



sartorius



Weigh - Detect - Control
Industrial Process
Catalog

Sartorius Industrial Products: Precision Scales, High Resolution Indicators/Platforms, Explosion Proof Scales, Tank Weighing, Level by Weight, Batching and more

Accuracy is Just The Beginning

If you're looking for tough and accurate scales, load cells and controllers that deliver fast and accurate results then look no further than Sartorius.

Our products are used for precise check-weighing, counting, totalizing, batching/recipe management and general weighing applications. They can be found in the finest food, pharmaceutical, chemical and other type companies throughout the world.

Precise Weighing Saves Money

The more accurate the weighing system, the more you save. That's why you shouldn't compromise in choosing the most reliable products out there. Choose Sartorius accuracy and you won't be disappointed.

From 1 Pound to Thousands

Our rugged load cells, indicators/controllers and transmitters used in combination can handle just about any size application, even in the harshest of environments.

Made by the most exacting standards available, they combine the finest in design and engineering expertise.

Lifetime Warranty!

You read it right! Our Star level weigh cells are so well made we gave them a lifetime warranty. With its low profile and extreme ruggedness, the Star brand is the load cell of choice for heavy silos and tanks. Accurate and durable, you won't find a better investment for your facility than Sartorius load cells.

Round Out Your Batching Process

Basic, extended and advanced batching/recipe solutions are our core competence. Used in combination our batching hardware and software system products are available to fulfill just about every process application.

Intrinsically Safe

Many of our products are intrinsically safe for weighing and handling your processing needs even in the most hazardous areas.

Call us at **800-635-2906 ext 8272**
We're ready to help you... today!

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Star
Product Guide

State-of-the-art technology and innovation - a Sartorius tradition

Sartorius is the leading supplier of industrial weighing components and systems worldwide. Our products and services have always been regarded as the best in the industry. They are a perfect synthesis of application experience and manufacturing know-how that give you unrivaled answers to your application needs.

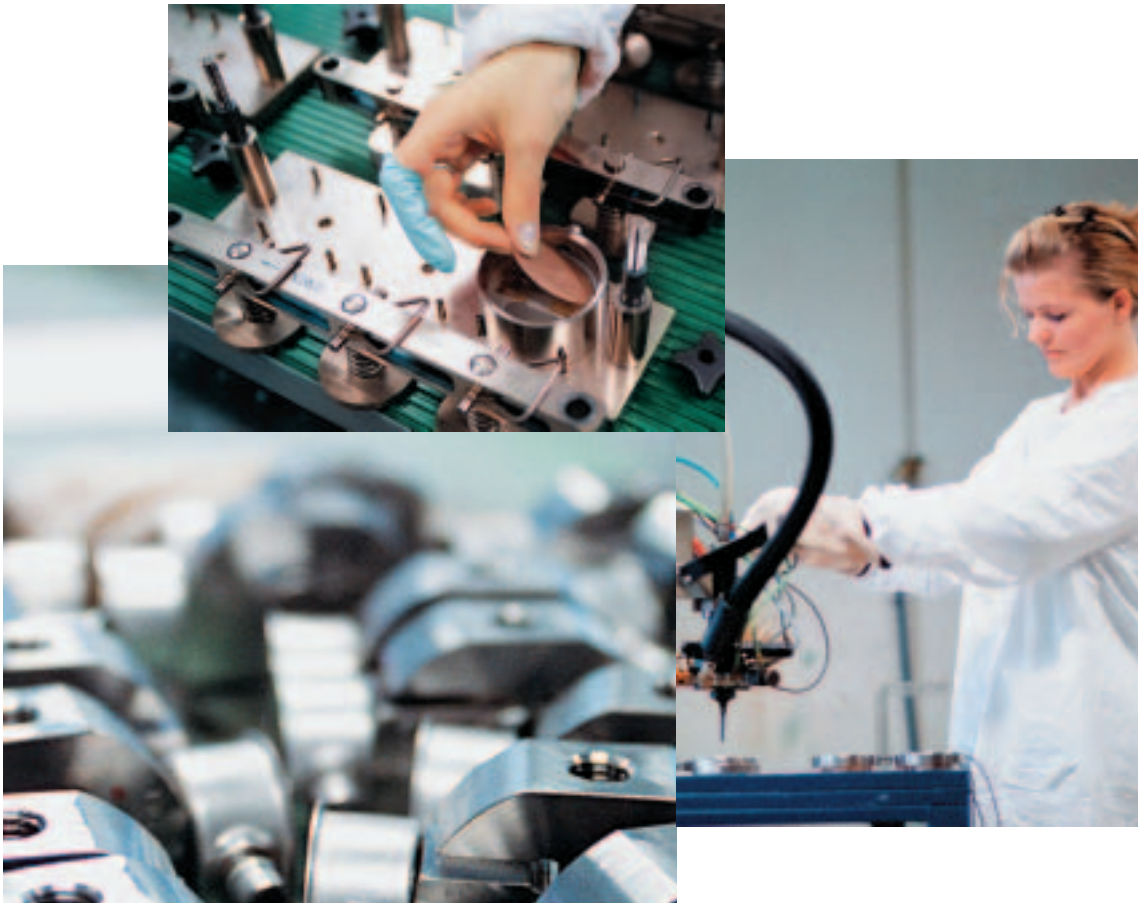
Our core application expertise includes the following business areas: cosmetics, pharmaceuticals, food & beverage, glass, building materials as well as chemical, paints, inks and adhesives industries. Whenever reliability and accuracy are needed in multiple plant operations, the Sartorius Group can form a global alliance to answer these considerations and deliver excellent results.

Our design and engineering specialists have been at the very forefront of technology and have defined today's standards in industrial weighing. Countless innovations are the basis of Sartorius competency. Examples include; our unique "sputter" technology, several inventions including international patents in special high-tech processes, materials and alloys.

With our decades of application know-how and experience in many weighing and automation projects, you can rest assured that our products will seamlessly blend into your process and give you direct access to its qualities and benefits. This is why so many clients choose Sartorius products and services when specifying a special project that needs the highest standard of quality available.

To reach the highest levels of product quality for our customers, many years of continuous research and development in different fields are needed. These include knowledge in physics, electronics, informatics and mechanics. All combine in a unique alliance with only one goal: the design and manufacturing of the very best load cells and weighing products in the world.

This sophisticated weighing technology from Sartorius provides the highest process reliability, maximum yield and unrivalled performance even under the harshest industrial conditions. This is the main reason for Sartorius' successes and why our customers keep coming back, time and again.



Latest production technology and total process control offer the highest quality and durability

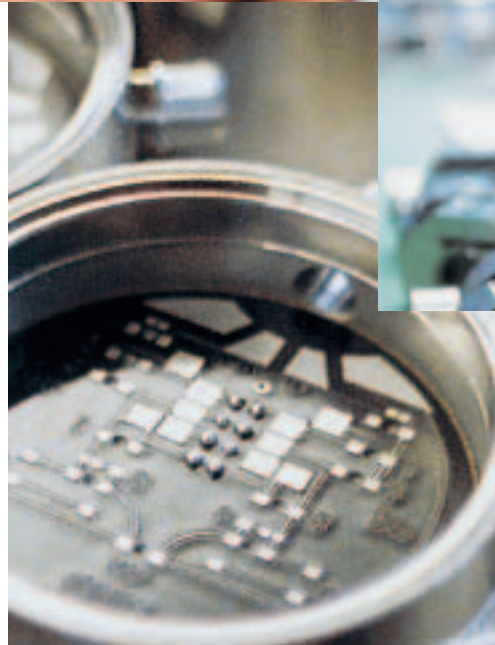
At the very beginning of the design phase the inherent properties and quality of a load cell are already determined. It all starts with the very careful selection of special alloys, its specific treatment and the basic design of the measuring element. Decades of experience are required to gain the specific know-how to build high quality load cells. This is achieved by combining the specific properties of the materials used and processes with a particular design. Our in-house CNC precision machining enables Sartorius to provide the highest level of quality combined with the highest degree of automation and maximum care in handling.

When it comes to precision weighing, Sartorius is one of the pioneers in strain gauge technology. As one of the few manufacturers worldwide, we develop, design and manufacture our own strain gauges using unique high-tech materials derived from aerospace and military applications. This not only gives us the widest possible control of our product offerings, but has also led to a degree of quality, reliability and control unsurpassed by any other supplier.

Sartorius is ready to help at every process level with extensive offerings in calibration and preventive maintenance.

Your specific application requirements are at the very heart of all our efforts at Sartorius. Our experts in sales and service are there to help with all their application and process know-how for your specific needs.

We at Sartorius provide more than just products. We are at your disposal in providing professional consultancy during initial specification and planning right through start-up, commissioning and the day-to-day operation of your plant.



Load Cells

	Type	Application	Accuracy	Capacity Range	Operating Temp.	Ingress Protect.	Approvals
 <p>PR 6201</p>	Compression-Load Cell (Lifetime Warranty)	Tank and Hopper Scales, Batching Systems	L, D1, C3 C4, C5 C6	500 kg...300 t (1,100 lbs... 666,000 lbs)	-30°C...+95°C optional 120°C/ 150°C (-22°F...+203°F optional 248°F 302° F)	IP68 NEMA 6	OIML, NTEP ATEX FM*
 <p>PR 6211</p>	Compression-Load Cell (Lifetime Warranty)	Tank and Hopper Scales, Batching Systems	D1	30 kg...300 kg (60 lbs...660 lbs 500 kg...10 t 1,100 lbs... 22,000 lbs)	-30°C...+95°C optional 180°C (-22°F... +203°F optional 356° F)	IP68 NEMA 6	OIML NTEP ATEX FM*
 <p>PR 6241</p>	Compression-Load Cell (Lifetime Warranty)	Tank and Hopper Scales, Precision Batching Systems	D1, C3, C6	100 kg...5 t (200 lbs... 11,000 lbs.)	-30°C...+95°C (-22°F...+203°F)	IP68 NEMA 6	OIML NTEP ATEX FM*
 <p>PR 6251</p>	Level Sensor (Lifetime Warranty)	"Level-by-weight"	L	500 kg...16 t (1,100 lbs... 35,000 lbs)	-30°C...+95°C (-22°F...+203°F)	IP68 NEMA 6	OIML NTEP ATEX FM*
 <p>PR 6246</p>	Tension Load Cell (Lifetime Warranty)	Tank and Hopper Scales, Precision Batching Systems, Hybrid Scales	D1, C3, C6	100 kg...3 t (200 lbs... 6,600 lbs)	-30°C...+95°C (-22°F...+203°F)	IP68 NEMA 6	OIML NTEP ATEX FM*

*Refer to individual data sheet for more details.

