Checkweigher Synus®

The modular designed checkweigher series

GERMAN QUALITY

German Quality

⚠ Advantages

- Perfect solution for all standard applications

- Blue HMI for maximum efficiency in production

- Flexible integration into your infrastructure

- Reliability thanks to EMFR weigh cell technology

The modular Synus® checkweigher series enables 100% and highly accurate weight control. The new Blue HMI user interface increases efficiency, transparency and safety in production. All models and variants are optionally MID-approved and monitor verifiable in accordance with common packaging regulations.

Synus® is the standard solution for many applications and industries

⚠ The new HMI of Minebea Intec gives fast and better insights into production and can improve efficiency of the line.

⚠ Broad connectivity, e.g. OPC-UA, for integration into your processes and SPC@Enterprise Software

⚠ Easy change of transfer height and running direction gives flexibility within your processes

⚠ EMFR weighing technology is providing high precise results up to 7 kg and 250 pcs/minute

A new checkweigher with Blue HMI

Operating a checkweigher can be so simple
Whether you're introducing a new product, fine-tuning line parameters or establishing a batch protocol, the user interface of the new checkweigher is designed to be fast and easy. Bid farewell to time-consuming tasks and extensive staff training. Say hello to streamlined control with the new Minebea Intec Blue HMI by your side.

Makes your production more safe and efficient
Positioned at the end of the production line a checkweigher can narrate the story of your production. The Blue HMI displays your equipment's efficiency and other statistics based on your recent weighing results. It assists you through audits with several onboard protocol functions. We aim for you to be fully prepared and compliant at every step of the way.

Keep an eye on your weight
Blue HMI is a web-based cross-platform user interface with multi-user security. With this you are able to see everything your checkweigher does from authorized users within your network while your data is stored locally and securely on the checkweigher.
You can sit down and browse comfortably through configurations, weighing statistics or efficiency protocols. Moreover, you may connect to Minebea Intec's SPC@Enterprise, OPC UA clients, ProfiNET or Ethernet/IP gateways.

Flat stainless steel housing

High performance BOX PC

Full HD 15″ Touch-Display
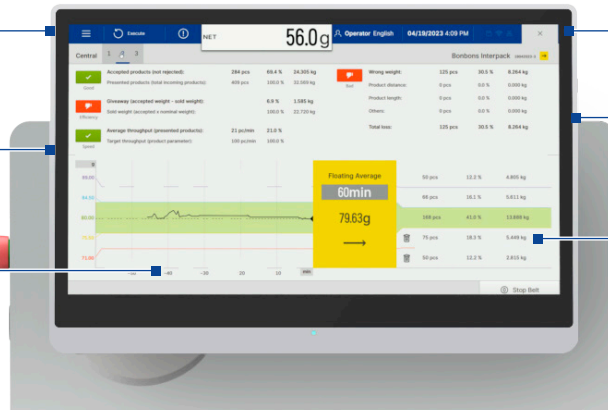
Optional tiltable screen

Flexible interfaces prepared for the future

Proven weighing technology

The new interface of Minebea Intec

As a global leading weighing supplier, we strive to offer reliable and flexible solutions for your production needs. However, flexibility in technical machinery often brings complexity.

Blue HMI serves as a cross-platform Human Machine Interface for all future products of Minebea Intec. Once started to use it, your daily work becomes easier.

