



## MIX-X5 System Controller



- Manual and semi-automatic batching for up to two scales
- Freely selectable execution of recipe lines
- Raw material ID verification
- Raw material batch reporting
- Scale freely selectable prior to starting components
- Bargraph display during batching
- Dialog instructions in the recipe
- Operator management with PIN
- Automatic compulsory logout
- Set-point recalculation after overshooting or undershooting tolerances
- Orders can be interrupted during processing
- Serial or Ethernet data connection
- Label and report printer

The MIX-X5 is a scale controller with integrated recipe and order management for the execution of recipes requiring manual weighing and semi-automatic batching.

The MIX-X5 was developed to support legislation and Standards, such as the requirements of IFS (International Food Standard) and GAMP (Good Automated Manufacturing Practice) in the food, cosmetics and pharmaceutical industries. The MIX-X5 is basically installed as a stand-alone system in manual batching (dispensing) processes.

The design and performance of this batching solution is based on the sector-specific requirements of the process industry. The variety of functions and the modular nature of the MIX-Controller, coupled with its ability to integrate customer-specific requirements via free programming, facilitate a comprehensive, universal batching solution.

### Application

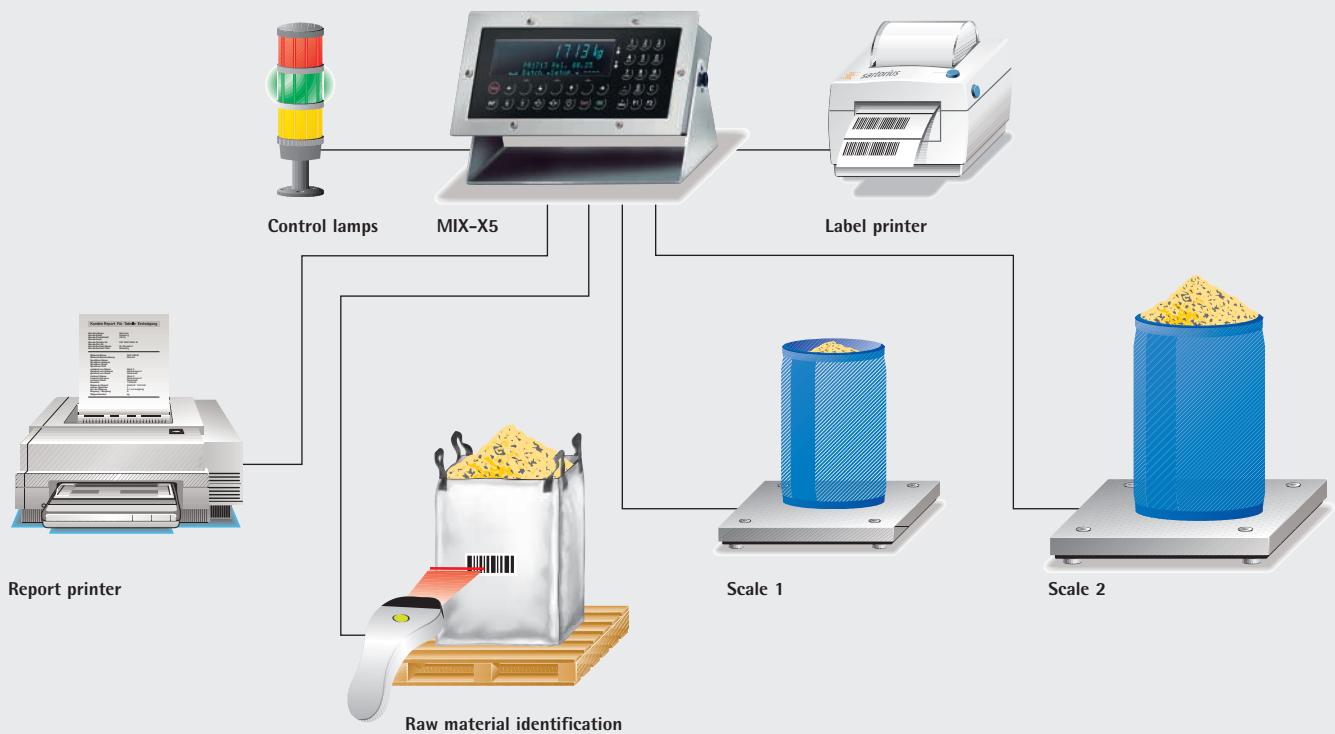
Raw materials are weighed out manually or semi-automatically in many production processes where recipe management is used. Various raw materials are batched in individual containers or in a common container and processed in further steps, such as heating, mixing, cooling and fermenting. These process procedures form part of a single recipe. The operator freely selects the recipe to be executed and the components to be batched but is directed and supported by the MIX-X5 in accordance with the requirements of the process. The Controller operates independently and can exchange data via a serial or Ethernet connection and in this way makes production data available to a master MES System.