ACCURACY IS IMPORTANT TO US!

Most load cell companies base their accuracy on only two criteria, hysteresis and linearity. We believe accuracy should be calculated on all influencing parameters.

Sartorius Accuracy Class is calculated using the following criteria:

- Hysteresis
- Linearity
- Temperature effect on zero
- Temperature effect on span
- Repeatability
- Creep

Sartorius guarantees the following load cell accuracies

"L/LA" Accuracy Class	0.25-0.5%
"D1" Accuracy Class	0.04-0.05%
"C3" Accuracy Class	0.015%
"C6" Accuracy Class	0.008%

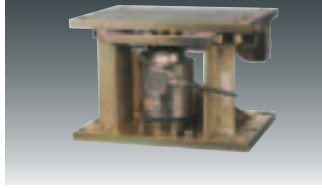
Our mounting solutions ensure that these accuracies are achievable in the field.

Mounting Kits

Remarks

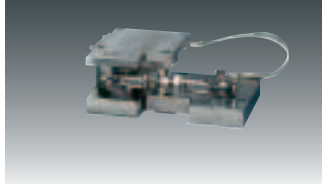
also available
with analog
output 4...20 mA
(standard warranty)

PR 6001



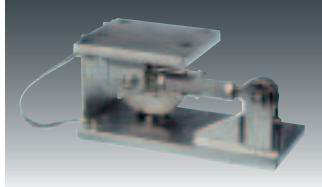
- Easy to mount
- Mounting without load cells is possible
- Integrated Lift-Off Protection
- High permissible side forces (Certified !)
- Normal steel zinc chromated or stainless steel
- Integrated jack-up for some versions
- Completely maintenance free

PR 6011



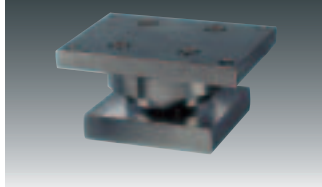
- Easy to mount
- Prepared for Lift-Off Protection or Intergraded
- Normal steel zinc chromated or stainless steel
- Compact design
- Completely maintenance free

PR 6043



- Easy to mount
- Mounting without load cells is possible
- Prepared for Lift-Off Protection
- Proven mounting kit for Platform and vessels
- Normal steel zinc chromated or stainless steel
- Completely maintenance free

PR 6051



- Easy to mount
- Extremely low profile
- Exceptional Inventory control
- Completely maintenance free

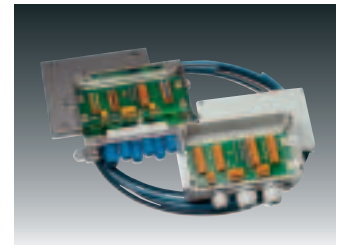
PR 6046



- Easy to mount
- Best accuracy for tension applications
- Normal steel zinc chromated or stainless steel
- Completely maintenance free

also available
with analog
output 4...20 mA
(standard warranty)

Accessories



PR 6130/08
Cable Junction Box for
Industrial Applications

PR 6130/60S
Cable Junction Box for
Industrial, Ex and W&M
Applications –
Stainless Steel

PR 6135
Extension Cable for Load Cells

Test conditions for
IP 68 protection at Sartorius:
1.5 m (5ft) water, 10,000 hrs.

Transmitter



Type	Application	Approvals	Housing
Digital Transmitter	High Accuracy Tank and Hopper Scales	W&M approval for 3000e, class III, ATEX Zone 1 (load cells)	Euroformat 19", Fieldhousing IP 65, Aluminium
In-/Outputs	Interfaces	Fieldbus	Remarks
Digital 3 / 3 Analog - / 1 (0/4-20 mA)	RS232/422/485	-	Intrinsically Safe Load Cell Interface, Ex (option), SmartCalibration



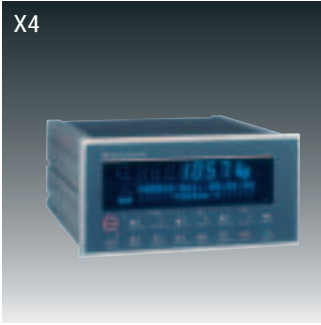
Type	Application	Approvals	Housing
Fieldbus Transmitter	Integrated Scales for Process Control Systems	W&M approval for 3000e, class III, ATEX Zone 2/22	Fieldhousing IP65, NEMA 4, NEMA 4X Aluminium or stainless steel
In-/Outputs	Interfaces	Fieldbus	Remarks
Digital 3 / 3 Analog - / 1 (0/4-20 mA)	RS232/422/485	Profibus-DP, Interbus-S, DeviceNet	SmartCalibration



Type	Application	Approvals	Housing
Process Transmitter	Integrated Scales for Process Control Systems	W&M approval for 6000e, class III	Rail mounting, IP 20
In-/Outputs	Interfaces	Fieldbus	Remarks
Digital 3 / 3 Analog - / 1 (0/4-20 mA) (option)	RS232 for Config. RS422/485	Profibus-DP (option)	SmartCalibration

Indicators / Controllers

X4



Type	Application	Approvals	Housing
Process Controller	PRO, IBC, FILL, BATCH, FLOW, PHASE etc.	W&M approval for 6000e, class III	Panel Main & Housing, Aluminium, Front IP65, NEMA 4
In-/Outputs	Interfaces	Fieldbus	Remarks
Digital 12 / 24 internal	RS232/422/485	Profibus-DP,	SmartCalibration,
Digital 256 external	Ethernet	Interbus-S,	programmable,
Analog 4 / 2	DDE- / OPC Server	DeviceNet, CC-Link	various application-software

X5 / PR 1713



Type	Application	Approvals	Housing
System Controller	PRO, IBC, FILL, BATCH, FLOW, PHASE, TRUCK, LOG, BULK etc.	W&M approval for 5000e, class III, NTEP ATEX Zone 2/22 FM Class I Div 2, Groups A,B,C,D	Desk, Wall and Front Panel Housing, Stainless Steel, IP 65, NEMA 4X (Optional Panel Mount)
In-/Outputs	Interfaces	Fieldbus	Remarks
Digital 18 / 24 internal	RS232/422/485	Profibus-DP,	SmartCalibration,
Digital 256 external	Ethernet	Interbus-S,	programmable, various
Analog 4 / 2	DDE- / OPC Server	DeviceNet	application-software



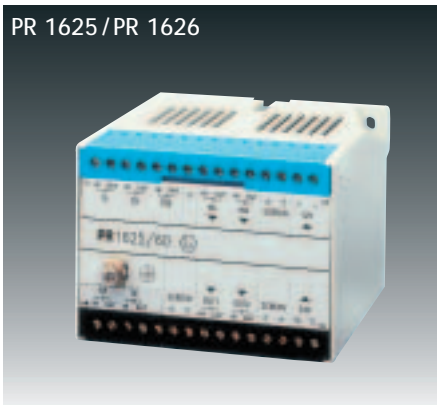
Accessories

PR 1623



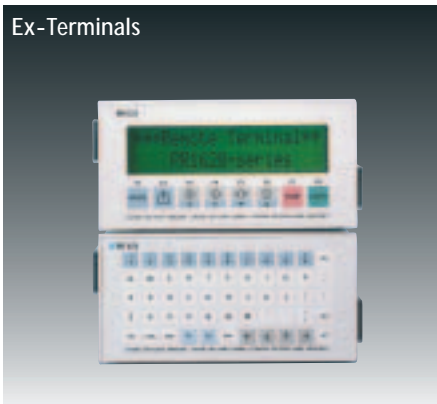
- Easy process integration for
 - X4 Process Controller with digital I/O-module PR 5510/12
- Direct switching of actuators with powerful relays
- Status indication with LED's

PR 1625 / PR 1626



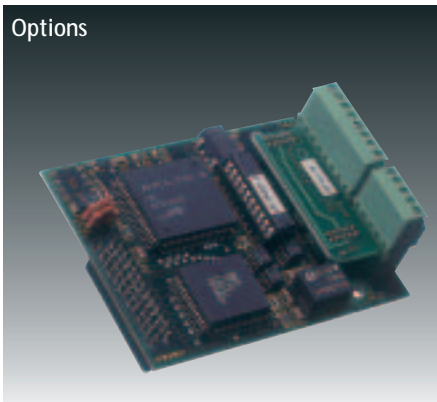
- Load cell interface PR 1626/60:
 - Intrinsically safe interface for connection of load cells in hazardous areas
 - Max. 8 load cells of 650 ()
- Approved for W&M applications (OIML R76, class III), 3000e
- Data interface PR 1625/60:
 - Intrinsically safe interface for connection of remote displays in hazardous areas
 - Bidirectional serial interface to and 2 digital inputs from the hazardous area
- Power supply 24 VDC PR 1624/00:
 - 24 VDC output
 - Supply: 110/230 VAC
 - LED operating signal

Ex-Terminals



- W&M approved remote display (slave) for indication and control
- ATEX approval (/60 versions) for operation inside hazardous area
- Rugged metal housing with IP65 front panel protection class
- PR 1628
 - display/operator language configurable
 - Additional signal inputs for process integration
 - 2-lines LCD
 - 8 function keys
 - max. 2 serial interfaces
 - printer connectable
- PR 1629/60
 - passive keyboard, 55 keys
- PR 5610/05
 - Ex-Terminal for indication and control of the controllers of the X-Family

Options



For many products from Sartorius Hamburg a wide range of options are available. If the requirements or the process changes this allows an easy extension or modification at a later stage, as needed.

