 kg		BBK4x2-0.6DXXS				
0,4 kg	IND690 + X404S IND4x5 + X404S					
0,2 kg	IND690 + X204S IND4x5 + X204S					
Average piece weight [1]	0,0001 g	0,001 g	0,01 g	0,1 g	1 g	10 g
Average piece weight [2]	0,001 g	0,01 g	0,1 g	1 g	10 g	100 g

Counting terminals

– IND690count

– IND465
– IND445
– IND435

Reference scales
– X204S
– X404S

Series 4 compact scales

– BBK4x2-0.6DXXS

– BBK4x2-3DXS

– BBK4x2-6DXS

– BBK4x2-6DSM

– BBK4x2-35DLA

– BBA4x2-6SM

– BBA4x2-35LA

Weighing platforms

– KA32s

– PBA330-BB60

– KE3000
– KES3000
– KCS600

– PFA574-D3000

[1] Counts up to 1000 pieces in normal ambient conditions at a relative standard deviation of <0.5% of the average piece weight

[2] Counts up to 1000 pieces in normal ambient conditions at a relative standard deviation of 0.5–1% of the average piece weight

The right solution for every job

IND690count: the robust and intelligent counting system

- The robust and versatile IND690count stainless steel terminal is IP69k-protected and is therefore also suitable for use in the harshest industrial environments – with a matching, robust industrial printer contained in stainless steel housing for printing barcodes.
- The large, bright, high-contrast "BigWeight®" display allows test results to be easily read-off without tiring your eyes – even at large distances and in poorly lit conditions.
- As up to 4 weighing platforms can be connected, this allows high-resolution, precise weighing ranges of 0.1 mg to 6000 kg using just one IND690count terminal.
- The integrated database provides 999 flexible storage locations for article data.
- The IND690count terminal can be connected to a warehouse management system via Ethernet, Profibus DP, USB, Bluetooth, PS2, WLAN, RS232, RS422, RS485, digital inputs/outputs and RFID, making it the central tool for registering incoming/outgoing goods and in inventory management.

Intelligent commissioning and portioning using BBK462, BBA462 and IND465

- The bright graphic display avoids misunderstandings, as it guides the user through the counting process using plain text instructions.
- An integrated database with 1500 flexible storage locations allows article data to be managed easily.
- Barcode scanners are used to ensure error-free, efficient article selection.
- Monotonous work, such as filling many identical packaging units, can be done efficiently. The filling guide and a "beep" signal inform the user when the target has been reached. Underfilling or overfilling is therefore avoided.
- Free design of barcode print-outs on labels, e.g. with name of company, address, alphanumerical article ID, date and time.
- Can be integrated into existing systems using Ethernet and digital inputs/outputs.
- A second scale can be connected for larger volumes or for precise reference measurement.

Correct portioning using BBK442, BBA442, IND445

- Monotonous work, such as filling many identical packaging units, is simplified, as the filling guide and a "beep" signal inform the user when the target has been reached. Underfilling or overfilling is therefore avoided.
- Comes with a database with 100 flexible storage locations for target weights, tolerances or tare values.
- Flexible print-outs with name of company, address, and numerical article ID. The article ID can be entered using the scale keyboard or a barcode.
- A second scale can be connected for large volumes or for exact reference measurement.
- The tare values can be entered on the keyboard.

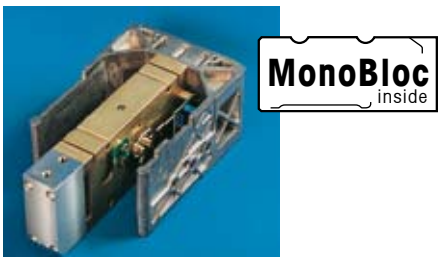
Simple, safe and professional: BBK432, BBA432, IND435

- Secure entry thanks to allocation of one single function to each key. Nothing can go wrong.
- Keys and display have been optimized simply and without compromise for counting.
- Password-protected settings.
- A second scale can be connected for large volumes or for exact reference measurement.
- All models also available with optional rechargeable battery for mobile use.

Highest rate of counting precision and repeatability thanks to MonoBloc – for reliable results.

The BBK4x2 scales and K weighing platforms are equipped with unique MonoBloc technology for maximum repeatability and precision of weighing and counting results.

