

Type 8922 Batch Controller ME43, ME63

Software for dosing liquids



Operating instructions - Software

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1 ABOUT THESE INSTRUCTIONS

The instructions describe the basic operation of the batch controller. Store the instructions and keep them available for consultation, and forward them on to the next user.

Safety information.

You can find safety information and information about the use of communication devices or products in the relevant operating instructions.

Failure to observe these instructions may result in hazardous situations.

► The operating instructions must be read and understood.

1.1 Validity of the instructions

These instructions are valid for the batch controller.

1.2 Symbols

DANGER!

Warns about a danger that will result in death or serious injuries.

WARNING!

Warns about a danger that may result in death or serious injuries.

Warns about a danger that may result in mild or minor injuries.

ATTENTION!

Warns about material damage that may damage the product or system.



Indicates important additional information, tips and recommendations.



Refers to information in these operating instructions or in other documentation.

- Designates instructions to avoid a danger.
- > Designates a procedure which you must carry out.
- Designates a result.

Menu Symbol for software interface texts.



1.3 Terms and abbreviations

The terms and abbreviations in these instructions represent the following definitions.

Device/product	Batch Controller Type 8922
büS	Bürkert system bus; a communication bus developed by Bürkert, based on the CANopen protocol
EDIP	Efficient Device Integration Platform is a modular digital device platform developed by Bürkert that enables intelligent networking of devices and industrial processes

The terms batch and dosing are used synonymously in these instructions.



2 INTENDED USE

The software has been designed for controlling and regulating liquid media, in combination with Bürkert devices. Improper use of the batch controller may be hazardous to people, nearby equipment and the environment.

- ▶ When using the device, observe the authorised data, operating conditions and usage conditions for the relevant devices or products specified in the contract documents and in the operating instructions.
- Only use the software in connection with third-party devices and components that have been recommended and approved by Bürkert beforehand.
- Correct installation, and careful operation and maintenance, are essential to ensure safe and trouble-free operation.
- Only use software as intended.

3 GENERAL NOTES

3.1 Contact address

Germany

Bürkert Fluid Control Systems Sales Centre Christian-Bürkert-Str. 13-17 D-74653 Ingelfingen Tel. +49 (0) 7940 - 10-91 111 Fax +49 (0) 7940 - 10-91 448 Email: info@burkert.com

International

You can find the contact addresses at <u>country.burkert.com</u> in the "Contact" menu.

3.2 Information online

Further product-related information at country.burkert.com



4 PRODUCT DESCRIPTION

4.1 General description

The batch controller is exclusively configured using the Bürkert Communicator.

The batch controller is used to detect and calculate flow signals as well as other input and output signals.

For example, the input signal for starting, pausing and cancelling the process, and the quantity selection, can be coupled via IO module, an EDIP display or a PLC.

4.2 Intended area of application

The "Batch Controller" software extension was specially developed for dosing liquids and is compatible with the ME43 and ME63 gateways.

It is important to ensure that the ME43 or ME63 gateway has the required technical prerequisites and the corresponding version of firmware so that the batch controller software extension can be used successfully, see chapter <u>"6 Batch software activation (ME43, ME63)"</u>.



ME63

Only devices that have the following laser marking can use the specific software extension.



Fig. 1: Laser marking ME63

4.3 Functions

ME4x output modules or valves with büS connection are required to control valves for exact dosing of the predetermined quantities.

The calculation is based on a precise recording of the current flow and the totalling or recording of the quantity using büS-compatible sensors (FLOWave) or via IO module (Impulse). For example, dosing can be performed in grams or kilograms if the FLOWave is used with active mass flow measurement.

It is possible to save max. 30 logs thanks to an update to the batch controller (see chapter <u>"11 Batch Con-troller update"</u>). Using a memory card makes it possible to increase the number of logs (see chapter <u>"13 Batch logs"</u>).

5 BÜRKERT COMMUNICATOR PRINCIPLES

5.1 General

The Bürkert Communicator software allows the comfortable configuration and monitoring of applicationspecific parameters.

When a device is connected to the Bürkert Communicator, it is displayed in the navigation area of the Communicator. Every device has a device menu, via which the device is configured.



The Bürkert Communicator can be downloaded free of charge from the Bürkert home page. In addition to the Bürkert Communicator, the "<u>USB büS interface set</u>", which is available as an accessory, is also required.



The operating instructions for the basic functions of the software can be found on the Bürkert home page: <u>country.burkert.com</u> \rightarrow Type 8920.

5.2 Connecting the device to the Bürkert Communicator

- \rightarrow Install Bürkert Communicator on the PC.
- \rightarrow Set the terminating resistor (on the büS stick, device or external terminating resistor).
- \rightarrow Use the USB-büS-interface set to establish the connection between the device and the PC.
- \rightarrow Start Bürkert Communicator.
- \rightarrow In the menu bar, click the symbol +3 for Add interface.
- \rightarrow Select the büS stick.
- \rightarrow Click finish.

The connection between the device and Bürkert Communicator is established, the device is displayed in the navigation area.



6 BATCH SOFTWARE ACTIVATION (ME43, ME63)

The batch software is an integral part of the ME43 gateway software (from version A.9.2 onwards) and ME63 gateway software (from version A.2.1 onwards). The software can be enabled via Bürkert Communicator (from version 6.2.3 onwards) at any time, even for test purposes.

The function on the device can only be used for one hour without a valid licence key. After this period, the function is disabled. The device must be restarted.

When a valid licence key is obtained, the function can be enabled via the Communicator for the device (see chapter <u>"18 Licence activation"</u>).



Before you start setting up and configuring the batch controller, it is important that you connect all the required devices to the büS, pre-configured and supplied with power.

6.1 Input devices

- ME61 Process Control Display (from version A.4.0)
- PLC
- DI module for gateway used (if necessary for connecting push-buttons)

For example, the Communicator itself can also be used as an input device for start-up.

Important

⁷ Only 1 input device can be used at any time.

6.2 Flow sensors

- büS-capable flowmeter
- · Configured DI module for gateway used with connected flow sensor (e.g. Bürkert paddle wheel)

6.3 Output signals

- Pre-configured valves that can be controlled via büS
- Configured DO modules (to which valves are connected)

If all prerequisites have been fulfilled, all required devices are displayed in the Communicator (see <u>"Fig. 2: Illustration of the connected devices</u>").



Fig. 2: Illustration of the connected devices



6.4 Enable the batch function

The batch function is part of the firmware on the ME43 and ME63 gateways. The batch function is enabled and configured in Communicator via the device menu on the gateway.

- \rightarrow Select gateway and click on "*f*(*x*) configuration".
- → If f(x) function is still not displayed, select "New function f(x)" and then "Batch" (see "Fig. 3: f(x) configuration").



Fig. 3: f(x) configuration

 \rightarrow The name of the f(x) function is preassigned with the designation "Batch".

Assignment of a specific name allows for precise allocation and management of data, particularly if several batches are present in the system.

- \rightarrow Click continue.
- \rightarrow Perform device restart.
- \rightarrow Click finish.
- Batch function enabled

GCOMMUNICATOR File Device Edit Options Tools		← → C
ß		Diagnostic deactivated
숚 Start page	f(x) configuration	
Desktop		$\blacksquare \blacksquare \blacksquare \blacksquare \blacksquare $ New function $f(x) +$
Graph	Batch	
Datalogger	Batch Test 1 $f(X)$ $f(X)$	
- 🗇 büS-Offline		
+ <u>↓</u> 8DI 009 8DI ME44	92 Parameters	
+ 1 8DO 012 8DO ME44		
+ 16DI 004 16DI ME64		
+ + + C VI 013 AirLINE 8652		
+ + +C FM 014 AirLINE 8653		
+ 4C V 015 CablePlug 8605		
+ CablePlug PWM 016 CablePlug PWM 8605		
+ C FW 010 FLOWave 8098		
_ Gateway - Indus 011 Gateway ME43		
f(x) f(x) configuration		
_{fx} ទ Test 1		
Industrial communication		
Web server		
General settings		
+ Process Control Display ME61		

FLUID CONTROL SYSTEMS

Fig. 4: Batch function enabled

7 OBJECT OVERVIEW

7.1 Use the controller commands

The batch controller can save up to 7 recipes. If the target volume is larger than 0, it will be shown on the ME61 Display.

Controller commands:

Function	Batch control hex	Batch control decimal	Bit0 0x01 Start	Bit1 0x02 Pause	Bit2 0x04 Stop	Bit3 0x08 (Recipe bit 0)	Bit4 0x10 (Recipe bit 1)	Bit5 0x20 (Recipe bit 2)	Bit6 0x40 (not used)	Bit7 0x80 (not used)
Start/Resume selected recipe	0x01	1	1	0	0	0	0	0	x	x
Pause batch	0x02	2	х	1	0	х	х	х	х	х
Stop batch	0x04	4	х	х	1	x	х	х	х	х
Start recipe 1	0x09	9	1	0	0	1	0	0	х	х
Start recipe 2	0x11	17	1	0	0	0	1	0	х	х
Start recipe 3	0x19	25	1	0	0	1	1	0	х	х
Start recipe 4	0x21	33	1	0	0	0	0	1	х	х
Start recipe 5	0x29	41	1	0	0	1	0	1	х	х
Start recipe 6	0x31	49	1	0	0	0	1	1	х	х
Start recipe 7	0x39	57	1	0	0	1	1	1	х	х
x=reserved (=0)									



7.2 Process control of the batch

Description of process automation/process control and the transitions



Status	Description
Initialisation	Initial state of process automation/process control and
	the transition to standby as soon as all producers have been found and f(x) is
	running.
Ready	Batch controller normal state
	Indication that no errors have occurred. Dosing can be initiated.
Running	Dosing process active.
Stopped	Dosing process paused by user.
	Dosing process can be resumed.
Error	Serious error during the dosing process.
	Dosing process cannot be continued
	(f(x) General Error, Invalid Parameter, Backflow, Unexpected Flow).
Interrupted	Dosing process interrupted by error (Producer not found, no flow, timeout
	during dosing).
	Remedy error.
	Dosing process can be resumed with the start command.
Cancelled	Dosing process cancelled by user.
	Dosing process can be resumed.
Finished	Dosing process completed.
	All valves closed.