- Various field bus options (Profibus-DP, DeviceNet, Interbus-S, CC-Link, ...)
- Ethernet TCP/IP
- Serial interfaces (RS 232, RS 422, 485, TTY...)
- Analog Interfaces (0 and 4-20mA, 0-10V)
- Digital I/O Extension (Relays, opto-coupler)

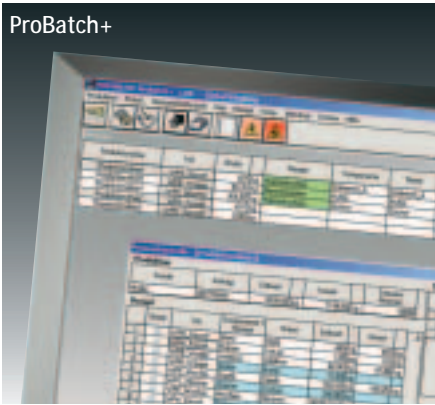
Software

PR 1750



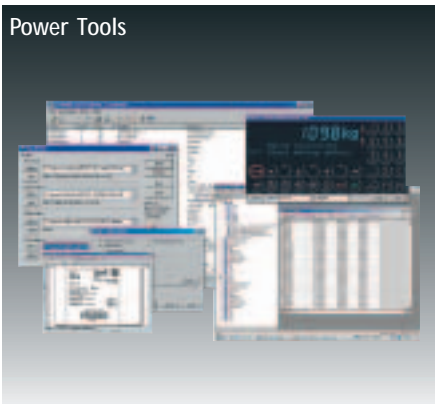
- Software / Application development tool for the X-Family controllers
- Programming in accordance to IEC-61131/3 (incl. Ladder-Logic)
- Supports Ethernet TCP/IP, DeviceNet, ProfiBus-DP and InterBus-S links
- Easy to handle project documentation tool
- Powerful debugging functions
- Several configurations and resources for one controller within a project are possible

ProBatch+



- Batch Management Software for up to 16 Batch stations (scales)
- Architecture in accordance to Batch Standard ANSI/ISA S88.01
- Simple, user-friendly operation with clear process information
- Integrated script language for special custom required functions
- Production and Batch reports, consumption statistics
- Material management and Stock control

Power Tools



The complete package of programs the System controllers of the X-Family

- **FlashIt** permits software updating at any time: the process functionality is always state-of-the-art
- **LayoutIt** supports Sartorius "Nice Label Express" for easy creation of reports and labels
- **DisplayIt** offers the possibility of displaying the system weighing controller on any Windows PC
- **TranslateIt** allows the easy translation of the operation language
- **RecoverIt** is a smart tool to backup and restore all data and parameters from the instrument
- **AccessIt** is a tool to upload, edit all tables in the controller and download them back into the controller (license required)

Sartorius Star Line Load Cells Fact Sheet: Easy Start-Up... Better Performance...Low Maintenance

- : **Calibration without weights.**
Competitor's calibration of a 50,000 lb vessel normally takes 4-6 hours, and there are usually no weights readily available. Sartorius calibration time is less than 20 minutes.
- : **No Shimming or corner adjustments.**
Most load cell manufacturers usually take 2 hours. Sartorius takes only 5 minutes, by hand rotating the load cell to determine whether or not there is load on the load cells. Only a minimal of 1 % of the load is required.
- : **No resistors or trim pots in the junction box.**
Resistors and potentiometers tend to be temperature and moisture sensitive. This can affect system accuracy.
- : **Matched Load Cells.**
All Sartorius load cells are totally matched, and can be replaced without the need for re-calibration.
- : **No influence from the effect of mixers, (moving the center of gravity).**
Due to matched load cells and unique mounting design.
- : **No side load effects due to temperature expansion of the vessel.**
Side forces are taken by the mounting kits which have freedom for temperature expansion
- : **Load Cells have lightning protection**
Special strain gage design in combination with our junction box makes it possible.
- : **Stainless steel and hermetically sealed.**
The load cells can be submerged under 5ft of water for 10,000 hours.
- : **Special load cell cable for harsh environments.**
No PVC insulation, PTFE is used for high chemical resistance and a Kevlar fiber for "Pull Protection".
- : **High impedance load cell design**
650-1200 Ohm input resistance for minimizing the effect of cabling on accuracy and higher signal under intrinsically safe conditions.
- : **NOW Limited LIFETIME WARRANTY on most STAR Line load cells.**
- : **Load cells remain within all specifications up to a usable load of 150-200% of nominal.**
- : **All controls are designed with a built-in test function and can be "calibrated without weights".**
- : **We offer a wide range of weighing and batching solutions, from simple indication to complex batching systems.**
- : **Corporate Member of the World Batch Forum.**





The "X-Family" Controllers

A Versatile Range to
Control the Industrial
Weighing Process

You're in control – with the “X-Family”

Unrivalled product quality and affordability

Sartorius is one of the leading manufacturers of industrial weighing equipment worldwide. As a first class supplier, we have more than 50 years of experience in industrial process weighing technology. Our high standards of quality and manufacturing are well known in the industrial market. Sartorius products have always been among the best available, proving in everyday use their reliability, ruggedness and accuracy.

Offering a maximum of functionality at an economical price, this new generation of controllers sets a high standard for control and display in the industrial area.

Packed with features

At Sartorius, we understand the importance of ease of operation. That's why we've included a number of quality features in our “X-Family” Controllers, enabling the utmost ease of handling.

The intelligent design concept offers useful functions to ensure smooth, low-maintenance operation and simple every day handling.

- A multitude of built-in applications offer simple solutions for processes such as batching, recipe control, filling, loss-in-weight or truck scales.
- The intuitive menus and clear keyboard design allows easy, user-friendly operation.
- The controllers offer a variety of mounting and installation options, such as desktop, wall mounting or panel mounting.

Powerful functions for the “X-Family”

From installation and commissioning, built-in functions ensure smooth mounting and trouble-free operation. The safety of your plant and processes will be enhanced with the X-Family controllers from Sartorius.



Our experienced specialists have developed a large number of practical features to enhance the ease-of-use of your process control. They are:

- **SmartCal** allows scale commissioning without time-consuming calibration with test weights.
- **FlashIt** enables software updating at any time: the process functionality is always state-of-the-art.
- **LayoutIt** provides utmost ease of layout design for delivery notes, reports or labels.
- **DisplayIt** offers the possibility to display and operate the controllers of the "X-Family" on a PC.
- **RecoverIt** allows to backup all data of the system controllers.
- **AccessIt** offers the possibility to store, display and edit all tables of the system controllers on a PC.

High-Tech innovations for better control of the process

Due to a manufacturer-independent programming concept, all Sartorius Controllers can be matched easily and conveniently to a large variety of requirements. A worldwide standard programming language according to IEC 61131 with extensive library functions and specific weighing variables enable access to the full functions of the instrument.

The "X-Family" from Sartorius offers the widest range of communication possibilities ever available for a scale. Application in partial processes or within autonomous systems frequently requires extensive communication of control commands or, of weighing and related data. Connection to all commercially available fieldbus systems ensures uncompromising integration into different control and superordinate systems. Additionally, an optional Ethernet interface permits connection with a supervisory PC.



Three controllers – one great concept

X4 Process Controller

The programmable Process Controller built into a compact housing, for simple integration into process solutions.

With a front dimension of 7.7 x 3.6 inches, the X4 offers easy mounting to enclosures, panels and operating stations. It also enables the exchange of existing devices.

Approved for W&M applications the X4 Process Controller offers in addition to the basic weighing functions a variety of interfaces and communication functions including industrial fieldbuses as options.

The rugged X4 Process Controller follows a coherent operation concept. The weight display with 7 digits guarantees good readability even under harsh conditions. Softkeys guide the operator through the menus of the application.

The input of alphanumerical characters uses a second level of the keys. An external PC-keyboard socket enables ease of data entry, if required.

X5 System Controller

The flexible design of the X5 System Controller means it can be used either as a desktop, wall mounted or panel mounted placement.

The stainless steel housing offers a high degree of protection (IP65, eq. to NEMA 4). Models for use in Zone 2,22 (ATEX) or Class I, Div 2 (FM) and NTEP approval are available.

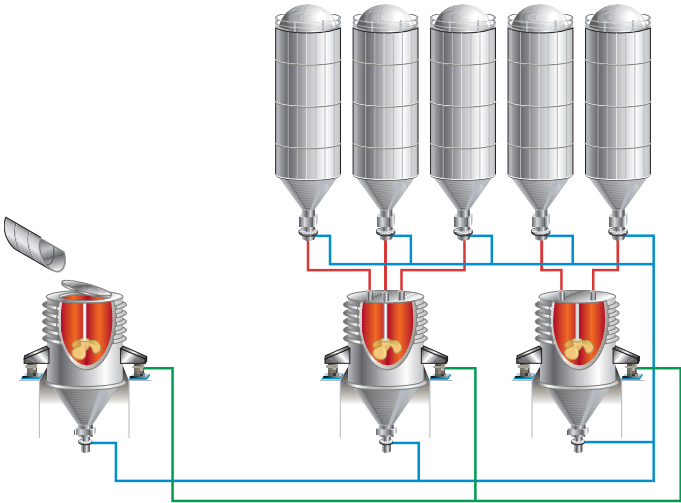
The powerful X5 controller is available with predefined applications or can be freely programmed using IEC61131.

If used for control of filling and batching processes, for raw material and product storage applications or for truck scales – the X5 System Controller offers an economical solution to your process. It can also be used for individually defined tasks with one or two weighing points.

A connection to a host system is possible with minimum cost. The operation is intuitive utilizing the front keypad or an external PC-keyboard. The X5 System Controller can also be operated via serial interface or an Ethernet connection from a PC using our DisplayIt program.



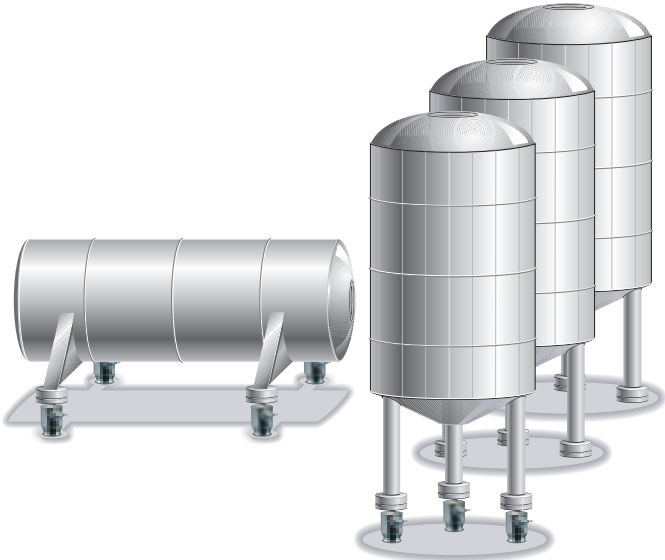
State-of-the-art system technology
for all requirements



Flow/Batch/Recipe control



Filling and discharge processes



Raw material and product storage

Testimonials:

"General Electric in Berlin has chosen products from Sartorius because professional consultancy during the planning and design phase guaranteed the trouble-free integration of the load cells and mounting kits into the rest of the system.

The weighing system forms an integral part of the production management system and supplies accurate and reliable data about the contents of the vessels

For the end-user this results in benefits like high process reliability and long life for the equipment."