Their high measuring resolution allows for a high weighing range at a very high rate of precision, linearity and repeatability. Generally, this means: MonoBloc is 10× more accurate than strain gauge technology. Thanks to their stable counting results, the BBK4x2 and K models are also the ideal scales when the piece weights are stored in the scale itself or the computer.



RefOpt: User-friendly, precise determination of piece weights

Using the "Automatic reference optimization" function, you can count easily, efficiently and correctly – and even count exactly when the piece weights are irregular.

USB
EtherNet
RS232
PS2
WLAN

Interfaces

Depending on the model, the METTLER TOLEDO counting systems and counting scales can be integrated into a modern materials management system. Thanks to Ethernet, Profibus DP, USB, Bluetooth, PS2 and RFID, all types of connection are covered and all data can flow freely.

The right models and sizes for your application

Combine small, medium and large platforms with modular compact scales and the powerful IND counting terminals. Position the terminal in the ideal location for your needs: to the side, the front or on a mount. Connect the compact BBK and BBA models to PBA/PFA and K/M platforms to form two-scale systems.

Compact scales BBK4x2...XXS/XS/SM / BBA4x2...SM

OIML-approved	BBA4x2: Class III, 7500e or 2x 5000e BBK4x2: Class II, 61'000e		
Housing	Die-cast aluminum		
Measuring method	BBK4x2 MonoBloc/BBA4x2 DMS		
Power supply	230V AC or built-in rechargeable battery		
Dimensions	265 × 335 × 100 mm		
Model	Weighing range	Readability	Platform size
BBK4x2-0.6DXXS	120/610 g	0.001/0.01 g	100mm Ø
BBK4x2-3DXS	0.6/6.1 kg	0.01/0.1 g	165 × 165 mm
BBK4x2-3XS	3.1 kg	0.01g	165 × 165 mm
BBK4x2-6DXS	6.1 kg	0.01/0.1g	165 × 165 mm
BBK4x2-6XS	6.1 kg	0.01 g	165 × 165 mm
BBK4x2-6DSM	1.2/6.1 kg	0.1/1 g	200 × 240 mm
BBK4x2-6SM	6.1 kg	0.2 g	200 × 240 mm
BBA4x2-3SM	1.5/3 kg	0.5/1 g	200 × 240 mm
BBA4x2-6SM	3/6 kg	1/2 g	200 × 240 mm
Interfaces:	Ethernet, USB, digital I/O, up to 3× RS232, RS485, connection for second scale (depending on application level)		

Compact scales BBK4x2...LA/BBA...LA

OIML-approved	BBA4x2: Class III, 7500e or 2x 5000e BBK4x2: Class II, 61'000e		
Housing	Die-cast aluminum		
Measuring method	BBK4x2 MonoBloc/BBA4x2 DMS		
Power supply	230V AC or built-in rechargeable battery		
Dimensions	360 × 370 × 115 mm		
Model	Weighing range	Readability	Platform size
BBK4x2-15DLA	3500/15100 g	0.1/1 g	240 × 350 mm
BBK4x2-15LA	3500/15100 g	0.5 g	240 × 350 mm
BBK4x2-35DLA	7000/35100 g	0.1/1 g	240 × 350 mm
BBK4x2-35LA	35.1 kg	1 g	240 × 350 mm
BBA4x2-15LA	15 kg	2/5 g	240 × 350 mm
BBA4x2-35LA	35 kg	5/10 g	240 × 350 mm
BBA4x2-60LA	60 kg	10/20 g	240 × 350 mm
Interfaces:	Ethernet, USB, digital I/O, up to 3× RS232, RS485, connection for second scale (depending on application level)		

IND690count weighing terminal

OIML-approved	7500e for DMS cells, up to 61 000e for BBK, K Line (15000e SR/32000e SR/3× 3000e MI/MR)
Housing	Stainless steel
Protection	IP69k
Measuring method	MonoBloc and DMS
Connection	Can connect up to 4 scales
Interfaces	Ethernet, Profibus DP, WLAN, Bluetooth, USB, digital I/O, RS232 Additional interfaces: CL, RS485/422, PS2, analog output

IND4x5 weighing terminal

OIML-approved	7500e
Housing	Die cast aluminum
Protection	IP65
Measuring method	DMS
Power supply	230V AC or built-in rechargeable battery
Connection	Can connect up to 2 scales
Interfaces	Ethernet, USB, digital I/O, up to 3× RS232, RS485, analog connection for second scale (depending on application level)

K Line

High-precision scales that can be table, stand, and floor-mounted for use in harsh industrial environments. Can be used as reference scales or volume-measuring scales.