7.3 Batch object description

7.3.1 Batch inputs

Object 0x254X Batch control

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Batch control	Unsigned8	0	х	х	х

A recipe can be selected, the dosing process started, paused/resumed and stopped via "Batch control".

Batch control								
Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	
Start	Pause	Stop	Recipe bit 0	Recipe bit 1	Recipe bit 2	Not used	Not used	

Important

⁷ Detailed information at: chapter <u>"7.1 Use the controller commands"</u>

Object 0x254X Flow

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Flow	Real32	0	х	х	x

Flow rate value in I/min or kg/min (depending on the sensor).

Object 0x254X Target quantity manual

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Target quantity manual	Real32	0	х	х	x

For a manual recipe (freely chosen target quantities), the previously saved value will be overwritten by this value.

This value/(the unit) is transferred in litres or kg (depending on the sensor).



7.3.2 Batch outputs

Object 0x250X NAMUR Status

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	NAMUR status	Unsigned8	0	х		х

NAMUR status	
0 – Diagnostics active	3 – Out of specification
1 – Error diagnostics active	4 – Function check
2 – Maintenance required	5 – Fault or error

Object 0x250X Valve output

Sub-index	Name	Data type	Default	Access		PDO
				Read	Write	mappable
0x01	Valve output	Unsigned8	0	х		х

Output for controlling all on/off valves (control depends on configuration in the wizard and connected valves).

Object 0x250X Totaliser

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Totaliser	Real32	0	х		x

Totaliser of the current dosing process in I or kg (depending on the sensor).

Object 0x250X Batch state

Sub-index	Name	Data type	Default	Access		PDO
				Read	Write	mappable
0x01	Batch state	Unsigned8	0	х		х

Status of current dosing process

Batch state	
0 – Initialisation	4 – Error
1 – Ready	5 – Interrupted
2 – Running	6 – Cancelled
3 – Stopped	7 – Finished



Detailed information at: chapter <u>"7.2 Process control of the batch"</u>

Object 0x250X Batch error state

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Batch error state	Unsigned8	0	х		x



Batch error state							
Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
General error	Producer not found	Dosing timeout	Recipe parameter invalid	No flow	Reverse flow	Unexpected flow	Not used

Object 0x250X Proportional valve 1

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Proportional valve 1	Real32	0	х		х

Output for controlling proportional valve 1 (actuating variable [0-100%] can be set via this object)

Object 0x250X Proportional valve 2

Sub-index	Name	Data type	Default	Acc	ess	PDO
				Read	Write	mappable
0x01	Proportional valve 2	Real32	0	х		х

Output for controlling proportional valve 2 (actuating variable [0-100%] can be set via this object)

Object 0x250X Proportional valve 3

Sub-index	Name	Data type	Default	Access		PDO
				Read	Write	mappable
0x01	Proportional valve 3	Real32	0	х		х

Output for controlling proportional valve 3 (actuating variable [0-100%] can be set via this object)

7.4 Batch controller integration into a PLC/process control system

Observe sequence:

→ Create gateway configuration or download from the <u>website</u>. Note: The current gateway configuration will be overwritten when importing the batch gateway configuration.

 \rightarrow Run batch wizard. Select inputs and outputs required.

 \rightarrow Manually map further optional batch objects.

7.5 Configuration examples

Example	Predefined recipe	Manual recipe
Task	Start recipe 3.	Set individual dosing quantity and initiate dosing process.
Precondition Recipe 3 is configured.		Batch setup has been successfully
	Batch setup has been successfully completed.	completed.
Procedure	→ Set batch control 0x19 (0b00011001).	 → Enter desired target quantity in "TargetQuantityManual". → Set batch control 0x39 (0b00111001).
Result	Dosing started using recipe 3.	Solution Dosing started using manual recipe.



8 VALVES AND THEIR FUNCTION

8.1 Valve arrangements

Overview of valve arrangements (called scenarios below) supported by the batch controller.



Fig. 6: Overview of possible scenarios

Depending on the application, the valves can be connected via a DO extension module or a büS network. The wizard helps make setup easier (see chapter <u>"10.1 Batch setup – run wizard"</u>)

The following section describes the valve arrangements for the batch applications being considered and how they work.

- x = valve available
- = valve not available

Valve	Dosin	g valves	Selection	n valves 1)	Drain valve
scenarios	Dosing valve	Dosing valve with high flow	Medium valve 1	Medium valve 2	
1	х	-	-	-	-
2	х	-	-	-	-
3	Х	-	х	-	-
4	Х	-	-	-	х
5	х	-	X ²⁾	-	-
6	Х	Х	-	-	-
7	-	-	X ³⁾	X ³⁾	-
8	-	-	х	х	-
9	_	_	Х	х	х
10	х	Х	Х	-	-

With valve scenarios 6 and 10 it is possible to use 1 proportional valve, e.g. an electromotive valve, and configure it accordingly instead of 2 on/off valves for a large or a small flow.

¹⁾ Medium selection

²⁾ Robolux

³⁾ Selection valve = dosing valve



Scenario Description Figure The dosing valve is installed after the flow 1 sensor. The flow sensor is permanently filled with medium. Dosing val 2 The **dosing valve** is installed before the flow sensor. Dosing valve The flow sensor is permanently filled with medium. Flow met 3 The line with the flow sensor is filled via the medium valve 1. The dosing valve is installed after the flow Medium valve sensor. Dosing valve 4 The **dosing valve** is installed before the flow sensor. Dosing valve The flow sensor is permanently filled with medium until the drain valve is opened. 5 This scenario is tailored to suit Robolux valves ⁴⁾. If no dosing occurs, the medium valve 1 is opened so that the flow sensor permanently has medium flowing through. During dosing, the medium valve 1 is closed and the dosing valve opened. Dosing valve ۵

8.2 Description of the valve scenarios

⁴⁾ The valve programme is based on the patented Robolux technology, wherein the diaphragm actuates two crossbars. With this concept, dead spaces are avoided and the flow volume is reduced.

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6	Dosing valve and dosing valve with high flow are valves with different nominal diameters or openings. Both are installed after the flow sensor.	Flow meter
	This scenario can also be performed with a single proportional valve.	High flow valve
7	Medium valve 1 and medium valve 2 are the dosing and selection valves. Both are installed before the flow sensor. An in-house recipe/dosing quantity is required	Medium 2 valve
	for each medium.	Flow meter Medium 1 valve
8	Medium valve 1 and medium valve 2 are selection valves. Both are installed before the flow sensor.	Medium 2 valve
	The dosing valve is installed after the flow sensor.	Flow meter Dosing valve
9	Medium valve 1 and medium valve 2 are the dosing and selection valves. Both are installed before the flow sensor. An in-house recipe/ dosing quantity is required for each medium.	Medium 2 valve
	The flow sensor is permanently filled with medium until the drain valve is opened.	Flow meter Medium 1 valve Drain valve
10	Dosing valve and dosing valve with high flow are valves with different nominal diameters or openings. Both are installed after the flow sensor.	Medium 1 valve
	By closing medium valve 1 and opening the dosing valve with low flow, or the dosing valve with high flow, the line can be drained via the dosing valve, including the flow sensor.	Flow meter Dosing valve High flow valve



9 BATCH MODE SEQUENCE DIAGRAM

9.1 Description of batch modes

Mode	Description
Automatic	In this mode, the batch controller automatically corrects the dosed volume, starting with the first batch. Dosing is briefly interrupted during initial dosing for this purpose (first batch), then the overrun volume is automatically calculated and taken into consideration with all further dosing. It is also possible in this mode to configure a manual correction volume. This enables consistent deviations to be corrected (see chapter <u>"9.3 Automatic – first batch"</u>)
Teach-In	In this mode, automatic correction of the measured flow volume does not take place. Only the manually set correction quantity is taken into consideration. This mode is mainly advisable when the system conditions (pressure, flow) remain constant and the overrun volume is known, or when the dosing time is too short and the automatic corrections therefore cannot be made (see chapter <u>"9.2 Automatic and Teach-In"</u>)
Manual	Regardless of the recipe used in this operation mode, all valves that are required for dosing are manually opened as soon as the start command is received (e.g. the "Start" key is briefly pressed on the display). The valves are closed again when the stop command is received (e.g. via the display). The system can be cleaned, tested or dosed "by hand" in this mode. The volume that is part of the recipe and the dosing time limit are not taken into account (see chapter <u>"9.4 Manual")</u>

9.2 Automatic and Teach-In



Fig. 7: Sequence diagram – Automatic and Teach-In

If a medium valve is present:

 $[\]rightarrow$ Start batch.



- Selected medium valve (medium valve 1 or medium valve 2) opens.
- After the delay in selecting the medium (medium selection delay), the dosing valves are opened (1).



- The medium valve has different functions, depending on the scenario
- Scenario 3, 8, 10: Valve is exclusively used for selecting the medium (pure closing/opening function).
 - Scenario 2, 4, 7, 9: Medium valve is used for dosing.



If no medium valve is available, the dosing valves are opened directly and the flow rises to the maximum value.

If a dosing valve with high flows is available:

- User defines a volume which should only be dosed by the **dosing value** at the end.
- If the quantity from which only the **dosing valve** should be used is reached in the totaliser, the **dosing valve** with high flow (target quantity residual volume for **dosing valve**) (2) is closed.

Only applies to Automatic mode

If the target quantity – excluding the automatically set correction volume – is reached, the **dosing valve** is closed (3). If a manual correction volume is configured, this is also taken into account.

Only applies to Teach-In mode

Only the manual correction volume is used, automatic correction does not take place. After the flow has been reset to 0, the medium valve is closed.

If a drain valve is available:

- The drain valve can be opened for a certain time after the batch has been completed. (*"Draining"* parameter in the recipe) (4)
- If the drain valve is closed then the batch procedure is ended.
- A new batch procedure can then be started.



9.3 Automatic – first batch



Fig. 8: Sequence diagram – first batch

There is an option to perform a "first batch" in "Automatic" batch mode. This is performed when the automatic correction volume has a value of 0 (when the system starts for the first time, can be reset via Communicator).

Essentially, this functions like a "normal batch". The difference is that the "first batch" temporarily closes the dosing valves at half of the target volume. The correction volume is not known during initial start-up. The correction volume can be determined and used by closing at half of the target quantity. This makes the first dosing process more accurate.

The dosing valve with high flow is closed before the dosing valve in this process.