### Regulations and Standards

Whilst offering a high degree of flexibility in terms of product variety, manufacturers in the food and cosmetics industries must also take into account high safety standards and legally regulated accountability. EC Directives, IFS and GAMP demand traceability across all stages of the production process. At the same time, not only must the raw material batches be systematically traceable but the process steps and operators must also be fully identifiable.

### Reporting and Documentation

For these reasons it is necessary to set up comprehensive reporting and documentation of the individual process steps. With operator identification, material ID verification, raw material batch reporting and diverse label printing and reporting the MIX-X5 provides the production process with a high degree of transparency. In addition the precise execution of process steps is guaranteed, in accordance with prescribed regulations and consistent with the recipe.



### System Design

The modular design of the MIX-X5 Controller facilitates a variety of application options. Typically, one or two platform scales with a variety of weighing ranges are connected to the Controller. One scale can be connected digitally, the other analog. Operator inputs can be entered via the Controller's keypad or via an external keyboard. A scanner can also be connected via the keyboard interface for quick and easy input of raw material data. A Sartorius signal lamp, which displays the batching status (Under, In, Over Tolerance), can be controlled via internal relays on the MIX-X5 (option).

Label or line printers can be operated simultaneously via serial interfaces for the printing of labels and the output of reports.

### Flexible Data Connection

Furthermore, data can be exchanged with a master PC system via the serial interface or Ethernet. Weighing reports can be loaded directly into an MS Access database with the aid of the Sartorius "AccessIt" power tool. The data connection can also be wireless (WLAN - Wireless LAN). In this way, process data can be transmitted by radio from the dusty production area to the service or office area.

### The System Controller

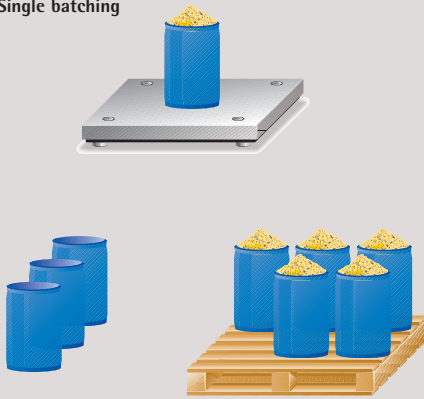
The robust design in stainless steel also facilitates installation in difficult environmental conditions. Serial RS232 interface and PC keyboard connections are built-in as standard. In addition the basic version of the MIX-X5 is supplied with a 1MB extended memory und 2 further serial interfaces (RS232+485). Extra digital and analog inputs/outputs can be supplied as an option.

### The Weighing Process

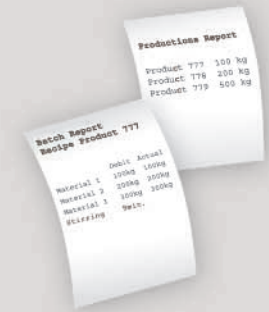
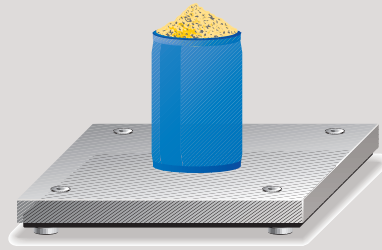
Prior to operation the user has to identify himself or herself to the Controller and log in with a PIN number. There are various user profiles, such as Administrator, Supervisor and Operator, for which various functions have been enabled or locked. The entry of the PIN for the user access function can be de-activated if required.

A job is created for every batch to be produced, which contains the recipe, starting quantity, number of starts and additional comments, such as product name or customer. After a job has started the operator selects a recipe line for execution. As an option, compliance with the recipe line sequence can be enforced (configurable). The operator can select the scale prior to starting the recipe line, provided that this has not been predetermined. Once the recipe line has started, the material identification can be verified and the raw material batch number read in via a scanner.