OIML-approved	3× 3000e MI/MR, up to 30 000e SR
Weighing ranges	3–3000 kg
Readabilities	0.1–50 g
Platform sizes	280 × 350 to 1500 × 1500 mm

M Line

Scales that can be table, stand, and floor-mounted for use in harsh industrial environments. Can be used as reference scales or volume-measuring scales.

OIML-approved	3× 3000e MI/MR
Weighing ranges	15–3000 kg
Readabilities	1–1000 g
Platform sizes	280 × 350 to 1500 × 1500 mm

PBA330

Scales that can be table, stand, and floor-mounted for use as volume measuring scales.

OIML-approved	2× 3000e MR
Weighing ranges	6–600 kg
Readabilities	1–200 g
Platform sizes	240 × 300 to 600 × 800 mm

PFA574 / 575

Coated or hot-dip galvanized floor/rack-mounted scales for use as volume-measuring scales in harsh industrial environments.

OIML-approved	3000e up to 2× 3000e MI/MR (optional) 1× 6000e
Weighing ranges	300–3000 kg
Readabilities	100–1000 g
Platform sizes	1000 × 1000 to 1500 × 2000 mm

X204S / X404S

Reference scales for small parts

Model	Weighing range	Readability
X204S	200 g	0.0001 g
X404S	400 g	0.0001 g

Platform size: 90 mm Ø

Low profile/pallet scales

Do you have special requirements for the design and weighing performance of your scale? Please contact us and we will find an individual solution for your application.

OIML-approved	3000e up to 2× 3000e MI/MR (optional) 1× 6000e
Weighing ranges	300–3000 kg
Readabilities	100–1000 g

BTA425 mobile pallet truck scale

Available in stainless steel or coated.

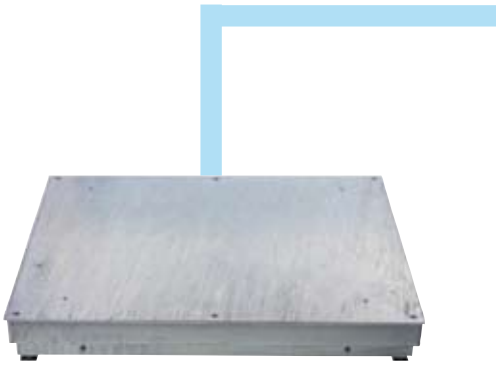
OIML-approved	2× 3000e			
Weighing ranges	**BTA425-1500**	1500 kg	0–600 kg	0.2 kg
			0–1500 kg	0.5 kg
	BTA425-2000	2000 kg	0–1000 kg	0.5 kg
			0–2000 kg	1 kg
Dimensions	Fork (L × W × H)	1000 × 180 × 85 mm		

Reliable numbers for incoming goods facilitate seamless production

Precise weighing and counting from 1 mg to 6000 kg
METTLER TOLEDO has a range of scales that comprehensively covers all counting and weighing requirements for incoming goods.

The incoming goods area of a company is often very hectic. Depending on the situation, multiple deliveries are often accepted and checked at the same time. Packages have different sizes, ranging from containers, through pallets, right down to smaller packages and even letters with small consignments.

The weighing technology used for incoming goods must therefore cover a range from 1 mg to 6000 kg. In certain circumstances, as many as 10 000 pieces must be counted within one package. Precise weighing down to the last and even lightest piece requires a precision bench scale. Counting pieces that are delivered on pallets or in containers require high weight capacities.



BigWeight® display – never get tired
Thanks to the bright, high-contrast graphic display of the IND690count, the user is provided with clearly legible instructions and information. The patented BigWeight® function is unique. It allows you to avoid reading errors and tiredness. The keys, which are uniquely labeled for piece counting, enable efficient work and help prevent operator errors.