The automatic correction volume can be calculated by closing, if there is none available.



9.4 Manual



Fig. 9: Sequence diagram – manual

The medium valve (medium valve 1 or medium valve 2) is selected via the current recipe.

At the start of the batch, all valves, **the dosing valve with high flow** and the **dosing valve** are opened directly and the totaliser totals the flow.

All valves are closed with the next control signal and the batch is finished.



9.5 Troubleshooting



Fig. 10: Sequence diagram – troubleshooting

Error name	Description		
General error	f(x)/f(x) licence error		
Producer not found Connected device is no longer in büS network			
Dosing time limit	Maximum valve opening duration		
	Knowledge of the flow and target quantity can be used to estimate how long a maximum dosing period should last. If the dosing time is exceeded, an error occurs and the valves are closed.		
Invalid recipe parameter	Target quantity = 0		
	Dosing time limit = 0		
	Target quantity and dosing time limit = 0		
No flow	System detects that no medium is flowing		
Reverse flow direction System detects that the medium is flowing in the wrong dire			
Unexpected flow After closure of the valves, the flow does not fall back to 0			



Section 1

A maximum valve opening time is configured via "Dosing time limit". If the target quantity is not reached within this time, all valves are closed after the period has ended and the error message "Dosing time limit" displayed.

Section 2

Diagnostics start after

- the "start fill level diagnostics" (default value: 10%) of the target quantity or
- the "flow validation time" (default value: 10 s)

has been reached. Both limits can be set specifically for the application in the scenario settings.



Start fill level diagnostics

⁷ The fill level diagnostics starts after a stable flow rate has been established during the batch process.

The value is set in per cent depending on the volume to be dosed.

Assuming a dosing volume of one litre, the flow rate is stable after 100 ml (depending on the application). In this case, the controller is set to 10 %. The more that is filled, the smaller the proportion to be adjusted.

Flow validation time

If after the flow validation time:

- no flow or
- Flow in the opposite direction

is measured, the batch process is cancelled and an error is output.

Section 3

At the *"Start Diagnosis"* time, the system inspects the current flow and can therefore detect the **No flow** or **Reverse flow direction** errors. The following diagnostic calculations are made during the dosing process:

- Determination of the minimum and maximum flow
- · Inspection whether the target quantity can be reached with the current flow
- · Automatically determined correction volume adjusted depending on the flow

Section 4

When using a **dosing valve with high flow** then the diagnostics is ended upon closure of the **dosing valve with high flow**. If only one valve is used for the dosing, the diagnostics are finished when this valve closes.

Section 5

If the flow does not drop back down to 0 after the valves close, the error **Unexpected flow** is recognised and displayed after 10 seconds at the earliest.



9.6 Pause behaviour

	Start Signal	Start Batch	Pause	Resume	Pause	Resume	Stop the high flow rate	Stop dosing	Start draining	End draining	Next batch possible
High flow				Target q	uantity						
rate											
		<u>,</u>									
Dosing											
Medium 1											
Medium 2											
Draining											
Flow							<u> </u>				

Fig. 11: Sequence diagram – pause behaviour

The pause behaviour in *"Automatic"* or *"Teach-In"* mode is identical. During a pause, both dosing valves are closed, while the medium valves remain open.

During a dosing process, dosing can be paused repeatedly and then restarted.

Pauses may be necessary when initial dosing takes several minutes and the ongoing process must be interrupted.

The following sequence steps of the dosing processes are not affected by this and run like a "normal dosing process".



10 BATCH CONTROLLER CONFIGURATION

10.1 Batch setup - run wizard

GCOMMUNICATOR File Device Edit Options Tools Help	Debug 🕞		_ 🗆 X
Can Tes ↑ Start page			
E₽ Desktop JX	Parameter Diagnostics	Maintenance	
Datalogger	Batch setup	Wizard to setup and configure the complete batch process	● -O-O
E būS COM6 E bueS-X-Gateway 8629 Debas	Recipe settings	Configure parameters for the recipes	>
f(x) f(x) configuration	Scenario settings	Configure parameters for the scenario	>
<mark>روگ</mark> Test 1 کار General settings	Batch logging	Configure parameters for the logging	>
+			
+ +			
+ ProcContrDispl 10 Process Control Display ME61			
Zoom •			rkert

Fig. 12: Parameters

 \rightarrow Select the batch to be configured (in this example, "Test 1").

 \rightarrow Start the wizard by clicking on Batch setup.

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The wizard for performing the batch setup is described precisely below.

An example project with the following Bürkert devices is used for visualisation purposes, and for better understanding:

- Type ME44 I/O module
- Type ME64 I/O module
- Type 8652 AirLINE
- Type 8653 AirLINE Field
- Type 8605 PWM control electronics for electromagnetic proportional valves
- Type 8098 FLOWave SAW flowmeter
- Type ME43 fieldbus gateway
- **Type ME61** EDIP process control display



10.1.1 Valve scenario overview

Batch setup					_ 🗆 ×
Page 1					
The wizard supports th	e setup of the batch	n controller and th	e related devices	by:	
 Selecting the valve sce Setting scenario-speci Selecting valves and d Configuring control se Configuring a display 	fic parameters efining outputs :ttings				
Required: - All devices relevant to - Flow meter and contr					
The new of the second s	Contraction	3 For noise 5 0 Daring solar	() Por rease 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	() 1 Constant of the second s	
(C) Processing Sign from state	The near	(B) Under 2 data Moder 1 data Promose Obergrades	Burgers	(9) Hereiter were For new Biographics	
Cancel					Next >

Fig. 13: Wizard overview page

The wizard provides support with the setup of the batch controller and the configuration of individual devices:

- Valve scenario selection
- Scenario-specific parameter
- Valve selection or output definition
- Controller configuration
- Display configuration (optional)

Prerequisite

- The flow sensor, as well as all valves and IO modules required for the application have been correctly connected regarding the electrics (büS (termination), supply (24 V, compressed air)) and connected to each other.
- Flowmeters used must be installed and calibrated correctly.
- Controller must be configured and integrated correctly.



The Communicator must display all devices connected via büS in the overview. When selecting the device in the Communicator, its status LED should start flashing.



10.1.2 Valve scenarios selection



Fig. 14: Scenario selection – example of scenario 10

10.1.3 Configuration of scenario selected

Depending on the scenario selected, the following is displayed on page 3 of the wizard:

	G Batch setup		_ 🗆 X
	Page 3	-0-0-0-0-0-0	
	Scenario settings		
	Configure parameters for the scenario	1	
	Batch mode		
1		Automatic	\sim
	Type of batch system - automatic, teach-in or manual		
2	In this mode, the "Batch Controller" automatically correct this purpose, the dosing is briefly interrupted during callit configure a manual correction volume in this mode. This 	pration (First Batch). In addition, it is possible to	
	Start diagnosis fill level	-	10,0 %
3	Fill level at which the flow is monitored after the dosing v	⊶ alve(s) are opened	•
	Flow validation time	1	0,000 s
4	— Time until which the flow is validated after the dosing validated afte	ve(s) are opened	
	Overshoot correction mode	Previous batch correction	\sim
	Enabling flow monitoring adapts the calculated overshoo	t correction from the previous batch to the actu	ual flow
	K Back Cancel] Next >

Fig. 15: Configuration of scenarios 1, 2, 4, 6

Batch Controller

Batch controller configuration



FLUID CONTROL SYSTEMS

Fig. 16: Configuration of scenarios 3, 5, 7, 8, 9, 10

No.	Designation	Description	Scenario
1	Batch mode	Batch mode selection: <i>"Automatic"</i> , <i>"Teach-In"</i> or <i>"Manual"</i> (see chapter <u>"9.1 Description of batch modes")</u>	All
2	Start fill level diagnostics Only for batch mode: "Automatic" and "Teach-In"	Fill level when the flow diagnostics start (see chapter <u>"9.5 Troubleshooting")</u>	All
3	Flow validation time Only for batch mode: "Automatic" and "Teach-In"	Time when the flow is tested after the valves open (see chapter <u>"9.5 Troubleshooting")</u>	All
4	Overrun correction mode	Mode for overrun correction	All
	Only for batch mode: "Automatic"	 <i>"Previous batch correction"</i> Adjustment while taking the last batch into consideration <i>"Previous batch correction with flow monitoring"</i> Dynamic adjustment while taking the last batch and the current flow into consideration 	
5	Medium selection delay Only for batch mode: "Automatic" and "Teach-In"	Determines the delay from the opening of the medium selection valve to the start of the dosing process. The delay to be set depends on the medium, pressure, line length, nominal diameter and whether the line is full or empty.	3, 5, 7, 8, 9, 10

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10.1.4 Flow measurement devices



Fig. 17: Flow measurement devices (flow measurement settings)

No.	Designation	Description	Scenario
1	List of flow meters	Selection between different flow measurement devices must be made	All
2	Type of flow	Volume flow Mass flow	All
		Only with supported Type 8098 FLOWave	
3	Channel number	Channel number must be selected in a drop- down menu Is only displayed when the device possesses multiple channels	All



10.1.5 settings of the controller



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Note for Type ME61 – EDIP process control display Existing screens on the display are deleted. Device restart required in order to apply changes.