### Single batching



### Mixture

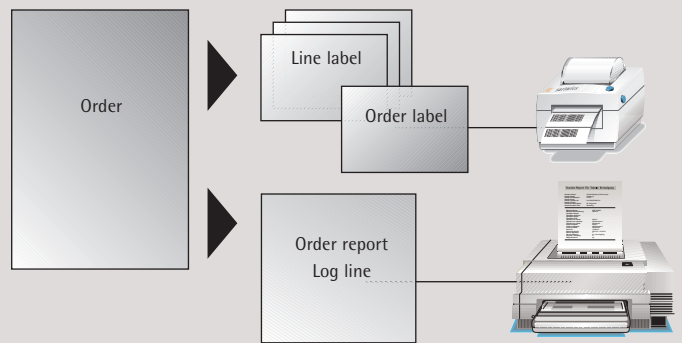


### Recalculation

Example:

Component	Setpoint	Setpoint-new	DIFF	Actual
Material 1	80	81		15 (=96-81)
Material 2	50	60	+20%	
Material 3	40	-		48
Material 4	60	-		72

Note: Material 1 within tolerance, material 2 is above tolerance value!



Manual batching is supported by a bargraph display. When the operator has confirmed the end of batching, the tolerance check is carried out and subsequently the label and corresponding report line are printed. Labels can be configured directly in the equipment and can also be precisely adapted to the customer's requirements with the aid of an extra software tool.

Jobs can be interrupted, for example to heat, stir or ferment the batched mixture in another part of the production plant, prior to adding further components to the mixture using the MIX-X5. Other jobs can be executed by the MIX-X5 Controller in the meantime. After the whole job recipe has been processed a job label is produced.

### Semi-automatic Processes

In the case of semi-automatic processes the operator selects the recipe line and starts the batching process. Subsequently the batching valves are controlled automatically via coarse/fine output signals. Tolerance checks and overshoot correction take place in the same way as in automatic batching.

### Recalculation

Recipes can be executed either as individual or mixed batches. If a tolerance threshold is exceeded in the case of a mixed batch this creates a problem in that the excess raw material cannot simply be removed, as in the case of individual batching. In order to prevent incorrect batching and waste, all set-points are automatically extrapolated in proportion, by means of a so-called recalculation, such that the mixture is restored to specification following renewed batching. Of course, this function can be deactivated for validated processes.

### PowerTools

Sartorius PowerTools offer a complete package of powerful PC programs for the System Controllers of the X-Family:

- FlashIt enables direct software updating
- LayoutIt NiceLabelExpress driver for formatting printouts
- DisplayIt enables remote control of the MIX-X5 from the PC screen
- TranslateIt facilitates the editing and loading of various languages
- RecoverIt saves all equipment data to a PC
- AccessIt for loading and editing the Controller's databases on the PC

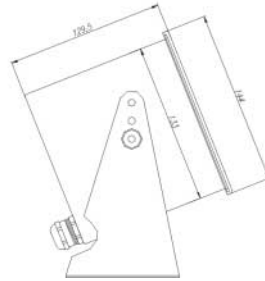
### Multiple Advantages

Using the MIX-X5 guarantees that process steps are executed precisely and in accordance with prescribed specifications. Exact batching of the smallest quantities is carried out efficiently. As a consequence a high level of recipe security and consistent quality are guaranteed. At the same time there is a cost reduction due to savings in raw materials and the prevention of waste, particularly when the recalculation feature is used.

The software was developed under cover of a certified management system in accordance with ISO 9001. Furthermore the MIX-X5 enables various legislation and regulations to be met in respect of traceability, with the aid of the operator security system, material ID verification, reporting of the raw material batches used and detailed labeling and production reporting. Many applications can be validated as a result.

Due to its high degree of flexibility and modular design the MIX-X5 is also equipped to respond to new demands in the future.