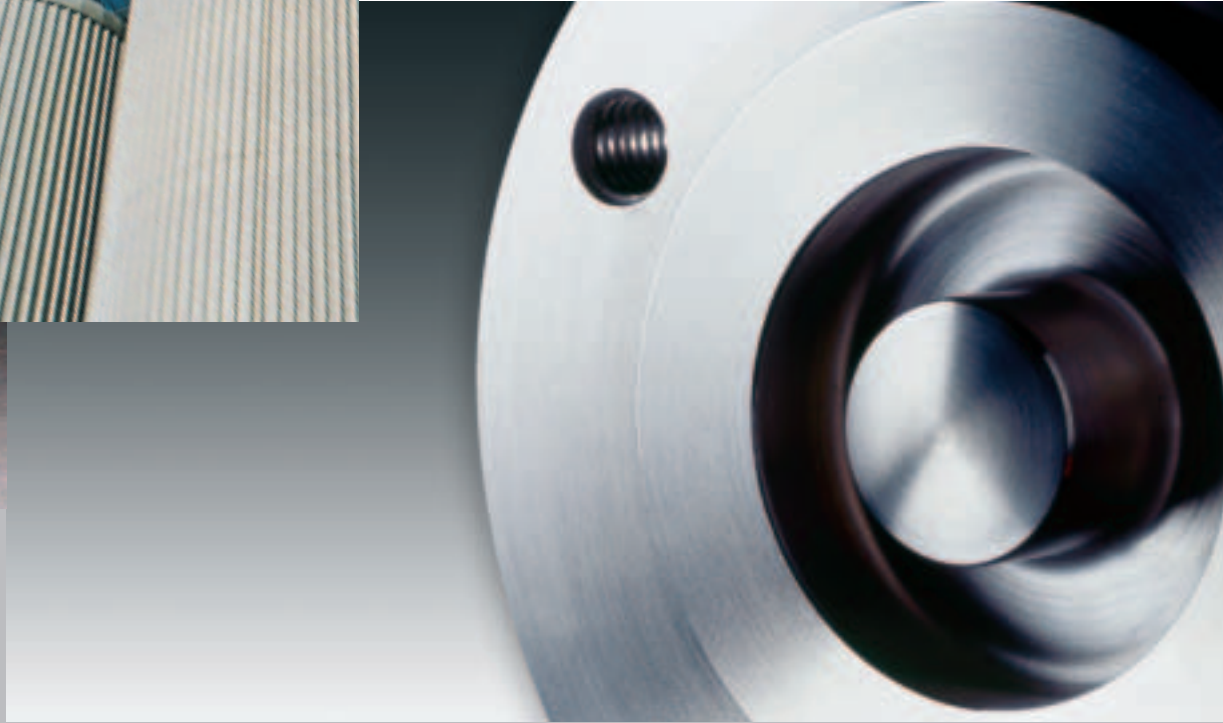
(Frank Ludley, GE Industrial Systems)

"In our Asphalt Plants we use load cells and electronics from Sartorius.

We have chosen Sartorius because the SmartCalibration feature is so accurate that no further calibration with product is required."

(Hans Adam, Benninghoven GmbH & Co.)





PanCake Level Cell

**A small solution
to a big problem!**

The most reliable solution for level control in tanks, silos, vessels.

The right solution to your level control requirements. Advanced Sartorius PanCake Technology for level-by-weight applications offer the user extreme ruggedness and durability. They offer the utmost precision in virtually all applications, independent of material properties and environmental conditions.

Retrofitting, is fast and easy. Tried and tested in many installations throughout the world, Pancake level cells are available at very affordable price.

Extremely accurate.

Conventional level control instrumentation can lead to errors of 5 % and more. In extreme cases this could result in interruption of the associated process.

New PanCake level-by-weight technology gives accurate readings better than 1 % in "real-life" applications – over the complete range of capacities of up to 50 t net content.

No Compromises.

The new Sartorius PanCake system offers not only superior technical advantages, it also offers exceptional value for the money. Compared to Ultrasonic or Radar systems, savings of up to 50 % are possible.



Extremely reliable and 100% maintenance free.

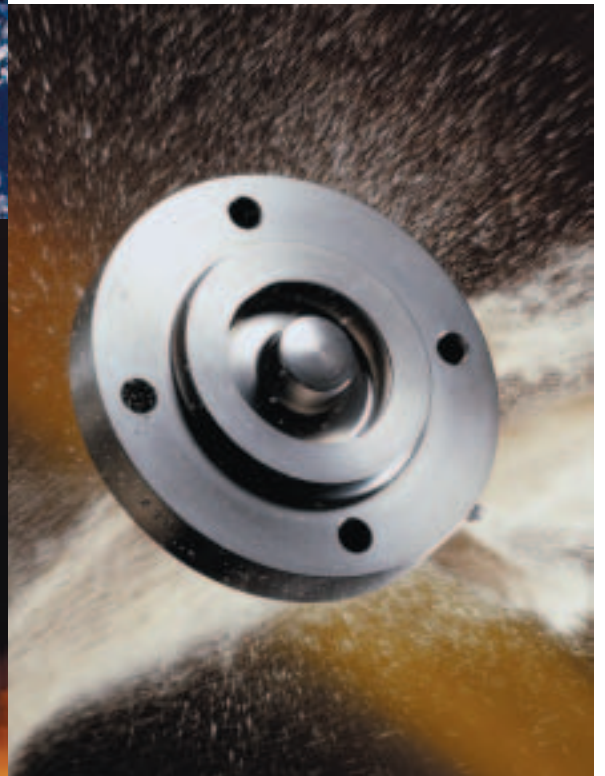
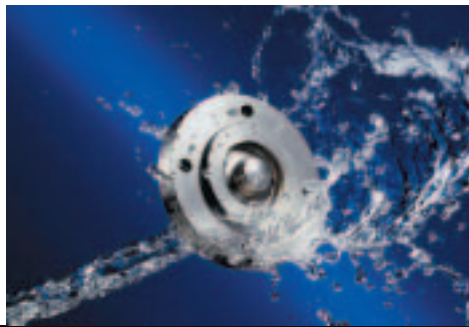
The rugged design of the Sartorius sensors through the use of high quality materials results in unrivalled reliability, even under harsh industrial conditions. Maintenance or recalibration of the sensor is not required, except when mechanical changes to the vessel are detected.

The high-quality sensor keeps its calibration for decades, without drift, aging or creepage.

The stainless steel housing is hermetically sealed by welding and complies to the highest IP rating (IP 68, 10000 hrs, 1.5 meters/5 ft.) equivalent to NEMA 6.

Accurate and affordable.

Sartorius PanCake technology is extremely accurate, competitively priced, easy-to-use, durable and maintenance free. They offer the best value for the money.



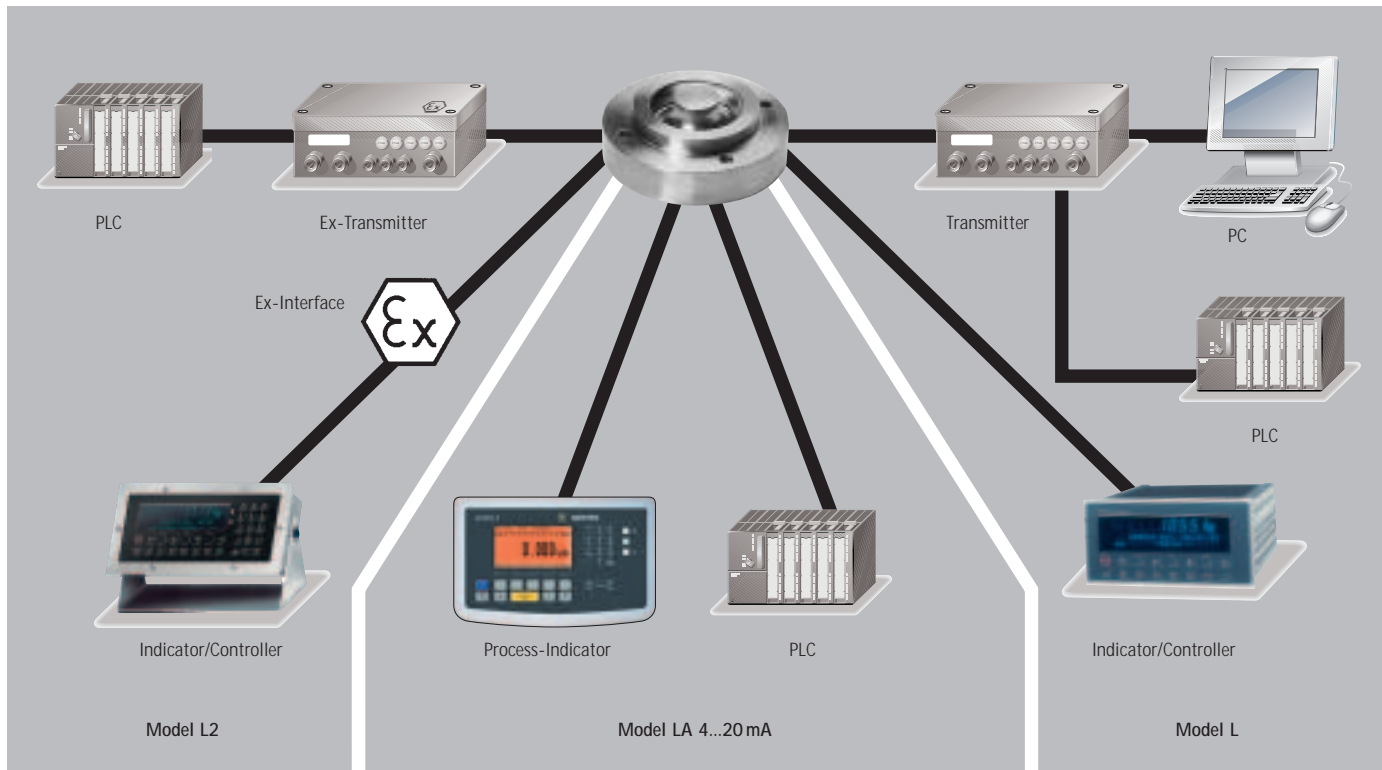
System capabilities at a glance:

Configuring your system is easy with Sartorius process equipment. The model LA provides 4...20 mA output for direct connection to process instrumentation or PLCs/DCS. The model L

featuring mV/V output are connected via our vast range of transmitters and indicators.

Usually only one PanCake is required (three legs). If two PanCakes are used

(4 legs) you still need only one input channel in your PLC or Process Indicator by simply switching the two outputs in parallel.