Note for DI devices

Channels on the input control device must be configured in digital input mode and arranged with keys in the following sequence:

- 0: Start
- 1: Pause
- 2: Stop







No.	Designation	Description			Scenario
1	Type of controller	Input control device selection	All		
		Option EDIP miscellaneous:			
	All EDIP devices that are connected to the büS are displayed				
0	List of controllors	displayed.			
2 3	List of controllers	Selection of devices found of The possible inputs are displa	•	devices.	All
3	List of inputs (Only for ME43 and ME63)	(This point is displayed or hic vious selection.)		on the pre-	AII
4	Cyclical value of gateway	OFF:			All
	(PLC)	Internal batch controller recip	bes are used.		
		ON:			
		Upstream controller recipes a	are used.		
5	Flow unit on the display	Flow unit must be selected.	Volume flow	l/min	All
	(Only for ME61)			m3/min	
				USgal/	
				min ft3/min	_
			Mass flow	kg/min	_
				lb/min	-
6	Totaliser unit on the display	Totaliser unit must be	Volume flow	1	All
÷	(Only for ME61)	selected.		m3	
		When using the display, it		ml	_
		is automatically configured	-	USgal	
		by clicking on Continue , and the batch dashboard is		ft3	
		prepared.		fl.oz.	
		The wizard continues con-			_
		figuration after the display restart.	Mass flow	kg	
		Testait.		g	
				OZ	
				lb	
7	8-bit input selection	8-bit input Ch1–8			All
	(Only for ME64)	8-bit input Ch9–16			

10.1.6 Dosing valve with high flow



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	G Batch setup	_ = ×		3 Batch setup	_ 🗆 X
	Page 6	-8-8-8-8-8-8-8-8-8-8-8-		Page 6	-8-8-8-8-8-8-8-8-8-8-8-
	Valve settings	Configure type and parameters for each valve in this scenario.		Valve settings	Configure type and parameters for each valve in this scenario.
	High flow Valve with a large diameter for a higher flow	Hedium 1 valve Flow meter Dowing valve High flow valve		High flow Valve with a large diameter for a higher flow	Medium 1 valve Flow meter Desing valve High flow valve
1 — 2 —	— Type of valve — Type of device	On-Off valve V EDIP Cable Plug (8605) V	1 – 2 –	Type of valve	On-Off valve
3 — 5 —	List of devices Channel number Advanced settings for the valve can be configured on the selected device directly	V 015 (8605) V 1 V	3 -	List of devices No compatible object found on the selected dev	8DI 009 (ME44)
	K Back Cancel	Next >			

Fig. 19: Selection and configuration of the dosing valve with high flow

No.	Designation	Description	Scenario
1	Valve type	On/off valve	6, 10
		Inverted on/off valve	
		Proportional valve	
		Not for Type 8652/8653	
2	Device type	Type of the device to which the valves are connected	6, 10
		Option EDIP miscellaneous:	
		All EDIP devices that are connected to the büS are displayed.	
3	List of devices	Devices that are connected to the büS network and meet the "Device type" selection criterion	6, 10
4	List of outputs	Select correct output	6, 10
5	Channel number	Channel number must be selected in a drop- down menu	6, 10
6	Valve inlet number	Drop-down menu for valve selection (valve 1–6).	6, 10
		Only for Type 8652.	
7	Opening	Setting the flow rate.	6, 10
		Only possible if "valve type" Proportional valve has been selected	


8	Use the same valve also as a dosing valve	OFF (dosing valve with high flow \neq dosing valve).	6, 10
		Selection criteria of dosing valve with high flow and dosing valve can be individually adjusted.	
		ON (dosing valve with high flow = dosing valve).	
		Selection criteria of dosing valve with high flow are assumed for the dosing valve . Opening must be set individually.	



10.1.7 Dosing valve





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Fig. 20: Dosing valve selection and configuration – example of scenario 10

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No.	Designation	Description	Scenario
1	Valve type	On/off valve	1, 2, 3, 4, 5, 6, 8, 10
		Inverted on/off valve	
		Proportional valve	
		Not for Type 8652/8653	
2	Device type	Type of the device to which the valves are connected	1, 2, 3, 4, 5, 6, 8, 10
3	List of devices	Devices that are connected to the büS network and meet the " Device type " selection criterion	1, 2, 3, 4, 5, 6, 8, 10
4	List of outputs	Select correct output	1, 2, 3, 4, 5, 6, 8, 10
5	Channel number	Channel number must be selected in a drop- down menu	1, 2, 3, 4, 5, 6, 8, 10
6	Valve inlet number	Drop-down menu for valve selection (valve 1–6)	1, 2, 3, 4, 5, 6, 8, 10
		Only for Type 8652/8653	
7	Opening	Setting the flow rate	1, 2, 3, 4, 5, 6, 8, 10
		Only possible if "valve type" Proportional valve has been selected	



10.1.8 Selection valves

Medium valve 1



Batch Controller

Batch controller configuration



	G Batch setup	_ = ×
	Page 6	-8-8-8-8-8-8-8-8-
	Valve settings	Configure type and parameters for each valve in this scenario.
	Medium 1	
	Valve for dosing medium 1	Flow meter
1 —	Type of valve	On-Off valve 🗸
2 —	— Type of device	EDIP others
3 —	List of devices	8DI 009 (ME44)
	No compatible object found on the device select	ed
	K Gancel	

Fig. 21: Medium valve 1 selection and configuration

No.	Designation	Description	Scenario
1	Valve type	On/off valve	3, 5, 7, 8, 9, 10
		Inverted on/off valve	
		Proportional valve	
		Not for Type 8652/8653	
2	Device type	Type of the device to which the valves are connected	3, 5, 7, 8, 9, 10
3	List of devices	Devices that are connected to the büS network and meet the "Device type" selection criterion	3, 5, 7, 8, 9, 10
4	List of outputs	Select correct output	3, 5, 7, 8, 9, 10
5	Channel number	Channel number must be selected in a drop- down menu	3, 5, 7, 8, 9, 10
6	Valve inlet number	Drop-down menu for valve selection (valve 1–6).	3, 5, 7, 8, 9, 10
		Only for Type 8652/8653	
7	Opening	Setting the flow rate.	3, 5, 7, 8, 9, 10
		Only possible if "valve type" Proportional valve has been selected	



Medium valve 2





G Batch setup	_ O X		Batch setup		_ = ×
Page 8	-8-8-8-8-8-8-8-8-0-8-		Page 8	-8-8-8-8-8-8-8-	-@@-
Valve settings	Configure type and parameters for each valve in this scenario.		Valve settings	Configure type and parameters for each in this scenario.	valve
Medium 2			Medium 2		
Valve for dosing medium 2	Medium 1 valve Hedium 1 valve Flow meter Dosing valve		Valve for dosing medium 2	Medium 2 ve Medium 1 valve Flow meter Dosing valve	lve
——— Type of valve	On-Off valve	1	 Type of valve 	On-Off valve	\sim
— Type of device	EDIP Cable Plug (8605)	2 —	 Type of device 	EDIP others	\sim
List of devices Channel number Advanced settings for the valve can be configured on the selected device directly	V 015 (8605)	3	List of devices No compatible object found on the device selec	801 009 (ME44) ted	>
🗸 Back Cancel	Next >				

Fig. 22: Medium valve 2 selection and configuration

No.	Designation	Description	Scenario
1	Valve type	On/off valve	7, 8, 9
		Inverted on/off valve	
		Proportional valve	
		Not for Type 8652/8653	
2	Device type	Type of the device to which the valves are connected	7, 8, 9
3	List of devices	Devices that are connected to the büS network and meet the "Device type" selection criterion	7, 8, 9
4	List of outputs	Select correct output	7, 8, 9
5	Channel number	Channel number must be selected in a drop- down menu	7, 8, 9
6	Valve inlet number	Drop-down menu for valve selection (valve 1-6).	7, 8, 9
		Only for Type 8652/8653	
7	Opening	Setting the flow rate.	7, 8, 9
		Only possible if "valve type" Proportional valve has been selected	



10.1.9 Drain valve



Batch Controller

Batch controller configuration



	G Batch setup	_ 🗆 X
	Page 8	-8
	Valve settings	Configure type and parameters for each valve in this scenario.
	Drain	
	Valve for draining the liquid from the system	
		Flow meter Medium 2 Medium 1 water Data value
1 —	Type of valve	On-Off valve
2 —	— Type of device	EDIP others 🗸
3 —	List of devices	8DI 009 (ME44)
	No compatible object found on the device selec	ted
	K Back Cancel	

Fig. 23: Drain valve

No.	Designation	Description	Scenario
1	Valve type	On/off valve	4, 9
		Inverted on/off valve	
		Proportional valve	
		Not for Type 8652/8653	
2	Device type	Type of the device to which the valves are connected	4, 9
3	List of devices	Devices that are connected to the büS network and meet the "Device type" selection criterion	4, 9
4	List of outputs	Select correct output	4, 9
5	Channel number	Channel number must be selected in a drop- down menu	4, 9
6	Valve inlet number	Drop-down menu for valve selection (valve 1–6).	4, 9
		Only for Type 8652.	
7	Opening	Setting the flow rate.	4, 9
		Only possible if "valve type" Proportional valve has been selected	

English



10.1.10 Recipe configuration





No.	Designation	Description	Scenario
1	Recipe	A maximum of 7 recipes are available. The indi- vidual settings can be adjusted here for each recipe.	All
		If the ME61 is being used, the recipe can be hidden by entering the quantity 0.	
2	Name	Freely selectable name for the recipe (this is displayed in the process control display).	All
3	Туре	Recipe type: A choice can be made between "Batch", "Drainage" or "Batch with draining" at this point.	Only for 4 and 9
4	Target quantity Only for Type: "Batch" or "Batch with drainage" "	Target quantity of recipe.	All
5	Medium valve number Only for Type: <i>"Batch"</i> or <i>"Batch with draining"</i>	The medium valve is selected here, depending on the scenario.	Only for 7, 8 and 9
6	Dosing time limit Only for Type: <i>"Batch"</i> or <i>"Batch with draining"</i>	Safety parameters (maximum dosing time for the recipe): Knowledge of the flow and target quantity can be used to estimate how long a maximum dosing period should last. If the dosing time is exceeded, an error occurs and the valves are closed.	All
7	Manual overrun correction Only for Type: "Batch" or "Batch with draining"	The batch controller possesses an automatic and constant correction function. It may be necessary to enter a manual correction quantity in certain cases. This is then always automati- cally included in the calculation.	All
8	Draining time Only for type: <i>"Drain"</i> or <i>"Batch with draining"</i>	Opening time of drain valve after end of batch dosing.	Only for 4, 9 and 10
9	Residual quantity in dosing valve	Residual quantity to be dosed with the dosing valve.	Only for 6 and 10



10.1.11 Batch logging

3 Batch setup	×
Page 8	-8
Batch logging	
Logging on memory card	ON
Automatic writing of the batch logs to the memory card inserted	can only be activated if a compatible memory card is
CSV delimiter	; ~
Delimiter format for the CSV file on the memory card	
Kancel	Next >

Fig. 25: Setting batch logging in the wizard

Batch logging is limited to 30 logs as a standard. For information on increasing the number of saved logs, see <u>"13 Batch logs"</u>.