Technical data – Synus®

Weighing system	WS 1 kg	WS 2 kg	WS 5 kg	WS 7 kg
Gross weighing range [g] (maximum load)	Up to 1,000	Up to 2,000	Up to 5,000	Up to 7,000
Smallest permissible calibration value [g]	0.1	0.2	0.5	1
Imprecision area (Ua) [mg]	From 100	From 500	From 1,500	From 2,000
Standard deviation attributable to measurement error(s) [mg]	From 17	From 83	From 250	From 333
	Depending on product, throughput and ambient conditions			
Throughput [item/min]	Max. 250	Max. 200	Max. 180	Max. 180
	Depending on product, permitted imprecision and ambient conditions			
Speed ranges [m/s]	0.2 to 1.5	0.2 to 1.2 0.5 to 1.5	0.2 to 1.0 0.5 to 1.4	0.2 to 1.0 0.5 to 1.4
Roller diameter [mm]	22	30		
Drives	Maintenance-free 24 V EC-motors with planetary gear Motor control short-circuit proof with temperature monitoring			
Supply voltage	115/230 V_{AC} (+10%/–15%); 50/60 Hz (L1, N, PE) switchable			
Power consumption	Approx. 500 V_A			
Operating pressure	Default setting: Pusher: approx. 3 bar Blower: approx. 5 bar			
Feed direction	From right to left or left to right (Please indicate when ordering)			
Working height [mm]	600 to 1100 (adjustable in 50 mm increments), adjustment range of the feet: ± 25 mm			
Ground clearance [mm]	100 (± 25)			
Permissible operating temperature range [°C]	0 to +40 (MID +5 to +40)			
Product temperature [°C]	–10 to +60 (WS 1 kg, belt) –40 to +80 (WS 1 kg, round belt) –30 to +80 (WS 2 to 7 kg, belt)			
Protection class	IP 54 (standard), IP 65 (optional)			
Dimensions	See dimensional drawings			
Checkweigher frame material	Stainless steel 1.4301			
Weight	Approx. 250 kg			
Airborne noise emitted	A-rated sound pressure level emitted < 70 dB(A)			
Inputs	8/16 (optional) digital inputs, 24 V Inputs galvanically isolated via relay or optocoupler depending on use			
Outputs	8/16 (optional) digital outputs, 24 V 2 analogue outputs 0–20 mA, 0–10 V Voltage output: load impedance ≥ 2 kΩ Current output: load impedance ≤ 300 Ω Outputs galvanically isolated via relay or optocoupler depending on use			

* IB infeed belt
  OB outfeed belt

The results that can be achieved in practice, e.g. for the standard deviation of the measurement error or the throughput, depend on the respective application and must therefore not be understood as absolute values. The precise design of the supplied machine is defined in the order confirmation.

Technical specifications – Checkweigher Synus®

Create your individual checkweigher Synus® from a wide range of options and function enhancements.
We´d be happy to advise you!

Checkweigher Synus® – standard

Dialogue PC	Full HD 15″ Touch-Display
Operational display	Choice of distribution, yield, throughput, average value chart, large weight readout,tare weight
Operating modes	AWC weigher
	Classifying weigher, freely selectable classification limits, x 3/5 sorting
Digital input	Control package, external event or ignore checkweigher, event counter, external fault reset
Digital output	Feeder/batch, 3-way/5-way sorting, total counter, error message output, time-unit-controlled sorting
Separation system	Pusher or blower (depending on product size)
Weighing belt	Various lengths and widths; Flat and round belt (for 1 kg system); blue and white

Checkweigher Synus® – optional for increased requirements

Connectivity	Fieldbus	Profibus-DP, ProfiNET, Ethernet/IP
	Factory bus TCP/IP, Ethernet	SPC@Enterprise, OPC UA, PackML via OPC UA
	Individual weight value output for external evaluation and connection to customer systems	Serial interface RS 422, RS 232 or current loop (20mA)
	All interfaces specified here are free from feedback and do not need to be secured	
	Browser remote view	Read-only access to the checkweigher conveniently via the company network
	USB print	Created reports can be downloaded on a USB device
	FTP export	Created reports are uploaded to a webserver
Software/programs	Filling spout evaluation	Statistics for each filling spout and overall statistics possible
	Calibration approval	Verifiable in accordance with OIML R 51 – MID
	Control functions	Integrity checking/with floating mean value
	3-way/5-way classifying display	3-way signal light, 5-way signal light, isolated outputs, isolated outputs with 3-way signal light, isolated outputs with 5-way signal light
	Separation system	Control of customer sorting/separating equipment
	Monitoring functions	
	Compressed air monitoring	Isolated output, belt stop
	Separation monitoring Goods flow	Isolated output Isolated output with belt stop
	Package length/interval monitoring	Using additional light barrier
	Fill level monitoring* Collection container Incorrect weight	Isolated output with light
	Production monitoring	Monitoring of average value and repetitive rejections
	Sorting with path cycle/ displacement sensor	
Mechanical designs	Emergency stop button	Mounted on the cabinet
	Incorrect weight collection container	Made from polycarbonate (for products up to 500 g and a maximum belt width of 200 mm)
	Transfer runways	Only for WS 1 kg
	Options	Wind protector, covers, IP65

* as well as pro version available, with an additional watchdog for the monitoring sensor

Overall Equipment Effectiveness (OEE)

The OEE helps you to optimize your manufacturing efficiency by providing a simple, comprehensive metric that measures the performance, availability and quality of the end of line. OEE helps to identify areas for improvement, reduce downtime, increase productivity and ultimately boost profitability.