Common level control systems in comparison:

The performance of conventional level control instrumentation is rarely better than a glimpse into the tank or a blow with a hammer. Ultrasonic, Radar and many other systems suffer from a wide range of application related problems:

rotating mixer blades, varying shape of material cones and vessels are the stumbling blocks of one-dimensional height measurement instead of real content determination. Specific material properties like particle size, foam,

reflection properties, vapor and dust or material sticking to the walls and the equipment add to the complications. In comparison, only Sartorius PanCake level-by weight technology is non-intrusive and provides extremely reliable results for your needs.

Measurement method	Solids			Liquids		
	free flowing/granular	fine powders/dust	coarse/lumpy	volatile	foaming	viscous/adhesive
Radiometry	+	+	+	+	+	+
Radar	?	?	?	+	+	+
Ultrasonic	?	?	?	?	-	?
Hydrostatic	+	+	-	?	?	?
Displacement	-	-	-	?	?	
PanCake	+	+	+	+	+	+
Feasibility of use:	+ optimal	? under certain conditions		- not suitable		

Source: VDI/VDE 3519, page 1+2.

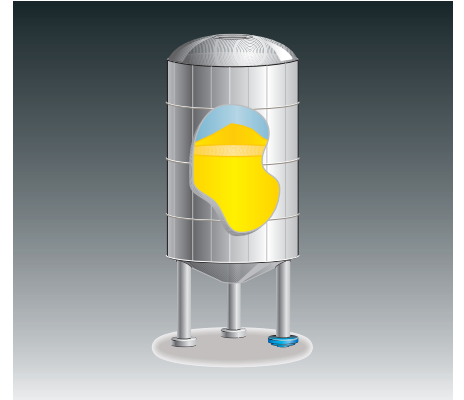
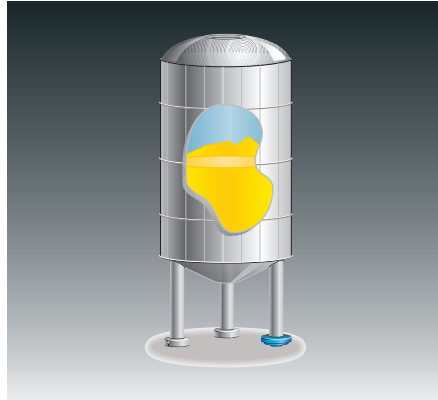
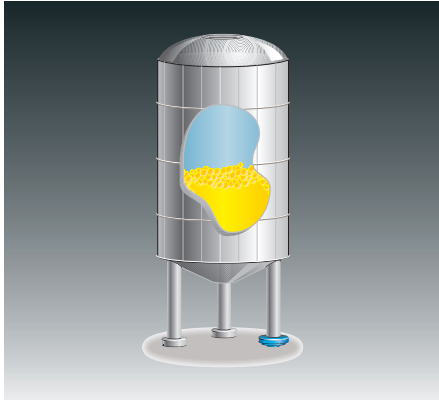
Application notes and further information available on request.

The sensor that does it all.

The new Sartorius PanCake level-by-weight technology determines the actual

content of a vessel directly in kilograms. It provides reliable readings independent

of the material measured.



Example 1:

Formation of foam and bubbles, phase transition and evaporation may affect others – not PanCake.

Example 2:

Material sticking to the wall of the vessel, variable moisture content and deviations in particle size – PanCake gets it right.

Example 3:

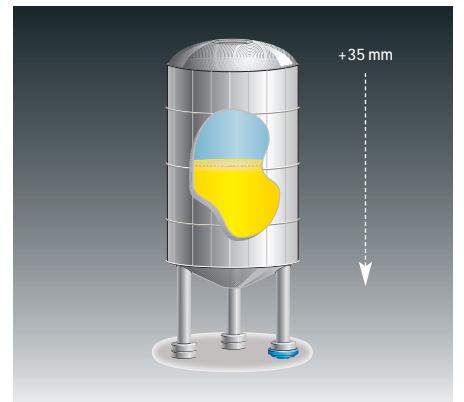
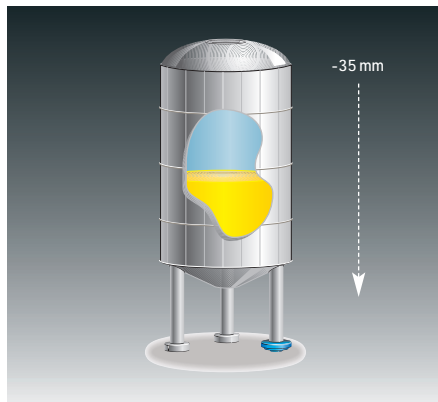
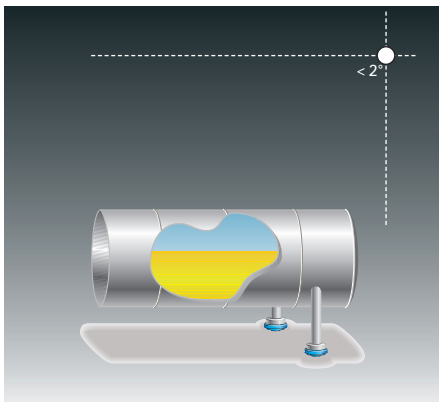
Material cones from filling or discharging can't affect readings of PanCake.

Easy to install.

It's simple and straightforward: Just lift one leg of the vessel for a little more than an inch, slide the PanCake into the

gap and your ready to go. In many instances you can install the unit without additional mounting kits

or complicated mechanical conversion of the vessel or changes to the pipework.



Example 1:

The vessel is lifted at one side only. The resulting inclination is in many cases usually small enough so as not to disturb the readings.

Example 2:

One leg of the vessel is shortened by an inch. No inclination occurs.

Example 3:

The vessel is lifted leg-by-leg. One leg to be supported by a PanCake. The other legs are leveled out by simple shimming plates.

N.B.: Use one PanCake only for vessels with 3 legs, or 2 PanCakes for vessels with 4 legs.

Testimonials:

" Because black is NOT just black, particularly in our varnish production, highest repeatability and reliability is essential... 24 hours a day, 365 days a year... Even under demanding operating conditions we've been able to rely on Sartorius blending vessels for more that 10 years now."

**(Ing. Rene Watschinger,
Engineering Manager, DuPont
Performance Coatings)**

" BASF has commissioned in Schwarzheide a production site for pesticides that is in line with the highest technical standards. For this plant the weighing systems had to be customized. The mounting kits were modified according to the specific requirements of BASF."

BASF has chosen Sartorius because Customer Integration, i.e. the active co-operation between supplier and customer is one of the fundamental working principles of the company"

**(Werner Hoffmann, Department
Weighing and Dosing BASF)**





Sartorius ProBatch+

**New Dimensions in
Recipe Management**

The flexible approach to automatic batch processes

System architectures

ProBatch+ can be used in a wide variety of applications. It offers highly powerful and extremely adaptable recipe management utilizing its scalable system architecture, with pre-programmed controllers from the X-family and the use of open standard interfaces. Connection to the "X-family" controllers can take place in the following ways:

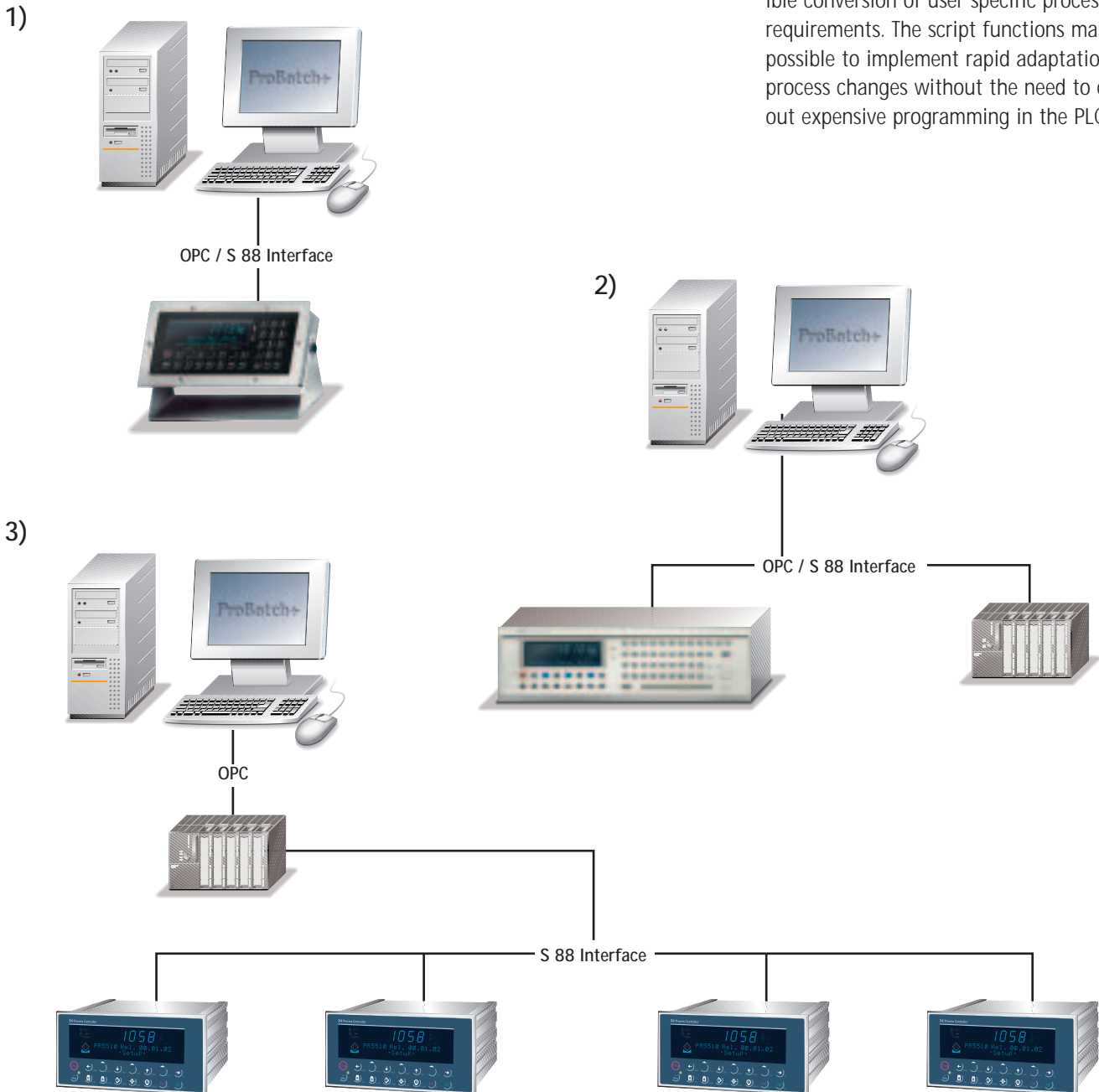
- 1) Direct serial connection or via the Ethernet. Recipe steps are pre-programmed functions of the controller.
- 2) Recipe steps can be carried out directly on a PLC.
- 3) Indirect connection via an PLC. In this way, PLC functions can be synchronized easily using the controller's pre-programmed batch functions.