10.1.12 Installed devices

G Batch setup	_
Page 10	-88
Device restart necessary to apply changes	
Are you sure you want to restart the device?	ON
8DI 009 (ME44)	
Gateway - Indus 011 (ME43)	
16DI 004 (ME64)	
Process Control 007 (ME61)	
VI 013 (8652)	
8605bueS_PWM 016 (8605)	
V 015 (8605)	
🗙 Back Cancel	Finish \checkmark

Fig. 26: Example representation of all devices configured by the wizard

To end the wizard, all devices required and configured for the batch are automatically restarted.

The restart is performed by clicking on Finish.



10.1.13 Batch controller re-configuration

→ Open büS map. and select the Network configuration tab at this point (see <u>"Fig. 27: Network configuration</u>").

Input side

If the wizard is restarted again after an initial successful configuration and the devices are reconfigured, the inputs of the batch controller (red) are reconnected.



Connections (mappings) that are no longer present are deleted.

Output side

Automatic updates do not occur on the output side (green).



Available mappings remain

Delete mapping manually if necessary.

 \rightarrow Click the connection that should be deleted.

- →Delete selected connection:
 - Apply change or
 - discard change



Fig. 27: Network configuration

No.	Designation	Description
1	Connection	Click a connection to select it.
2	Delete selected connection	The selected connection can be individually deleted.

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11 BATCH CONTROLLER UPDATE

ATTENTION!

Device damage due to faulty firmware update

If the firmware update is not completed successfully, the device may not be operational.

During the firmware update

- do not switch the device off.
- ► do not disconnect from the power source.
- do not operate the device.
- ▶ contact Bürkert service in case of error.

As the Batch Controller is a component of the gateway firmware in question, it is updated via this firmware. Not every gateway firmware update automatically adds new features (or bug fixes) to the Batch Controller. The gateway restarts after an update to the gateway firmware via the Communicator. If the new features contained in the firmware are needed for the Batch Controller, it must be reinstalled.

Update sequence

- \rightarrow Right-click on gateway.
- \rightarrow "Print all parameters in PDF...".
- → Create PDF report for gateway. All relevant settings and information are displayed and saved as a PDF file.



Fig. 28: Generate Batch Controller report



- \rightarrow Click f(x) configuration.
- → Delete Batch Controller via "x" (1) and confirm device restart (2) (see "Fig. 29: Delete Batch Controller and restart device").

		×
	File Device Edit Options Tools Help Debug 📧 🖵 🗒 🖽	$ \Box & & } \\ $
	د f(x) configuration	
	A Start page A Start page	
	Desktop	▶ ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ►
1	Graph	
	$ \begin{array}{c} \hline \\ \hline $	
	- L bue5-X-Gateway 8629	
	f(x) f(x) configuration	×
	JS Test 1	
	🔗 General settings	
	_ <u>₽</u> 8DO 1055 Slot 01	
	<u>↓</u> Digital outputs	
	C General settings	
	+ 1 Slot 02 Do you really want to delete	this functionality? All related be deleted!
	+ C bueS-X-Gateway Sim	
	+ + + C 0030298800000307	
2	+ Process Control Display ME61	Restart device
	Process Control Display Meb 1	
	Zoom •	

Fig. 29: Delete Batch Controller and restart device

 \rightarrow The Batch Controller can then be added again.

→ If a licence was available, the newly initialised Batch Controller is automatically licensed again and can operated permanently (see chapter <u>"6.4 Enable the batch function"</u>).

		- @ ×
File Device Edit Options Tools	Help Debug 🖅 📮 🗒 🖬	
€ ↑ Start page	f(x) configuration	
Desktop	$\blacksquare \blacksquare \blacksquare \blacksquare \blacksquare $ New function $f(x) + $	hical programming
Datalogger	Time Batch	-
— □ būs COM6 — □ bueS-X-Gateway 8629 □ bus	Create a new functionality	
f(x) f(x) configuration		

Fig. 30: Add Batch Controller

→ The wizard (see <u>"10.1 Batch setup – run wizard</u>") can then be executed using the PDF report created. All scenario and recipe settings can be found in the report created.



12 RESTORE OR BACKUP DEVICE CONFIGURATIONS

Symbol	Menu	Command/description				
	Restore or backup device/device	Device configurations can be exported,				
	configurations	imported, copied or overwritten.				

In the menu bar:

- \rightarrow Click on interface büS-Offline.
- \rightarrow Click on Communication.
- →Save system configuration.

In context menu:

→ Click on interface büS-Offline.

 \rightarrow \equiv click.

 \rightarrow Save system configuration.

Or:

- \rightarrow Right-click on büS-Offline .
- \rightarrow Save system configuration.



Fig. 31: Context menu device or product

 \rightarrow Click Backup and restore device configurations.

A wizard will appear.

- \rightarrow Select function:
 - Restore Export device configuration
 - Backup Import device configuration
 - Clone Copy device configuration
- Overwrite Overwrite device configuration



Function	Description			
Restore	Export device configuration.	A wizard will appear:		
	Saves the device configuration in a file.	→ Select storage location and designation for the device configuration.		
		\rightarrow Save.		
		\rightarrow Ok.		
		The device configuration is saved in a file.		
		Note: the file type is "Device Backup File (*.load)".		
Backup	Import device configuration.	A wizard will appear:		
	Imports the device configuration from a file into the device or product.	→ Select storage location and device configuration.		
	Note: the identification number and serial number of the device or	\rightarrow Open.		
	product must match in the device	\rightarrow Select values.		
	configuration.	\rightarrow Ok.		
		The device configuration is imported into the device or product.		
		Note: the file type is "Device Backup File (*.load)".		
Clone	Copy device configuration.	A wizard will appear:		
	Imports the device configuration from a file into the device or product.	→ Select storage location and device configuration.		
	Note: the identification number of the	\rightarrow Open.		
	device or product must match in the device configuration.	 → Enter the data via the keyboard: The user can input name, location and description of the device or product here. Or: Data of restored file: Name, location and description are copied over from the file. 		
		\rightarrow Select values.		
		\rightarrow Ok.		
		The device configuration is imported into the device or product.		
Overwrite	Overwrite device configuration.	A wizard will appear:		
	Imports the device configuration from a file into the device or product.	ightarrow Request password from service.		
	Note: the data is imported unchecked.			

Table 1:Restore or backup device configuration.



13 BATCH LOGS

The batch controller has a logging function that can be used to log certain parameters of a dosing process.

This includes:

- Date and time of dosing
- Associated recipe names and target quantity
- Dosing amount
- Average dosing amount
- Maximum and minimum flow rate
- Standard deviation
- Variance
- Batch status and possible error messages

These logs can be helpful, for example, when searching for errors and during optimisation.

Logging can take place in the memory of the device or on the memory card if this is available in the device. A restart is necessary after inserting the memory card.

13.1 Logging with and without memory card

	Gateway without memory card	Gateway with memory card	
Language	Set interface language of the Bürkert Communicator	English	
Date and time	ME43 ⁵): local PC time	ME43: UTC	
	ME63 ⁶⁾ : elapsed time	ME63: elapsed time	
File name BatchLog_2023-10-24-11-47-0 csv (example)		BatchLog.csv	
Logs max. 30 logs (Only the logs in the device's memory can be read out)		dependent on the memory capacity	
Reading out the log data	CSV export (see chapter <u>"13.3</u> Batch logging diagnostics")	via card reader	

Memory card

- Article number: 774087
- Type: KT01

- ⁵⁾ The ME43 has a real-time clock, so the time and date are logged for each entry.
- 6) The ME63 does not have a real-time clock, so the entries in the log refer to the elapsed time since the device was started.

13.2 Parameter batch logging

C Test ↑ Start page bueS-X	1 -Gateway 8629		
Desktop	-Galeway 6625		
Graph	Parameter Diagnostics	Maintenance	
Datalogger	Batch setup	Wizard to setup and configure the complete batch process	••••
— 🗔 büs COM6	Recipe settings	Configure parameters for the recipes	>
– C bueS-X-Gateway 8629	Necipe settings		-
f(x) f(x) configuration	Scenario settings	Configure parameters for the scenario	>
روان المعالم ال المعالم المعالم	Batch logging	Configure parameters for the logging	>
+ 1 8DO 1055			
+ 1 8DI Slot 02			
+ DueS-X-Gateway Sim			
+ + +C 0030298800000307			
+ ProcContrDispl 10 Process Control Display ME61			
Process Control Display ME61			

Fig. 32: Parameter batch logging



Batch logs

	<u>گ</u>	Test		E= E=	
	A Start page		X-Gateway 8629		
	Desktop		Parameter Diagnostics Mainte	nance	
	Graph		A Parameter A Batch logging A		
	- 🗔 büs com6				
1 —	_		Logging on memory card	Automatic writing of the batch logs to the memory card can only be activated if a compatible memory card is inserted	On 🧷
2 —	f(x) = f(x) configuration		CSV delimiter	Delimiter format for the CSV file on the memory card	; 0
	fx [₽] Test 1				
	😚 General settings				
	+ <u>↓</u> 8DO 1055 Slot 01				
	+ <u>↓</u> 8DI Slot 02				
	+ bueS-X-Gateway Sim				
	+ + + - C 0030298800000307 Kabelkopf				
	+ ProcContrDispl 10 Process Control Display ME61				

Fig. 33: Batch logging settings

No.	Designation	Description					
1	Logging on memory card		Up to 30 batch logs are saved on the Bürkert Communicator.				
		On	Enables over 30 batch logs to be saved on one memory card.				
2	CSV separator	The separator (semicolon or comma) is selected for a CSV file depending on regional conventions and software requirements, and to ensure consistent data processing.					

 \rightarrow Click "Log on memory card".

 \rightarrow Set selection to "On".

 \rightarrow Select separator.

 \rightarrow Restart the device



13.3 Batch logging diagnostics

The Diagnostics tab shows where the logged data is saved and how it is separated from each other.