Robust industrial equipment
In the dispatch room, awkward and heavy packages are transported manually, with a fork-lift truck, a hand lift truck or even a crane. METTLER TOLEDO scales withstand these conditions due to their high overload protection. Their terminals – protected up to IP69k – continue to work reliably even in dusty or damp environments.

Auxiliary displays
The dispatch room is large and full of packages. It may therefore be necessary for the weight and counting values to be displayed and readable over a larger distance. The METTLER TOLEDO weighing terminals can be equipped with several clearly legible auxiliary displays.

Network-capable
The data recorded via the barcode readers, keyboards or RFID* readers can be transferred to an IND690count terminal via PS2, RS232, USB or Bluetooth. The data is then transferred from there via Ethernet or Profibus to the ERP system or the PLC. The IND-690count terminal thereby assumes the function of a local network node with user guidance.

Greater efficiency with a database
The IND690count has a database with 999 storage locations for the article ID, piece weight, tare weight and target weight with tolerances. The stored values can be called up by barcode reader or keyboard. The database can be easily edited and stored on the computer using the "COUNT Tool" software and loaded onto the IND690count.

Always the correct scale, thanks to multiple connections
Always count and weigh on the right scale and at the right place.
Up to 4 scales can be connected to an IND-690count terminal. To determine the reference of unequal pieces, you can connect a 0.1 mg reference scale. You weigh and count small pieces on a 10 mg to 6 kg scale. For medium weights, connect a bench scale up to 300 kg, and for very heavy weights a floor scale up to 6000 kg.

Every piece is important –
in the warehouse, when taking inventory, commissioning and dispatching outgoing goods

User-friendly applications – portioning/filling
Even if there is a large number of portions, filling and portioning remains easy and efficient. A multitude of planned quantities for certain articles can be stored in the scales and terminals. The optical weighing guide has been supplemented by an acoustic signal. Once the planned quantity has been reached, "OK" flashes on the display and a short beep s ounds. Optionally, signal lamps can be directly controlled by the scale. This securely prevents overfilling or underfilling.

Totaling
The total quantity of parts filled in portions can be counted using the "Tota" function.

Uniform user concept
For compact scales or modular scales with separate weighing platforms and terminals, all models have identical user guidance to simplify job rotation in the order picking warehouse.

Network-capable
The data recorded using barcode readers or keyboards can be transferred to the scale by USB, PS2 or RS232. The data is transferred via Ethernet to a computer or the ERP system. The compact scales BBA4x2, BBK4x2 or the IND4x5 terminal assume the role of local network nodes.

Mobile counting in the order picking warehouse
As it can be powered by battery, the scale can be operated on a trolley. Compact scales BBK462 and BBA462 have 1500 storage locations for target weight, tolerance, identification, piece weight and tare weight. Barcode readers, a keyboard or printer can be also connected. This keeps the scale mobile throughout the day and allows it to be used independently in the order picking warehouse.

Greater efficiency with a database
The IND465, BBA462 and BBK462 models have a database with 1500 storage locations. The storage locations offer enough space for the article ID, piece weight, tare weight and target weight with tolerances. The stored values can be called up by barcode reader or keyboard. The database can be easily edited, managed and stored on the computer using the "Smart Manager" program and also loaded onto the scale.

Print to scale
Select your ideal solution from a multitude of various label printers and continuous paper printers. The print possibilities vary depending on the built-in application.

High-resolution
two-scale system

Why do the piece weights vary? The variance in piece weights depends on the machine, the day or the operator who has produced the parts. Often, the mass of the all of the parts is not determined exactly. A small error when determining the average piece weight is multiplied when counting larger quantities. Therefore, when there is a large variation, the average piece weight must be determined using a greater number of reference pieces. You also require a high-resolution and high-precision reference scale.

For very small and highly-varying parts, the X204 and X404 platforms are used. The X204 and X404 can be connected as reference scales or stand-alone scales to the IN690count, IND465, IND445 and IND435 counting terminals. They act as pure reference scales together with compact scale models BBK432, BBK442 and BBK465. This allows you to use all the features that make the METTLER TOLEDO scales so user-friendly and efficient with the highest resolution and precision.

www.mt.com/counting

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