Connection using established standards

Communication between ProBatch+ and controllers takes place using OPC in accordance with ANSI/ISO S88.01 Batch Control Standards. In order to connect to visualization systems, dynamic data is supplied via DDE and OPC. For transfer of production data to an ERP System the SQL and ODBC database interfaces can be used. This consistent use of established standards simplifies connection, reduces commissioning times and costs.

Script function

The script language integrated in ProBatch+ can be used for easy and flexible conversion of user specific process requirements. The script functions make it possible to implement rapid adaptations to process changes without the need to carry out expensive programming in the PLC.



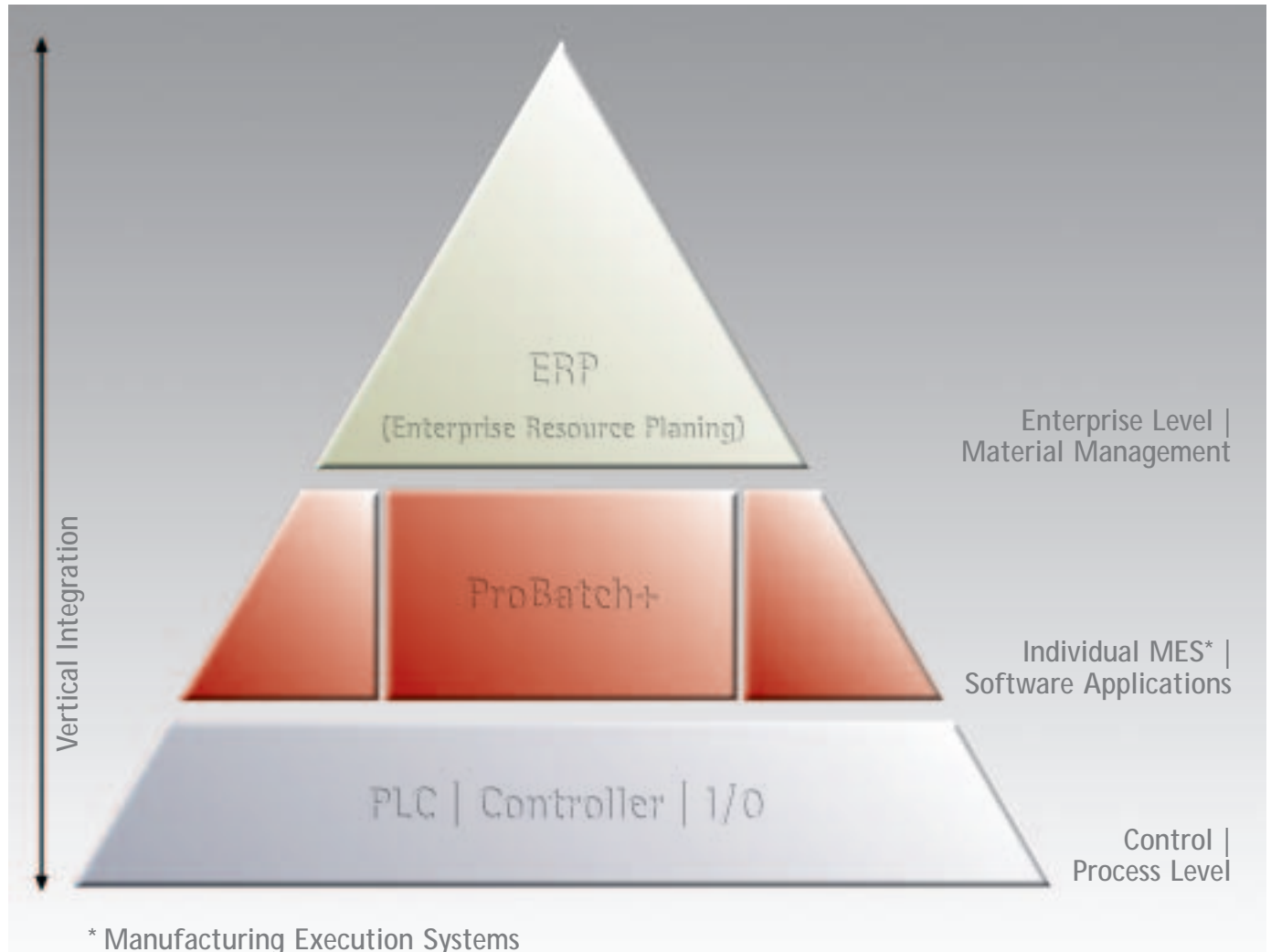
ProBatch+ – New dimensions in recipe management

Manufacturers in the cosmetics, chemicals and food industries today have to cover a wide variety of products and at the same time react quickly to changing market conditions. In addition, high safety standards and legally required traceable batch records must be met.

The ProBatch+ recipe and production management system offers many advantages due to its advanced features and extreme flexibility. Its easy installation and commissioning are unique, as is its intuitive operation. ProBatch+ runs under Windows and uses the powerful MS Access database to manage large quantities of raw material, recipe and production data, easily and securely.

Substantial time and cost savings are achieved through ease of handling and operation. Fast operator training of the ProBatch+ user assures safe operation. Automatic execution of the program guarantees extreme reliability and exact reproducibility. Universal record-keeping of production data provides for the fulfillment of batch record traceability.

The scalability and flexibility of ProBatch+ guarantees high investment security including future expansion.



Highly efficient software for the production process

Production management

With ProBatch+ several batches of a recipe can be executed within one production run. Production plans can be prepared for each process line individually and can be started both automatically or by the user. At any time the user has a clear overview of the entire production process and can intervene when necessary. By means of an integrated security system several users with different access rights can be logged on. This prevents misuse by an unauthorized operator and avoids unnecessary batch faults.

Recipe management

The intelligent recipe management of ProBatch+ enables it to define recipes in the well-known Windows user interface, even when there are special procedure steps, such as mixing, heating, cooling, etc. In addition, recipe steps can execute powerful script functions for the synchronization of process steps or for the display of user dialogs.

Material management

ProBatch+ can manage a large number of materials pertaining to a production line. With only a few operator steps, raw material quantities used and recipe quantities produced can be recalled and reviewed. Automatic stock monitoring is included. Material tracking with three freely selectable batch parameters and one data field can be activated optionally.

Report management

At the end of every recipe run ProBatch+ generates batch and production reports. Material management makes available reports on consumption, production quantities and stock levels. All reports can easily be individually adapted as needed.



With ProBatch+ weigh the advantages

1. Easy installation

The installation of all necessary programs takes place using one single Windows installation routine. Quick, safe and secure.

2. Easy commissioning

The implementation of data specific to the installation is given in clear material and recipe tables. Connection of the controller is set out in a few configurable steps.

3. Easy operation

The user-friendly operator interface provides a clear presentation of the process conditions. Thanks to its simple, understandable operation, the Recipe Manager is easy to operate. Several languages are already incorporated into the system. The integration of these languages underscores the versatility of ProBatch+.

4. Easy connections

It is particularly easy to connect the ProBatch+ Recipe Manager for visualization or for goods management using established system standards. All production data, such as raw materials, consumption, recipes and records are safely stored in a Microsoft Access database. The use of this common database offers the advantage of exchanging production data over standardized interfaces. In this way goods, economic systems or other Enterprise Resource Planning (ERP) systems can easily be connected.



Testimonials:

"Accuracy and security are vital to our manufacturing processes. We batch perfumes and aftershaves using an Automated Batching System from Sartorius. The system combines compression load cells with the PR1740 Recipe Manager. The Recipe Manager hardware connects to our Wide Area Network, giving us total control over the process and ensuring the recipes are secure.

Our batching process has been such a success that it has now been implemented in the Netherlands and we're expanding the site in Ireland to increase its capacity"

(Kevin Coyle, Engineering Manager, International Flavors and Fragrances)

" VTA GmbH, a renowned System Integrator, has chosen Sartorius Batch Controllers because of their flexibility to adapt to our processes.

For the future this means if the process changes, there is no need to change the instrument. The controller can adapt to the change by a simple modification of the application software."

(Torsten Chwoika, VTA GmbH)





Combiics Industrial Scales

**30,000 steps ahead
of the competition**



Combics Industrial Scales. Diversity redefined.

5,000 or 30,000 digital steps, floor or bench, stainless or painted steel, or any combination of the above can be described in a single word: **Combics**. Indicators from basic to custom, clean room to submersible, weight-only to process control... It's the same word: **Combics**. In fact, you may not have a weighing need outside the universe of **Combics** industrial scales.

Consider the advantages in every sector of your business. Operationally identical scales from 10 pounds to 10,000 pounds covering your production needs, quality control, research and warehouse. Every application from parts counting, to batching, sorting or checkweighing, all with functional similarities so that anyone can operate any scale in any department. Diverse operations seamlessly integrated into a single product line: this is the world **Combics** has redefined.

But complete operational integration is only the beginning of the **Combics** story. Accuracy levels unheard of in the industrial scale market ensure your weighing flexibility does not compromise your production standards. At 30,000 digital weight steps, when used with the **Combics** indicator, readability is up to five times more precise than traditional scales.

Combics platforms are built to last, with optional 316 stainless steel base construction and ultra-sanitary electropolished weighing surfaces. Every weighing base meets IP65 washdown standards. Optionally, you can equip both base and indicator for the more stringent protection of IP67 or NEMA4X. If safety is paramount, add a painted steel or stainless steel treadplate.

The extended weighing ranges of **Combics** make it perfect for, but not limited to, the following industries:

- Pharmaceutical
- Chemical
- Electronics
- Food and food processing
- Metal production and processing

Government and industry standards met by **Combics** performance and/or construction include:

- HACCP
- FDA
- NEMA
- GLP/GMP

Combics accessories are designed to simplify—not complicate—installation. Pit frames ensure proper dimensional criteria are maintained in flush-mounted floor applications. Floor-mounted post display columns keep indicators away from potential damage, or you can use the panel mount kit to integrate the display into existing control boxes.