Overall Equipment Effectiveness(OEE)

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Availability
It measures operational time as a fraction of planned production time, accounting for scheduled breaks like lunch, maintenance and cleaning.
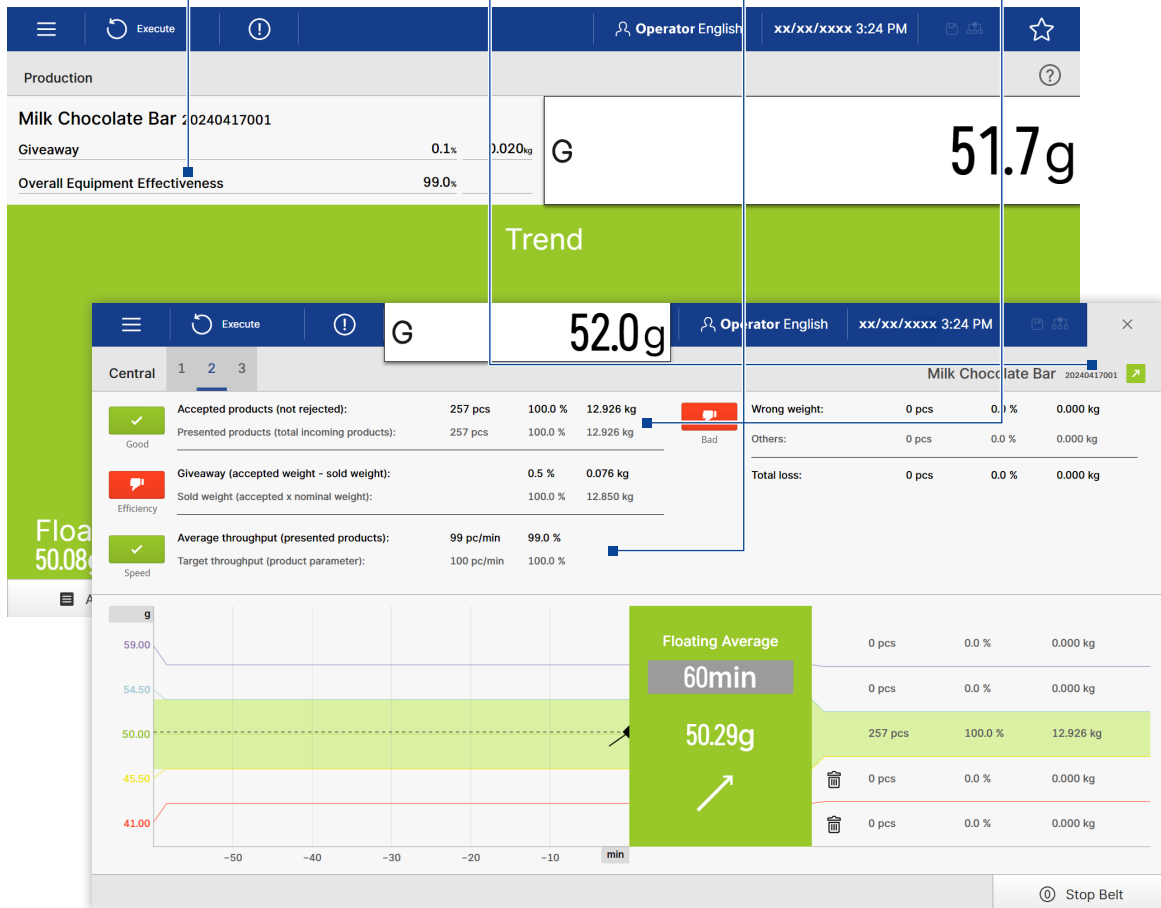
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Performance
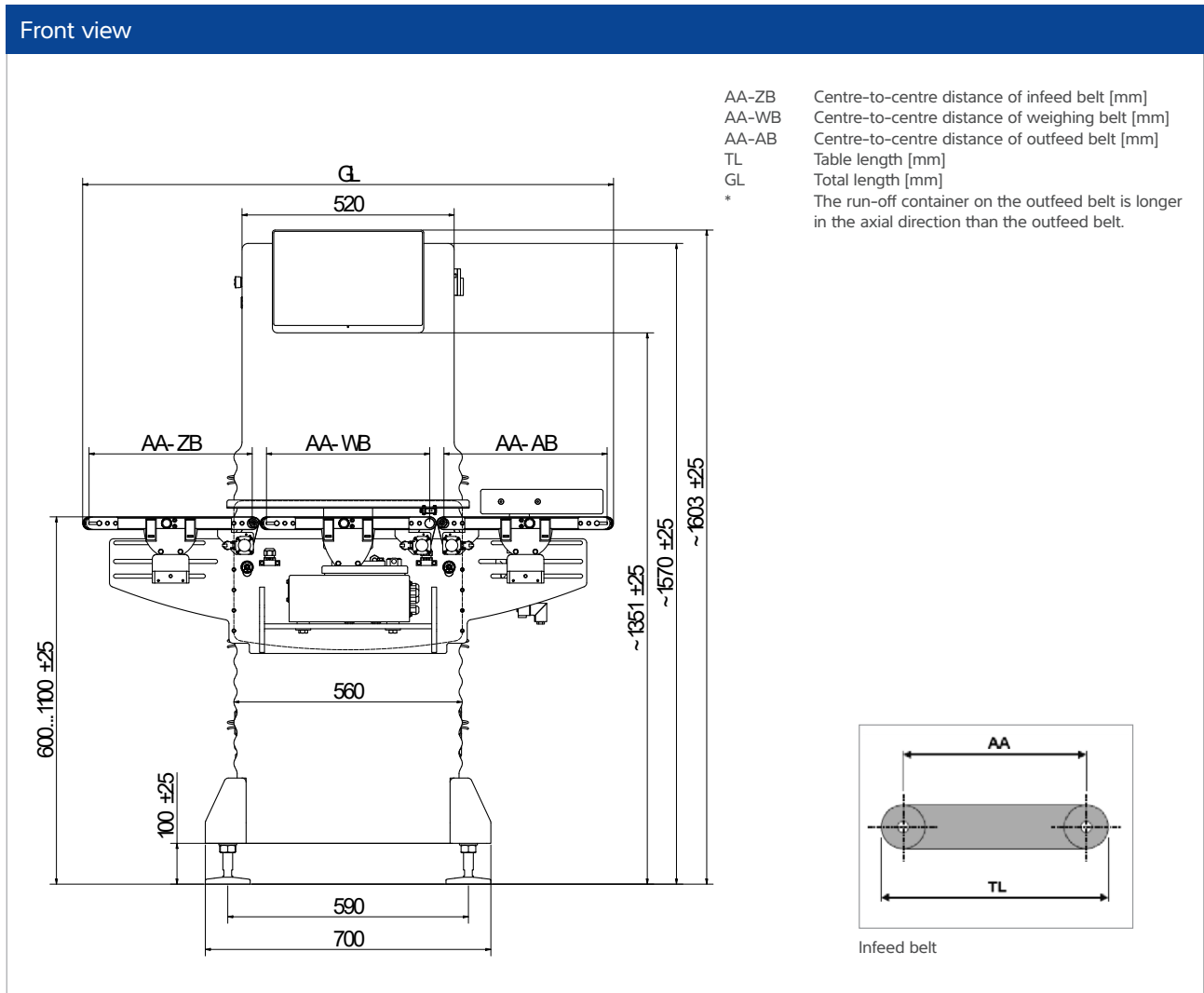It measures the actual line speed as a fraction of the optimal line speed.