## Technical Data MIX-X5



### Power supply

115/230V  $V_{AC}$  50-60Hz or 24V  $V_{AC/DC}$   
Max. 19W / 25VA

### Housing

Stainless steel DIN 1.43 01 (B.S. 304)  
Ingress Protection: IP 65 eq. to (NEMA: 4X)

### Order information

Type	Description	Order number
PR5610/60	MIX-X5 230V	9405 156 10601
PR5610/61	MIX-X5 24V $V_{AC/DC}$	9405 156 10611
PR5610/62	MIX-X5 Ex-Zone 2/22 (230V)	9405 156 10612
PR5610/63	MIX-X5 Ex-Zone 2/22 (24V)	9405 156 10631

### Options

			SLOT	1	2	3	4
PR1713/05	RAM Memory Extension 1MB	9405 317 13051					inclusive
PR1799/99	W&M Approval Labels (1 set)	9405 317 99991					
PR8901/81	Internal Alibi Memory (Licence)	9405 389 01811					
PR8001/01	X-Family PowerTools	9405 380 01011					
PR1713/31	Extended EW Commands	9405 317 13311					
PR1792/20	AccessIt Licence	9405 317 92201					
PR1713/91	Panel Mounting kit	9405 317 13911					
PR1792/13	OPC Server Licence	9405 317 92131					
PR1713/04	Serial interface card (RS 232/485)	9405 317 13041		o	x	o	
PR1713/06	Analogue Output 0 / 4 - 20 mA	9405 317 13061	*	o	o	o	
PR1713/07	1 Analogue Output / 4 Analogue Input	9405 317 13071	*	o	o	o	
PR1713/08	BCD 24 out, 1 in	9405 317 13081				o	
PR1713/12	Digital 4 In- / 4 Output, Opto/Opto Ouput: 31 V, 25 mA	9405 317 13121		o	o	o	
PR1713/13	DIOS-Master (add. Software required)	9405 317 13131				o	
PR1713/15	Digital 4 In- / 4 Output, Opto/Relais Output: 31V, 1A	9405 317 13151		o	o	o	
PR1713/17	Digital 6 In- / 8 Output, Opto/Opto Ouput: 31V, 25mA	9405 317 13171		o	o	o	
PR1721/11	Profibus-DP interface	9405 317 21111					o
PR1721/12	Interbus-S interface	9405 317 21121					o
PR1721/14	DeviceNet interface	9405 317 21141					o
PR1713/14	Ethernet interface, 10MBaud	9405 317 13141					o

o = optional, x = included in delivery

The documentation will be delivered on a CD, a paper version can be ordered separately.

\* max. 1 Analogue Output Card

### Display

7-Digit plus status symbols  
text: 2 lines, 20 characters

### Interface

Bi-directional serial interfaces RS 232;  
user selectable protocols: Remote Display,  
Printer, XON, Jbus, XBPI, ModBus, Dust 3964R

### Linearity

< 0.007%

### Resolution

Max. 330,000 div. (internal)  $\hat{=}$  0.11  $\mu$ V/d  
Usable stepwidth 0.4  $\mu$ V/d

### Accuracy

5000e class III acc. to EN 45 501;  
OIML R 76min. verification interval 1.0  $\mu$ V/e;

### Load cell input

6- or 4-wire  
Load cell supply: 12V  
Impedance: min. 750hm,  
E.g. 8 load cells with 6500hm

### Measuring principle

Ratiometric integrating A/D converter  
Conversion time: 50ms  
Update: 100ms to 2s,  
adjustable in 100ms steps  
Digital filter 0,1 to 5Hz

### Input signal range

Net range 2.4mV to 36mV  
(for 100 % maximum capacity)  
Tare range: 0... 33.6mV

### Temperature influence

Live zero  $T_{k_0}$ : < 0.1  $\mu$ V / K RTI  
Span  $T_{K_{spn}}$ : < 0.006% / 10 K

### Environmental conditions

#### Temperature range

Operation: -10°C to +40°C  
Storage: -40°C to +70°C

### Electrical safety

According to IEC 61010-1

### Vibration

According to IEC 600-68

### Electrostatic discharge

According to IEC 61000-4-2

### Supply line

According to IEC 61000-4-4

### Electromagnetic fields

According to IEC 61000-4-3

### Radio interference

According to EN 55011

Sartorius Hamburg GmbH  
Meiendorfer Straße 205  
22145 Hamburg, Germany  
Tel. +49.40.67960.303  
Fax +49.40.67960.383  
www.sartorius.com

Specifications subject to change  
without notice.

Printed in Germany.

n/sart • C

9498 756 10001

Version 12.2004