Combics Weighing Components

(1) Indicators: All stainless steel enclosures with IP44, 65 or 67, or NEMA4 or 4X protection levels.

Choose from a basic gross/net/tare device, over/under, function toggling, memory weighing, or alphanumeric keyboard and graphic display of calculated results. All three feature backlit LCD readouts with a puncture-resistant indicator face.

(2) Bases: Capacities from 10 to 10,000 lbs and up to five-foot square base dimensions, with protection ratings of IP65 or IP67, or NEMA4 or 4X.

Basic construction includes a galvanized frame with stainless steel weighing surface (low capacities) or painted steel frame and weighing surface (high capacities). 100% stainless steel is available on all models in 304 or 316 grade and one or four load cells depending on capacity and desired configuration. Add roller conveyors or low profile ramps to complete the package.

Sartorius has not forgotten our loyal customers who already own high-resolution electromagnetic bases. The new **Combics** indicators are fully compatible with high-resolution IS bases. Expanding your Sartorius scale portfolio to include **Combics** does not mean company employees need to learn two systems. **Combics** scales cover the range from one milligram to 10,000 pounds.



Combics Painted Steel Platforms

The cost-effective solution for industrial weighing is Combics painted platforms. One or four load cell designs have ample overload protection to keep your production moving and profits growing. Ten foot (low capacity) and twenty foot (high capacity) load cell cables for connection to indicators are included. Construction high-lights:

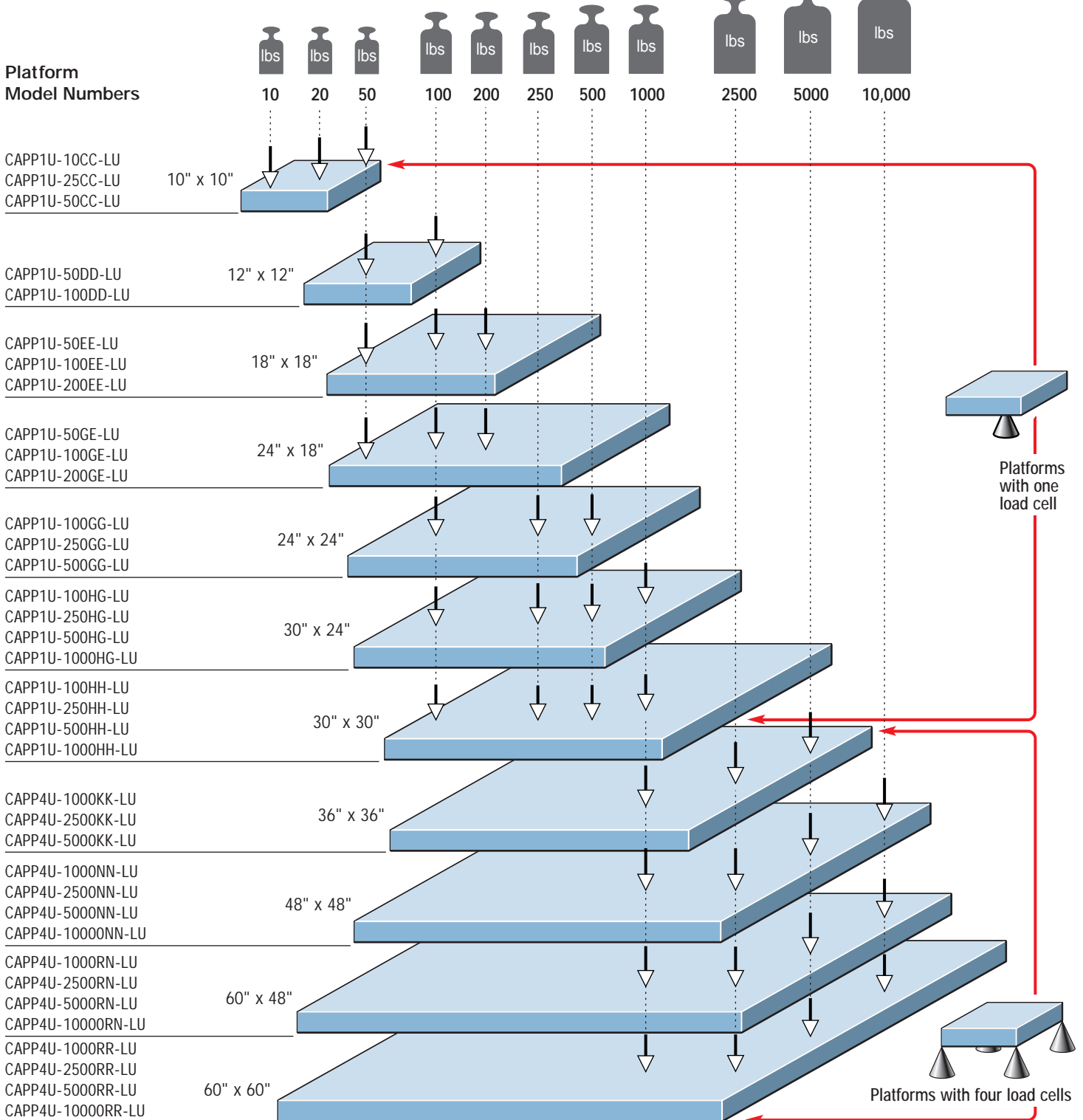
Standard Construction

- Zinc-plated steel frame (low capacity)
- 304 stainless load plate (low capacity)
- Painted steel frame and load plate (high capacity)
- IP65/NEMA4 dust and water protection

Optional Construction

- 304 stainless load plate (high capacity)
- Painted steel treadplate (high capacity)

Platform Model Numbers



Combics Stainless Steel Platforms

Corrosion resistant stainless steel bases stand up to heavy usage and caustic environments. All scales larger than 20 inches feature four load cell systems. Substitute a 316 stainless steel frame and load plate for excessively caustic environments. Use a pneumatic lift platform for easy cleaning in sanitary applications. Construction highlights:

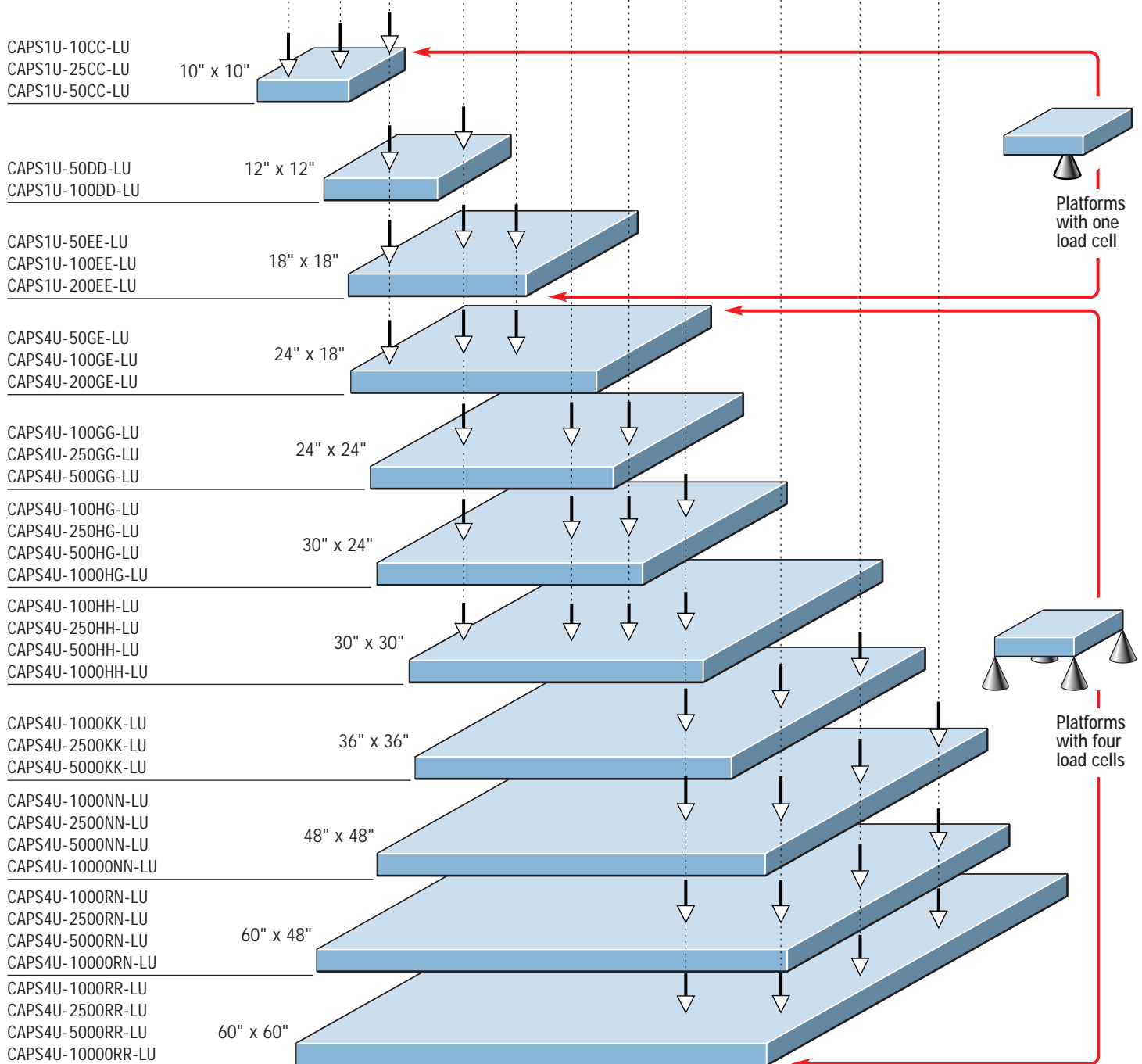
Standard Construction

- 304 stainless frame and load plate
- IP67/NEMA4X dust and water protection

Optional Construction

- 316 stainless frame
- 316 stainless electropolished load plate
- 304 stainless treadplate (high capacity)
- 304 stainless pneumatic lift platform system (high capacity)

Platform Model Numbers



Combics Indicators

The perfect match for a Combics base is, of course, a Combics indicator, offered in four keyboard styles that keep basic weighing fast and complex operations running smoothly. Combics allows you to address your current needs while dramatically increasing your weighing precision.