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Quality
It measures the number of saleable pieces produced as a fraction of the total produced pieces.

| ☰ | ↻ Execute | ① | | ⵐ **Operator** English | xx/xx/xxxx 3:24 PM | | ☆ |

Production | ⑦

Milk Chocolate Bar 20240417001

| Giveaway | 0.1 % | 0.020 kg | **G** | **51.7 g** |

Overall Equipment Effectiveness | 99.0 %

Trend

| ☰ | ↻ Execute | ① | **G** | **52.0 g** | ⵐ **Operator** English | xx/xx/xxxx 3:24 PM | | × |

Central 1 2 3

Milk Chocolate Bar 20240417001 ↗

	Accepted products (not rejected):	257 pcs	100.0 %	12.926 kg	Bad	Wrong weight:	0 pcs	0.0 %	0.000 kg
Good	Presented products (total incoming products):	257 pcs	100.0 %	12.926 kg		Others:	0 pcs	0.0 %	0.000 kg
Efficiency	Giveaway (accepted weight - sold weight):		0.5 %	0.076 kg		Total loss:	0 pcs	0.0 %	0.000 kg
	Sold weight (accepted x nominal weight):		100.0 %	12.850 kg					
Speed	Average throughput (presented products):	99 pc/min	99.0 %						
	Target throughput (product parameter):	100 pc/min	100.0 %						

Floa
50.08

g										
59.00								0 pcs	0.0 %	0.000 kg
54.50						**Floating Average**		0 pcs	0.0 %	0.000 kg
50.00						**60min**		257 pcs	100.0 %	12.926 kg
45.50						**50.29g**		0 pcs	0.0 %	0.000 kg
41.00						↗		0 pcs	0.0 %	0.000 kg
	−50	−40	−30	−20	−10	min				

⓪ Stop Belt

Scale drawings

AA-ZB   Centre-to-centre distance of infeed belt [mm]
AA-WB   Centre-to-centre distance of weighing belt [mm]
AA-AB   Centre-to-centre distance of outfeed belt [mm]
TL   Table length [mm]
GL   Total length [mm]
*   The run-off container on the outfeed belt is longer in the axial direction than the outfeed belt.

Infeed belt

Dimensions table: WS 1 kg

AA-ZB	AA-WB	AA-AB
300/350/400/450/500	310	300*/350*/400/450/500
Total length GL = AA-ZB + AA-WB + AA-AB + 90		

Dimensions table: WS 2/5/7 kg

AA-ZB	AA-WB	AA-AB
300/350/400/450/500	300	300*/350*/400/450/500
350/400/450	350	350*/400/450/500
500	350	400/450/500
400/450/500	350	500
400/450/500	400	400/450/500
450/500	450	450/500
500	500	500
Total length TL = AA-ZB + AA-WB + AA-AB + 100		

Side view

BB   Belt width [mm]
X1   Variable, see dimensional drawing [mm]
X2   Variable, see dimensional drawing [mm]
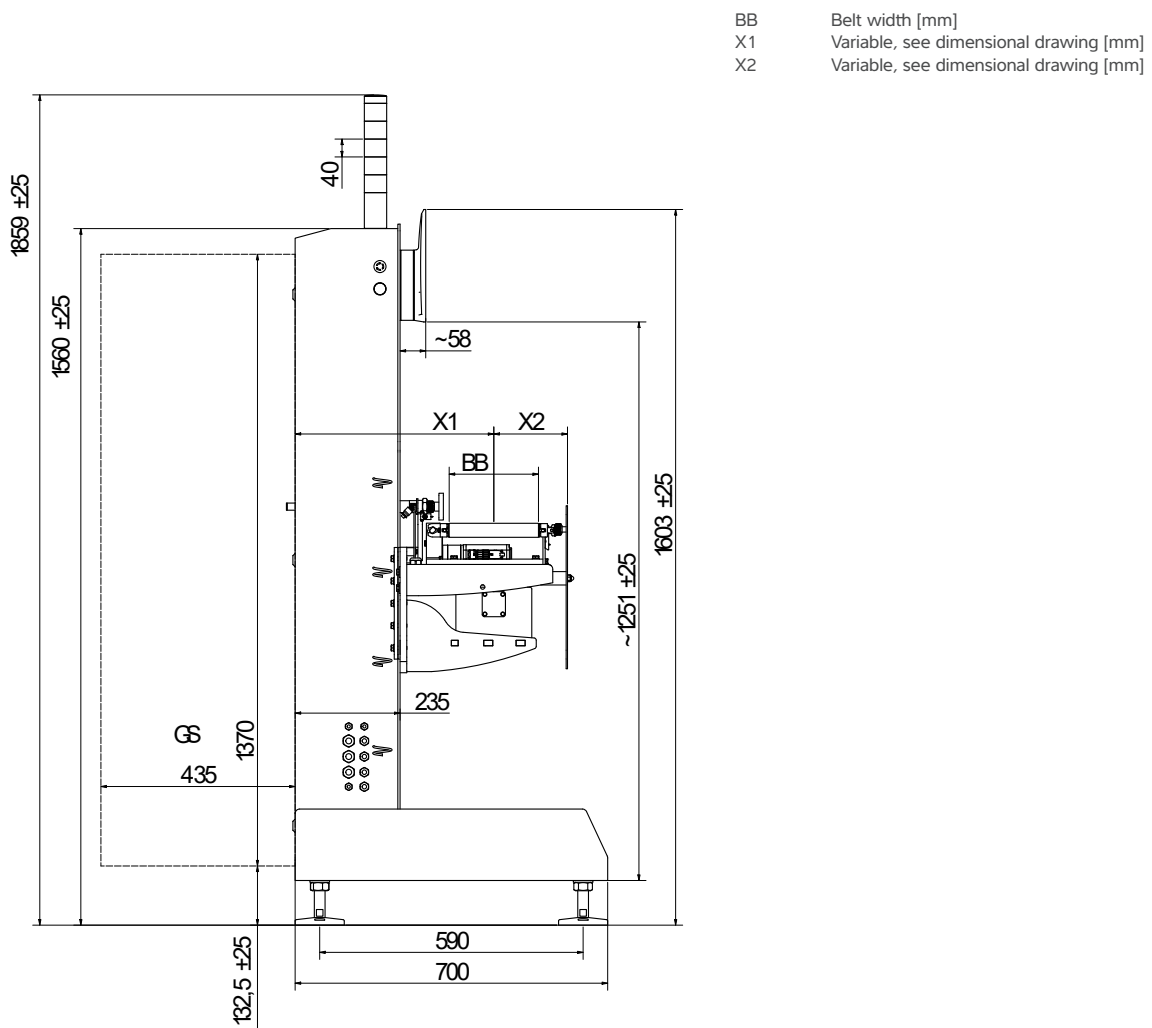
Dimensions table: WS 1 kg