				×
		o Debug 🗁 📰 🗒	$\mathbb{E} \ \square \ \textcircled{b} \ \boldsymbol{\leftarrow} \ \rightarrow \ \mathbf{C}$	
	<u>گ</u> Te	est 1		
		eS-X-Gateway 8629		
	Desktop	Parameter Diagnostics Mainter	Dance	
	Graph			
	Datalogger	C Diagnostics C Batch logging	3	
1 _	Dus COM6 Dus-X-Gateway 8629 Dos	Logging on memory card	Automatic writing of the batch logs to the memory card can On only be activated if a compatible memory card is inserted	
2 —	f(x) = f(x) configuration	CSV delimiter	Delimiter format for the CSV file on the memory card	
3 —	روم Test 1 کې General settings	Batch log viewer	Wizard to view and download logs of the previous batches	
	+ # 8DO 1055			
	+ 1 8DI Slot 02			
	+ L bueS-X-Gateway Sim			
	+ + + C 0030298800000307 Kabelkopf			
	+ ProcContrDispl 10 Process Control Display ME61			
	Zoom •			

Fig. 34: Batch logging diagnostics

No.	Designation	Description
1	Logging on memory card	See chapter "13.2 Parameter batch logging"
2	CSV separator	See chapter "13.2 Parameter batch logging"
3	Batch logging display	Display area for logs from the last dosing process exe- cuted. Batch logging can be saved in an Excel file via a CSV export. To do this, the Bürkert Communicator must be connected to a PC.



Batch logging display

	2	3	4	5	6	7	8	9 .	10	11	12	13		
itch log viewer														- ®
e 1 of 2												_		
	b	 c	d	e I	f	g	l h	I	ł	k		l m		
			0.500	0.000.0		-	100414			12 0 000 1				
023-11-24 15:52:50 023-11-24 15:52:53	1 2	Recipe 1 Recipe 1		0.2221		5.221 l/min 5.194 l/min	4.994 l/min 5.187 l/min	0.000		12 0.000 l	Finished Finished	No error No error		
023-11-24 15:52:56	3	Recipe 1		0.103		5.232 l/min	4.997 l/min	0.000 l		2 0.000		No error		
023-11-24 15:53:05	4	Recipe 1				5.227 l/min	4.999 l/min				Finished	No error		
023-11-24 15:53:09	5	Recipe 1				5.230 l/min	5.005 l/min			² 0.000		No error		
023-11-24 15:53:11 023-11-24 15:53:14	6 7	Recipe 1 Recipe 1		0.077		5.233 l/min 5.214 l/min	4.999 l/min 5.008 l/min			2 0.000 2 0.000	Finished Finished	No error No error		
023-11-24 15:53:14	8	Recipe 1		0.103		5.239 l/min	4.997 l/min	0.000		1º 0.0001		No error		
023-11-24 15:53:20	9	Recipe 1		0.173			4.994 l/min	0.000 l		2 0.000		No error		
023-11-24 15:53:22	10	Recipe 1		0.093 l		5.210 l/min	4.995 l/min			² 0.000		No error		
023-11-24 15:53:24	11	Recipe 1		0.053 l		5.209 l/min	5.015 l/min				Finished	No error		
023-11-24 15:53:26	12	Recipe 1		0.095		5.224 l/min	4.995 l/min				Finished	No error		
023-11-24 15:53:28 023-11-24 15:53:29	13 14	Recipe 1 Recipe 1		0.045		5.228 l/min 5.228 l/min	5.059 l/min 5.059 l/min			12 0.000 I 12 0.000 I	Finished Finished	No error No error		
023-11-24 15:53:32	15	Recipe 1		0.0271			4.994 l/min	0.0001		1º 0.0001		No error		
023-11-24 15:53:35	16	Recipe 1				5.225 l/min	5.042 l/min			l ² 0.000 l		No error		
023-11-24 15:53:36	17	Recipe 1	0.500	0.019	0.000 l	0.000 l/min	0.000 l/min	0.000 l	0.000	2 0.000	Finished	No error		
023-11-24 15:53:39	18	Recipe 1		0.087 l		5.233 l/min	4.999 l/min			2 0.000		No error		
023-11-24 15:53:40	19	Recipe 1		0.075		5.234 l/min	4.994 l/min				Finished	No error		
023-11-24 15:53:42 023-11-24 15:53:44	20 21	Recipe 1	0.500	0.044 0.075		5.228 l/min 5.228 l/min	5.059 l/min 4.997 l/min	0.000 l 0.000 l		2 0.000		No error		
)23-11-24 15:53:44	22	Recipe 1 Recipe 1		0.0751		5.230 l/min	5.037 l/min			2 0.000 2 0.000		No error No error		
023-11-24 15:53:48	23	Recipe 1		0.0941		5.231 l/min	4.999 l/min			12 0.000 I		No error		
023-11-24 15:53:52	24	Recipe 1		0.044 l		5.228 l/min	5.058 l/min			2 0.000		No error		
023-11-24 15:53:55	25	Recipe 1	0.500	0.094 l	0.000 l	5.215 l/min	4.994 l/min	0.000 l	0.000	2 0.000	Finished	No error		
023-11-24 15:53:56	26	Recipe 1		0.085 l		5.237 l/min	4.994 l/min			2 0.000		No error		
023-11-24 15:53:57 023-11-24 15:54:02	27 28	Recipe 1		0.043 0.120		5.237 l/min 5.225 l/min	4.994 l/min 4.996 l/min	0.000		2 0.000		No error		
023-11-24 15:54:02	28	Rezept 1 Recipe 1				5.225 l/min 5.233 l/min	4.996 l/min 4.999 l/min			2 0.000 2 0.000	Finished Finished	No error No error		
egend														
Date and time														
Dosing count														
Recipe name														
Target quanti														
Dosed quantit														
Overshoot co Maximum flov														
Minimum flow														
Average value		losed quantitie	es											
Variance of th														
Standard devi	ation of	the dosed qua	ntities											
Batch state														
Batch error st														
ownload this batch l	og into	a CSV file?												ON
SV delimiter							;							~
elimiter format for th	e CSV fi	e on the mem	ory card											
ownload path													C:\Users	\Test\Downloads\
ancel														Next >

Fig. 35: Example of batch logging display

No.	Designation	Description
1	Date and time	Time and date of dosing process
2	Dosing meter	Number of completed dosing practises
3	Recipe name	Name of recipe selected for the dosing process
4	Target quantity	Set target quantity
5	Dosing amount	Measured amount of the dosing process
6	Overrun correction	Automatic overrun correction of batch
7	Maximum flow	Maximum flow rate within the set validation time (see chapter
		"10.1.3 Configuration of scenario selected")
8	Minimum flow	Minimum flow rate within the set validation time (see chapter
		"10.1.3 Configuration of scenario selected")
9	Average of dosed quantities	Average of last maximum 30 dosed quantities
10	Variance of dosed quantities	Average square deviation of the last maximum 30 dosed quan-
		tities from the average
11	Standard deviation of dosed	Average deviation of the last maximum 30 dosed quantities from
	quantities	the average
12	Batch state	Dosing process status
13	Batch – error state	Display area for errors that occurred during the dosing process



CSV export

A log file in CSV format can be created to document the dosing processes. This CSV file contains different information on dosing processes

 \rightarrow Set CSV export in the batch logging display to "On"

- \rightarrow Generate CSV file
- \rightarrow Save CSV file

The ability to document and analyse dosing processes means that the recorded data can be used for optimisation and tracking.

13.4 Error messages

Designation	Description	
F(x) Batch: memory card is not	disable	\rightarrow Confirm error message.
available. Confirm to disable	re-enable	\rightarrow Do not confirm error message.
batch logging		\rightarrow Insert memory card.
		\rightarrow Restart device to continue logging.
F(x) Batch: writing batch log	Error while w	riting onto memory card.
onto memory card failed	Possible causes:	
	Memory card damagedMemory card full	
F(x) Batch: log file on memory card is reaching the maximum permitted size of 100 MB		
		reached the maximum size and will no longer be written losing processes are no longer written on the memory
	(100 MB is e	quivalent to approx. 1 million dosing processes)



14 BATCH DIAGNOSTICS

	Image: Construction Image: Construction Parameter Diagnostics Maintenance	Lagnostic deactivated
Craph	Scenario number	9
2 - 🗇 būS-Offline + 👉 8DI 009	Batch mode Type of batch system - automatic, teach-in or manual	Automatic
3 + ↓ spi me44 3 + ↓ spo 012 spo 012	Start diagnosis fill level Fill level at which the flow is monitored after the dosing valvefal are opened	10 %
4 + ↓ 16DI 004 16DI 44554 + 4€ VI 013 + 4€ VI 013 4	Flow validation time Time until which the flow is validated after the dosing valve (c) are opened	10,000 s
$5 \xrightarrow{+ \text{CVI013}}_{\text{ArLINE 8652}} + \text{CVI014}_{\text{ArLINE 8653}}$	Overshoot correction mode Enabling flow monitoring adapts the calculated overshoot correction from the previous batch to the actual flow Previous	s batch correction with flow monitoring
6 + C V015 CablePlug 8605	Medium selection delay Delay of the dosing process after opening the medium selection value.	0 s
7 + \bigcirc Cabledge yww.010 - Cabledge yww.010 + \bigcirc FW 010 - FLOWave 8098	Current batch View the details of the current batch	>
8 - Gateway Indus 011 Gateway ME43	Previous batch View the results of the previous batch	>
9 <u>f(x)</u> f(x) configuration	Batch logging View the log settings	>
Industrial communication Web server General settings Process Control 007 Process Control Display ME61		

Fig. 36: Batch diagnostics

No.	Designation	Description		
1	Scenario number	Number of scenario selected		
2	Batch mode	Batch mode selection: "Automatic", "Teach-In" or "Manual"		
3	Start fill level diagnostics	Fill level when the flow diagnostics start		
4	Flow validation time	Time when the flow is tested after the valves open		
5	Overrun correction mode	Mode for overrun correction		
		• <i>"Previous batch correction"</i> Adjustment while taking the last batch into consideration		
		• <i>"Previous batch correction with flow monitoring"</i> Dynamic adjustment while taking the last batch and the current flow into consideration		
6	Medium selection delay	Determines the delay from the opening of the medium selection value to the start of the dosing process. The delay to be set depends or whether the line is full or, if the line is empty, medium, line lengths pressure and nominal diameter.		
		Only for scenario 7, 8, 9		
7	Current batch	See chapter "14.1 Current batch"		
8	Previous batch	See chapter <u>"14.2 Previous batch"</u>		
9	Batch logging	See chapter <u>"13.3 Batch logging diagnostics"</u>		