The secret to weighing accuracy is the ability to complement the characteristics of the weighing platform. The extreme accuracy of the analog to digital circuitry in Combics indicators matches perfectly the requirements of the Combics base. Combics bases and indicators are made for each other. We at Sartorius applied all our years of experience with high-resolution balance applications, with their millions of displayed and accurate

steps of resolution, to the design and production of Combics Scales. The result is a highly accurate and stable match of weighing platforms and indicators with unmatched resolution.

Whether your needs are basic or sophisticated, Combics indicators are ready to answer the call. Combics 1 gross/net/tare indicators are not only affordable but available with full water and dust protection.

The Combics 1Plus is a perfect indicator for simple weight-only applications where tare values need to be entered manually. It is also perfect for applications where simple weighing needs to be accompanied by traceable ID that can be entered via the integrated keypad.

Combics 2 indicators create the perfect checkweighing or parts counting system with available dual scale interface and tolerance test indicator lights. Combics 3 makes user input and prompts easy with the alphanumeric keypad and graphic display. Using the "FlexPrint" feature ensures compatibility with virtually any printer or format.

All four indicators are enclosed in stainless steel housings and include an RS-232 COM port for serial communications. Auto tare, weight unit toggling and printer head storage are standard features on every Combics indicator.

Combics 1



Catalog No.: CISL1U
Protection Rating IP44
or Protection Rating IP65/ NEMA4 (with upgrade YAS01CISL)

Catalog No.: CISU1
Protection Rating IP67/NEMA4X

Important Features:

- (1) Keys for ON/OFF, zero, tare and print data output
- (2) Function key for
 - Gross/net toggling
 - Toggling between weight units
 - Toggling to 10X higher resolution
- (3) Automatic container taring
- (4) Battery charge status display (with connection of battery pack)

Combics 1Plus



Catalog No.: CISL1N
Protection Rating IP44
or Protection Rating IP65/ NEMA4 (with upgrade YAS01CISL)

Catalog No.: CIS1N
Protection Rating IP67/NEMA4X

Important Features:

- (1) Numeric keypad with 2 "ID" for entering identifier codes and preset tare.
- (2) Info key for quick and easy display of tare input and ID codes
- (3) Automatic container taring option
- (4) Date/time fully integrated
- (5) GMP printable record
- (6) Capable of using NICE Label Express "FlexiPrint"

Combics 2



Catalog No.: CISL2U
Protection Rating IP44
or Protection Rating IP65/ NEMA4 (with upgrade YAS01CISL)

Catalog No.: CISU2
Protection Rating IP67/NEMA4X

Important Features:

All features of Combics 1 plus:

- (1) Platform toggling and four function keys
- (2) Three built-in LED checkweighing lights
- (3) Date/time (printout)
- (4) Bar graph weighing range indicator
- (5) Application data and totalization memory stored in battery-backed RAM

Combics 3



Catalog No.: CISL3U
Protection Rating IP44
or Protection Rating IP65/ NEMA4 (with upgrade YAS01CISL)

Catalog No.: CISU3
Protection Rating IP67/NEMA4X

Important Features:

All features of Combics 1 and Combics 2 plus:

- (1) Dot matrix graphic display
- (2) Alphanumeric keypad
- (3) Key for toggling between weighing applications, and five soft keys with text supported user guidance
- (4) Input functions for entering up to four alphanumeric ID texts

Refer to the Combics Scales Guide and Price List for a complete listing of all platform and indicator accessories.

Applications:

- (1) Counting
- (2) Checkweighing
- (3) Differential Weighing
- (4) % Weighing
- (5) Gross-Net-Tare
- (6) Sorting
- (7) Totalizing
- (8) Animal Weighing

Custom Applications for Combics 3 only:

- (1) Single component batching BASIC
- (2) Single component batching PRO



Designed for Convenience.
Nothing is out of reach with Combics weighing systems. Mount your indicator in any manner that fits your job. Use the post-mounted display for eye-level filling or a base-mounted checkweigh weighing indicator. Wall-mounted displays provide “across the room” readability or integrate into other control systems using the optional panel mount installation.

No matter where you place your indicator, be confident visibility will never be an issue. Nearly one-inch high LED weight-indicating digits are clearly viewed from any angle. Even in a dark-ened room environment or behind tall warehouse shelves, the backlit amber display cannot be missed. Outdoor uses in direct sunlight will not “wash out” the weight or other display data.

Tough as Nails.

With all its precision, Combics is right at home on the production floor. Determine the smallest flaws or inconsistencies in process samples. There is no need to interpolate columns of numbers. Get results at a glance using the built-in under/OK/over indicator checkweigh lights.

With Combics, you are not restricted to a single capacity/platform combination. Use the size that is appropriate for your samples: larger for bulky lightweight samples or smaller for dense metallic items. Either way, you never sacrifice the precision you need simply because your samples are too large to fit on traditional scale bases.



We're ready to help you wherever you need us

Under the umbrella of the Sartorius Group, the business segment called Process Weighing & Control is represented in a global network – for sales and distribution, technical service and research.

Each geographical location combines the expert knowledge in process weighing, quality assurance and metal detection into one organization under the Sartorius brand.

This combination makes us an even more capable partner in optimizing your processes.

Our goal is to offer you not only tailored products for your application, but also increasingly process- and value-added consultation services and solutions. Whether IFS, ATEX or GAMP, we have expert knowledge of the latest standards and can offer you high-quality products and service packages that meet the legal regulations applicable to your systems – from weighing platforms and scales to

controllers and software solutions.

To summarize: Sartorius combines our expertise as process specialists, going by the motto:

"Weigh | Detect | Control".

Total Care Service from a single source

To us, service means:

- Providing you with expert advice right from the start concerning applications in weighing and process engineering
- GLP/GMP-compliant equipment qualification – IQ/OQ/PQ
- Logging the weighing results and certifying your weighing equipment
- Offering first-rate repair, exchange and spare parts services
- Providing online services
- Conducting product training courses



Testimonials:

"The products of Sartorius are ideally suited for use in the pharmaceutical industry: great reliability, good consultancy and project Management."

**(Falk Borsutzki, Engineering,
Wisktoffe Lantus Aventis)**

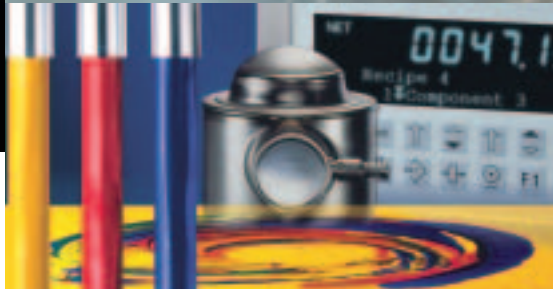
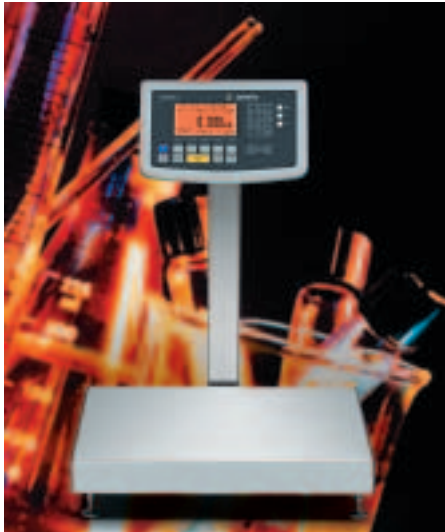
..."The load cells offer fantastic reliability and that minimizes our downtime."

In fact, we're still using the same load cells that were installed fifteen years ago, we've never had to replace them.."

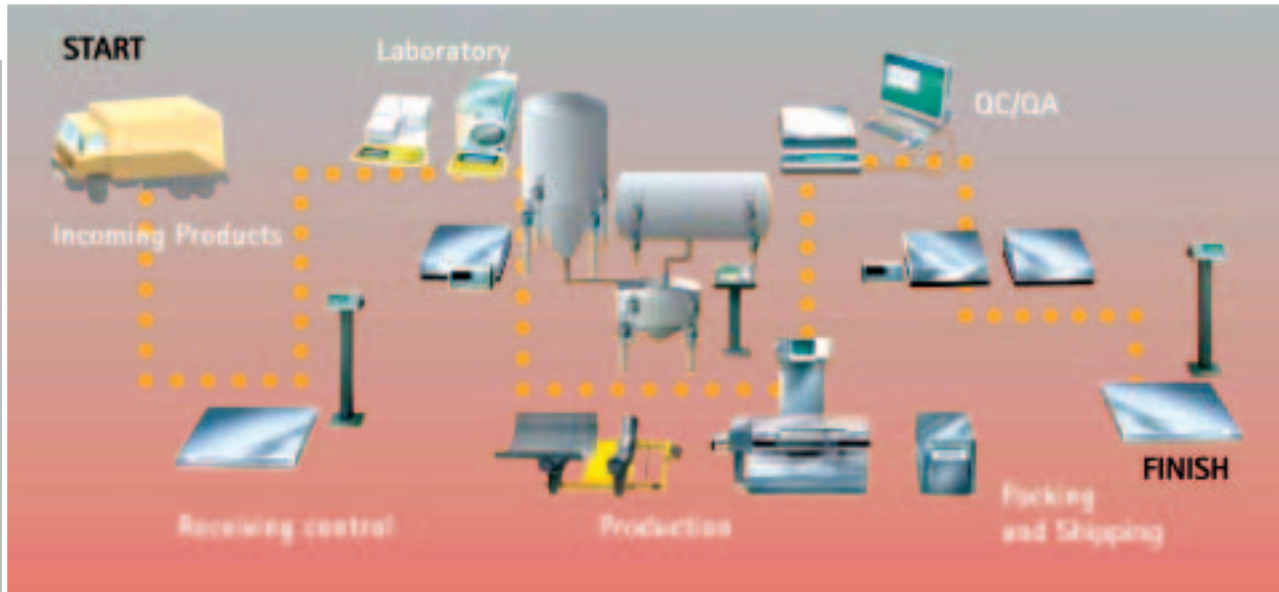
**(Kevin Coyle, Engineering
Manager, International Flavors
and Fragrances)**

"The Sartorius equipment helps ensure that Guinness tastes great wherever you are in the world..."

**(Emon McDonagh, Guinness
Ireland Group)**



Laboratory, Industrial and Process Weighing



From Start to Finish

- Lab Balances
- Precision Scales
- Platform Scales and Indicators
- Explosion Proof Scales
- Moisture Analyzers
- Tank and Hopper Weighing
- Bulk Inventory/ Silo Weighing
- Batching
- Level by Weight
- Dynamic High-Speed Checkweighers
- Metal Detectors

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