BB	X1	X2
40	420	215
80	420	215
120	420	215
160	420	215

Dimensions table: WS 2/5/7 kg

AA-ZB	AA-WB	AA-AB
150	420	215
200	445	190
300	495	240

Versions

Dimensions table: WS 1 kg

BB x AA [mm]		
Infeed belt ■	Weighing belt ●	Outfeed belt ■
150 x 300/350/400/450/500	40 x 310 ■	150 x **300***/**350***/400/450/500
	80 x 310 ●	
	120 x 310 ●	
	160 x 310 ●	

Dimensions table: WS 2/5/7 kg

BB [mm]	AA [mm]		
	Infeed belt ■	Weighing belt ■	Outfeed belt ■
150	300/350/400/450/500	300	**300***/**350***/400/450/500
	350/400/450	350	**350***/400/450
	500	350	500
	400/450/500	400	400/450/500
	450/500	450	450/500
	500	500	500
200	300/350/400/450/500	300	**300***/**350***/400/450/500
	350/400/450	350	**350***/400/450
	500	350	500
	400/450/500	400	400/450/500
	450/500	450	450/500
	500	500	500
300	350/400/450	350	**350***/400/450
	500	350	500
	400/450/500	400	400/450/500
	450/500	450	450/500
	500	500	500

AA	Centre-to-centre distance (mm)	BB	Belt width (mm)	●	Round belt or belt design
○	Round belt design	■	Belt design	*	The run-off container on the outfeed belt is longer in the axial direction than the outfeed belt.

The outfeed belt must be at least AA = 400 mm if the machine is ordered in the following design:

■ Weighing belt AA = 300, 310 or 350 mm and

■ separation monitoring and

■ run-off container incorrect weight

OPC UA

Experience seamless connectivity with OPC UA, based on the Companion Specification for scales. Our smart scales offer precise data integration and simplify your processes. Connect your production effortlessly and maximize efficiency with OPC UA!

Display option

Ergonomic working with Blue HMI

Ergonomic adjustment
Tilting display enables optimum positioning for every operator.

Environmental flexibility
Adaptation to different lighting conditions and environments.

Customised comfort
Improved user-friendliness and working comfort for efficient processes.

	Tiltable display	Rigid display
Synus®	Optional	Standard
Flexus®	Standard	Optional
EWK (mounted on frame)*	Standard	Optional
EWK (terminal standalone)*	Standard	Optional

* Additionally limited swivelling and lockable around the vertical axis

Extend your checkweigher with our Software SPC@Enterprise to ensure your product quality, food safety and efficiency.

Get your first impressions about **SPC@Enterprise Software**!

The products and solutions presented in this data sheet make major contributions in the following sectors:

| Food and beverages | Pharmaceutical | Chemistry | Agribusiness | Cosmetics | Building materials | Recycling | Machinery (OEM) |