14.1 Current batch

★ Start page	Test 1 Sateway - Indus 011		Diagnostic deactivated
Desktop	Parameter Diagnostics Mainte	enance	
Datalogger	Current bate	ch	
+ † 8DI 009	Batch control	Value of cyclic batch control parameter	
* * _ 8D0 ME44 * _ 8D0 012 * _ 8D0 ME44	Selected recipe	Currently selected recipe	Recipe 1
+ 16DI 004	Target quantity	Target quantity of the currently selected recipe	0 ml
+ +	Medium valve number	The selected medium valve of the currently selected recipe	1
	Totalizer	Quantity dosed in the current batch	0
+ 605bue5_PWM 016 CablePlug PWM 8605	Flow	Actual flow measured by the batch system	0
	Batch state	Current state of the batch system	Init
f(x) f(x) configuration	Batch extended state	Detailed state of the batch system	Dosing ready
Industrial communication	Batch error state	Errors in the batch system	
Web server	Maximum flow	Maximum flow observed during the flow monitoring time	0
+ Gateway - Indus 011 Gateway ME43	Minimum flow	Minimum flow observed during the flow monitoring time	0
+ Gateway - Indus 011 Gateway ME43 + Process Control 007 Process Control Isplay ME61			

Fig. 37: Current batch

No.	Designation	Description	
1	Batch controller	Batch procedure control	
2	Selected recipe	Recipe currently selected	
3	Target quantity	Target quantity of recipe.	
4	Medium valve number	The selected medium valve is listed here, depending on the	
		scenario	
5	Totaliser	Cycles of the current batch	
6	Flow	Actual flow rate	
7	Batch state	Current state of batch system	
8	Advanced batch status	Detailed state of batch system	
9	Batch – error state	Error detected in dosing system	
10	Maximum flow	Maximum flow occurring during dosing	
11	Minimum flow	Minimum flow occurring during dosing	



14.2 Previous batch

☆ Start page	日 日 日 日 st 1 way-Indus 011		ostic deactivated
Desktop	Parameter Diagnostics Maint	enance	
Graph			
Datalogger	C Diagnostics C Previous based	tch	
	Dosing count	Number of batches completed	0
+ # 8DO 012 8DO ME44	Quantity dosed	Quantity dosed in the last batch	0 ml
+ 16DI 004 16DI ME61	Overshoot correction	Automatically calculated overshoot correction applied by the system for the last batch	0 ml
+ + C VI 013 AirLINE 8652			
+ + FM 014 AirLINE 8653			
+ + + C V 015 CablePlug 8605			
+ 24 8605bue5_PWM 016 CablePlug PWM 8605			
+ 🖵 FW 010 FLOWave 8098			
Gateway - Indus 011			
f(x) f(x) configuration			
ر Test 1			
Industrial communication			
Web server			
General settings Process Control 007 General Display M551			
+ Process Control 007 Process Control Display ME61			

Fig. 38: Previous batch

No.	Designation	Description	
1	Dosing meter	Number of completed batches	
2	2 Dosing amount Dosing amount in last batch process		
3	Overrun correction Automatic overrun correction of batch		



15 BATCH PARAMETER

				- 🗆 X
	File Device Edit Options Tools Help			
		est 1		
		2S-X-Gateway 8629		
	Graph	Parameter Diagnostics	Maintenance	
1 _	Datalogger	Batch setup	Wizard to setup and configure the complete batch process	● 0-0
2 –	Dis com6 DueS-X-Gateway 8629 Die bus	Recipe settings	Configure parameters for the recipes	>
3 –	f(x) = f(x) configuration	Scenario settings	Configure parameters for the scenario	>
4 –	رومی Test 1 دومی General settings	Batch logging	Configure parameters for the logging	>
	+ 1 8DO 1055			
	+ 1 8DI Slot 02			
	+ C bueS-X-Gateway Sim			
	+ + -==C 0030298800000307 Kabelkopf			
	+ ProcContrDispl 10 Process Control Display ME61			
				irkert
	Zoom •			

Fig. 39: Batch parameter

No.	Designation	Description	
1	Batch setup	Wizard for setting up and configuring the complete batch process	
2	Recipe settings	Configuration of parameters for the recipes	
3	Scenario settings	Configuration of parameters for the scenario	
4	Batch logging	See chapter <u>"13 Batch logs"</u>	



15.1 Recipe settings

	File Device Edit Options Tools He		$\mathbf{P} \leftarrow \mathbf{A} \mathbf{C}$	
	✓ </th <th>Test 1 Gateway - Indus 011</th> <th></th> <th>Diagnostic deactivate</th>	Test 1 Gateway - Indus 011		Diagnostic deactivate
	Desktop	Gateway - Indus 011		
	A Graph	Parameter Diagnostics Maintena	nce	
		A Parameter A Recipe settings A		
-	- 🗔 büS-Offline	()		
·	+ <u>↓</u> 8DI 009 8DI ME44	Recipe setup	Wizard to configure all the recipes	•••••
2 —	+ 100 012 8DO ME44	Selected recipe	Currently selected recipe	Recipe 1 🧷
_	+ ↓ 16DI 004 16DI ME64	Recipe 1		>
	+ .FC VI 013 AirLINE 8652			
ŀ	+ -FC FM 014 AirLINE 8653	Recipe 2		>
	+ + V015 CablePlug 8605	Recipe 3		>
3 —	+ 2605bueS_PWM 016 CablePlug PWM 8605	· · · · · · · · · · · · · · · · · · ·		
ŀ	, C FW 010	Recipe 4		>
	+	Recipe 5		>
	f(x) = f(x) Configuration	· · · · · · · · · · · · · · · · · · ·		
L	fter Test 1	Recipe 6		>
4 —	Industrial communication	Manual recipe	Configure the manual recipe	>
	Web server			-
	🕐 General settings			
	+ Process Control 007 Process Control Display ME61			

Fig. 40: Recipe settings

No.	Designation	Description	
1	Recipe setup	Wizard for setting up and configuring the complete batch process	
2	Selected recipe	Recipe currently selected	
3	Recipe 1-6	Selection can be made between 6 different recipes	
4	Manual recipe	Manual recipe configuration	





	Recipe setup					
		Page 1 The wizard supports you in configuring the page 1	eters for all the recipes			
		The wizard supports you in configuring the	ters for all the recipes			
		Cancel	Next >			
	Recipe setup	_	Recipe setup	×		
	Page 2 Recipe settings		Page 2 Recipe settings			
	The values are saved automatically upon clicking	next or upon changing the selected recipe		upon clicking next or upon changing the selected recipe		
1 _	Recipe	Recipe 1 V	Recipe	Recipe 1 🗸		
2 -	Name	Recipe 1	Name	Recipe 1		
	Name of the recipe		Name of the recipe			
3 _	туре	Batch with drain	Target quantity	0 ml		
	Type of the recipe		Target quantity of the recipe. Set to	o 0 to hide this recipe on the display		
4 _	Target quantity	0 ml	Dosing timeout	0 s		
	Target quantity of the recipe. Set to 0 to hide this		Maximum dosing time for the recip duration, the dosing process will be safety parameter.	be. If the dosing process takes longer than the specified e aborted with an error. This parameter thus represents a		
5 -	Medium valve number	1 ~	Manual overshoot correction	0 ml		
	Select the medium for the recipe			ould be needed to have a manual overshoot correction that		
6 -	Dosing timeout	0 s				
	Maximum dosing time for the recipe. If the dosin duration, the dosing process will be aborted with safety parameter.	g process takes longer than the specified an error. This parameter thus represents a	Dosing valve rest quantity Defines the quantity that is dosed to	0 ml towards the end exclusively with the dosing valve		
7 –	Manual overshoot correction	0 ml				
	Depending on the whole setup, it could be neede can improve the accuracy of the batch quantity.	ed to have a manual overshoot correction that		Next >		
8 –	Drain time	0 s				
	Defines the opening time for drain valve after ba	tch completion				
	Cancel	I Next >				
		Recipe setup	- 0	×		
		Page 3	00			
		Recipe settings have been successfully confi				
		K Back	Finish $$			

Fig. 41: Steps for recipe setup



No.	Designation	Description	Scenario
1	Recipe	A maximum of 7 recipes are available. The indi- vidual settings can be adjusted here for each recipe.	All
		If the ME61 is being used, the recipe can be hidden by entering the quantity 0.	
2	Name	Freely selectable name for the recipe (this is displayed in the process control display).	All
3	Туре	Recipe type: A choice can be made between " <i>Batch</i> ", " <i>Drainage</i> " or " <i>Batch with draining</i> " at this point.	Only for 4 and 9
4	Target quantity	Target quantity of recipe.	All
5	Medium valve number	The medium valve is selected here, depending on the scenario	Only for 7, 8 and 9
6	Dosing time limit	Safety parameters (maximum dosing time for the recipe):	All
		Knowledge of the flow and target quantity can be used to estimate how long a maximum dosing period should last. If the dosing time is exceeded, an error occurs and the valves are closed.	
7	Manual overrun correction	The batch controller possesses an automatic and constant correction function. It may be necessary to enter a manual correction quantity in certain cases. This is then always automati- cally included in the calculation.	All
8	Draining time	Opening time of drain valve after end of batch dosing.	Only for 4, 9 and 10
9	Residual quantity in dosing valve	Residual quantity to be dosed with the dosing valve.	Only for 6 and 10



15.1.2 Current recipe

Recipes 1-6, and the user-defined recipe, can be adjusted here

Image: Sector product secore product sector product sector product sector produc		😰 🚬 🖺 🖻 🗈 Ist 1 eway-indus 011	₽ ← → C	Diagnostic deactivated
Image: Construction of the construc			ince	
Image: state in the state i				
2 + 1 = 100 MBR Target quantity Target quantity of the recipe. If the doing process takes longer than 0 ml 3 + 11 = 100 MBR Dosing timeout Maximum dosing time for the recipe. If the dosing process takes longer than 0 sc 4 + 10 MBR Manual overshoot correction Depending on the whole setup, it could be needed to have a manual overshoot correction Depending on the whole setup, it could be needed to have a manual overshoot correction Depending on the whole setup, it could be needed to have a manual overshoot correction that can improve the accuracy of the batch summtry. 0 ml 0 ml 5 + 10 MBRS Dosing timeout Depending on the whole setup, it could be needed to have a manual overshoot correction. 0 ml 0 ml 0 ml 6 + 10 MBRS Dosing valve rest quantity Defines the quantity that is dosed towards the end exclusively with the dosing 0 ml 0 ml 6 - 10 MBRS Dosing valve rest quantity Defines the quantity that is dosed towards the end exclusively with the dosing 0 ml 0 ml 6 - 10 MBRS Dosing valve rest quantity Defines the quantity that is dosed towards the end exclusively with the dosing 0 ml 0 ml 7 F 00 MBR - 10 MBRS Dosing valve rest quantity Defines the quantity that is dos		Name	Name of the recipe	Recipe 1 🧷
3 + it 1601004 Dosing timeout Maximum doing time for the recipe. If the dosing process takes longer than os it 4 + Visitive 8502 Dosing timeout Maximum doing time for the recipe. If the dosing process takes longer than os it Os it 5 + Consider 8503 Dosing timeout Desing timeout Desing timeout Desing timeout Maximum doing time for the recipe. If the dosing process takes longer than os it Os it 5 + Consider 8503 Dosing timeout Desing timeout <th>. I# 8DO.012</th> <th>Target quantity</th> <th>Target quantity of the recipe. Set to 0 to hide this recipe on the display</th> <th></th>	. I# 8DO.012	Target quantity	Target quantity of the recipe. Set to 0 to hide this recipe on the display	
4 + C Value asso 4 + C Value asso 5 + C Value asso 6 + C Value asso 6 + C Value asso 6 - C Value asso 7 - C Value asso 8 - C Value asso 9 - C Value asso <td< th=""><th>+ 16D1004</th><th>Dosing timeout</th><th>Maximum dosing time for the recipe. If the dosing process takes longer that</th><th>0s //</th></td<>	+ 16D1004	Dosing timeout	Maximum dosing time for the recipe. If the dosing process takes longer that	0s //
5 + C (V015 Drain time Defines the opening time for drain value after batch completion 0 s ? 6 + C (Storweg WMX) Dosing value rest quantity Defines the quantity that is dosed towards the end exclusively with the dosing 0 ml ? 6 - C (NOVIG) Dosing value rest quantity Defines the quantity that is dosed towards the end exclusively with the dosing 0 ml ? 6 - S (Stative B055) SAW sensor Image: Complexity of the complexi		Manual overshoot correction	Depending on the whole setup, it could be needed to have a manual	
C Proto Dosing valve resk quantity whe whe couputs	+ C V015 CablePlug 8605	Drain time	Defines the opening time for drain valve after batch completion	0s 🖉
⊊ SAW sensor I⊥ Outputs	_ (FW 010	Dosing valve rest quantity		ns 0 ml 🧷
Example 1 Example 1	♀ SkW sensor ↓ Outputs ♥ General settings □ Gateway - Indus 011 ↓ File 1 ↓ Industrial communication ♥ General settings ↓ Process Control 007			

Fig. 42: Recipe options

No.	Designation	Description
1	Name	Freely selectable name for the recipe (this is displayed in the process control display).
2	Target quantity	Target quantity of recipe.
3	Dosing time limit	Safety parameters (maximum dosing time for the recipe):
		Knowledge of the flow and target quantity can be used to estimate how long a maximum dosing period should last. If the dosing time is exceeded, an error occurs and the valves are closed.
4	Manual overrun correction	The batch controller possesses an automatic and con- stant correction function. It may be necessary to enter a manual correction quantity in certain cases. This is then always automatically included in the calculation.
5	Draining time	Opening time for drain valve after batch has been completed
6	Residual quantity in dosing valve	Residual quantity to be dosed with the dosing valve.
		Only for scenario 6 and 10.



15.2 Scenarios setting

		CO C C C C C C C C C C C C C C C C C C	nance	Diagnostic deactivated
1 -	- □3 b05-Offline + 118D1 009 ab1 ME44	Batch mode	Type of batch system - automatic, teach-in or manual	Automatic 🧷
2 - 3 -	+ 1 BDO 042 + 1 BDO ME44 + 1 1600 ME44	Start diagnosis fill level Flow validation time	Fill level at which the flow is monitored after the dosing valve(s) are opened	10 % // 10,000 s //
4 -	+ +C VI013 AirLiNE 8652 + +C FM 014 AirLINE 8653	Overshoot correction mode	Enabling flow monitoring adapts the calculated overshoot correction from the previous batch to the actual flow Previous batch	correction with flow monitoring 🧷
5 - 6 -	+	Medium selection delay Valve settings	Delay of the dosing process after opening the medium selection valve.	0 s 🖉
-	+ C PK 000 C RCWWere Work 011 C Gateway Indus 01			burkert

Fig. 43: Scenarios setting

No.	Designation	Description
1	Batch mode	Batch mode selection: "Automatic", "Teach-In" or "Manual"
2	Start fill level diagnostics	Fill level when the flow diagnostics start
3	Flow validation time	Time when the flow is tested after the valves open
4	Overrun correction mode	Mode for overrun correction
		 <i>"Previous batch correction"</i> Adjustment while taking the last batch into consideration
		• <i>"Previous batch correction with flow monitoring"</i> Dynamic adjustment while taking the last batch and the current flow into consideration
5	Medium selection delay	Determines the delay from the opening of the medium selection valve to the start of the dosing process. The delay to be set depends on whether the line is full or, if the line is empty, medium, line lengths, pressure and nominal diameter.
		Only for scenario 3, 5, 7, 8, 9, 10
6	Valve settings	Configuration of valves used in scenario



16 BATCH OPERATION

16.1 Operation via display

After the ME61 was selected as a controller in the wizard, the batch dashboard appears on the ME61. In order to be able to use the preconfigured dashboard, it must be ensured that the supported display version is in use.



Fig. 44: Surface of display

No.	Designation	Description
1	Dose meter	Selected batch is displayed
2	Totaliser	Current dosing amount
3	Batch status	Current state of batch system
		For detailed information, see chapter <u>"7.2 Process</u> control of the batch"
4	Operation keys	Start
		Pause
		• Stop
5	Recipe selection	Up to 7 recipes are available. The individual settings of the selected recipe are displayed here. For detailed information, see chapter <u>"10.1.10 Recipe configuration"</u>
		If the ME61 is being used, the recipe can be hidden by entering the quantity 0.
6	Flow rate	Displays the temporary flow rate



16.2 Operated via the Communicator

16.2.1 Parameters set

Start-up and operation of the batch controller can, in addition to the display, also be carried out with the Bürkert Communicator.

- \rightarrow Select the gateway in the navigation bar.
- \rightarrow Enable batch control (1).
- \rightarrow Select recipe via bit values (2) (see chapter <u>"16.2.2 Recipe selection"</u>):
 - Recipe bit 0 => value 1
 - Recipe bit 1 => value 2
 - Recipe bit 2 => value 4

\rightarrow Select start (3).



Fig. 45: Parameters set

16.2.2 Recipe selection

Recipe number	Recipe bit 0	Recipe bit 1	Recipe bit 2
1	x		
2		Х	
3	x	Х	
4			Х
5	x		Х
6		Х	Х
7	x	Х	Х



17 BATCH MAINTENANCE



Fig. 46: Batch maintenance

No.	Designation	Description
1	Test batch	Can be used to calculate the dosing time. This is cal- culated here.
2	Reset dosing meter	Totaliser for the finished batch can be reset.
3	Reset the overrun correction	The batch controller possesses an automatic and con- stant correction function. The manually set correction quantity can be reset with this start-up wizard.
4	Batch version	Software version of the batch.



18 LICENCE ACTIVATION

The use of the f(x) function and/or the batch has been set by the manufacturer to only be available for an hour, for experimental purposes. In order to permanently use the functions without restrictions, a licence must be obtained.

The following steps must be completed to obtain this licence:

- → Open Bürkert home page <u>country.burkert.com</u> and enter licence key or the article number 00572948 in the search field.
- \rightarrow Start search.

 \rightarrow Enable ordering/buying graphic programming.



Please note:

- The article and serial number of the device on which the batch controller is later used will be required for the order.
- You can find the article number and serial number on the type label.

After the order has been completed, a delivery note containing a licence is generated (see <u>"Fig. 47: Example of a delivery note with the generated code")</u>.

Lieferschein	
Bürkert GmbH & Co. KG, D-74853 Ingelfingen	Ihr Bürkert Vertriebs-Center München Ihr Ansprechpartner: Tel.: Fax.: Mail:
Ihre Bestellung zu Auftrag	Kunden Nr. Auftrag Nr. Lieferschein Nr. Datum
Versandart: DPD Lieferbedingung (INCO 2010): FCA / ab j unsere Kreditorennummer: Warenausgang:	arod. Werk Ierpackung
Pos. Ident Nr. Artikelbezeichnung	Auftragsmenge Liefermenge Restmenge
10 00567713 Freischaltung graphische Program 8922-01 Ursprungsland: Frankreich (Rhi Stat. Warennummer: 00268020 kein Ursprungserzeugnis Nettogewicht / ST 0,001 KG	nmierung 1 ST 1 ST 0 ST
X95Y-Y9X-z5@B-Z5?A	
Teleton (07540) (16-9111), Teleta (07540) (16-914-8 Diese könner Internet was busertet de E-Mail Infolgibuertet de Date herunte Kommandigeseischet für ingefingen Bankwehlten Registagerecht Sautgar (14-8 SSG-27) Commerziaan Genergetricht Sautgar (14-9) (15-91	19 5225 1550 0007 6000 63 581KUN
	Sete 1/1

Fig. 47: Example of a delivery note with the generated code



- → Open input mask at: <u>https://communicator.burkert.com/deviceactivation</u> and enter the following information:
 - Licence code
 - Article number of the product for which the f(x) function/batch function is to be enabled
 - Item serial number

l the form below to generate your license key.	
License code	
JXB-QVU9-7N5E-KAHX	
Bürkert item number	
0307390	
Serial number	
125	



When the input mask is complete, a licence key (see <u>"Fig. 49: Licence key"</u>) that can be loaded into the Bürkert Communicator is generated.







- \rightarrow Open Bürkert Communicator
- \rightarrow Tools
- → Enable device functions (see "Fig. 50: Activate licence")



Fig. 50: Activate licence

\rightarrow Load licence (see <u>"Fig. 51: Load licence")</u>

 \rightarrow Open licence key

Gerätefunktionsverwaltung		×
Lizenz laden	>	
Lizenz laden	>	

Fig. 51: Load licence

The unlimited f(x) function/batch function will be available after this procedure and can now be used.



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