



Operating and installation instructions

Electronic controller

Type: 2210



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Table of Contents

1	Basic safety instructions for the electronic controller	5
2	Technical data of controller and control cabinet components . .	7
2.1	Power components	7
2.1.1	Supply	7
2.1.2	Motor control	7
2.1.3	Power supply	7
2.1.4	Fuse protection	7
2.2	Control circuit board inputs / outputs	8
2.2.1	Optocoupler inputs (E1 - E5), terminals 31 - 40	8
2.2.2	Potential-free relay outputs	8
2.3	Circuit diagram.	8
3	Operation	9
3.1	Device functions and control sequence	9
3.1.1	Master switch operation feedback contact.	10
3.1.2	Control voltage monitoring.	10
3.1.3	Motorstörung	10
3.1.4	DP – too high, backflushing filter (100 %)	10
3.1.5	Key C (number of flushes)	10
3.2	Display for "Operation" mode.	10
3.3	Text messages	11
3.3.1	Text display after switching on.	11
3.3.2	Text display in "Operation" mode.	12
3.3.3	Alarm messages	12
3.4	Setting and operation.	13
3.4.1	Setting level - Viewing and selecting parameters	13
3.4.2	Setting level - Changing and saving parameters	13
3.4.3	Return to operation level	13
3.5	List and description of parameters.	14
3.5.1	P0 Filter type	14
3.5.2	P2 Time-controlled backflushing	14
3.5.3	P3 Time-controlled backflushing	14
3.5.4	P4 Back-flushing Time.	15
3.5.5	P9 Motor Fault	15
3.5.6	P11 Language	15
3.5.7	P12 Test Code.	16
4	Description and function of controller	17
4.1	Controller type 6.18	17
5	Appendix	19
5.1	Worldwide sales and service network, subsidiaries and representatives	19





1 Basic safety instructions for the electronic controller



DANGER!

Risk of accidents from improper installation

Installing the controller or the connected equipment improperly may cause the device to fail and lead to serious or even fatal personal injuries. You must therefore follow the general safety regulations for equipment in industrial electrical systems and pay particular attention to the following points:

- The controller must be installed by qualified specialist staff only (as defined by the guidelines IEC 364, DIN VDE 0105 for electrical equipment).
 - The laws, guidelines, directives and regulations for the installation of electrical equipment which are valid at the location for installation must be adhered to.
 - Settings on devices with protection class IP00 without covers must only be made by authorised specialist staff when the devices are switched off. The local regulations for safety and the prevention of accidents must be observed.
 - The controller must only be operated within the permitted area of application.
-





2 Technical data of controller and control cabinet components

2.1 Power components

2.1.1 Supply

Supply L1-L2-L3 direct to 4-pole master switch – Q1 (T1-T2-T3)

2.1.2 Motor control

Motor connection U-V-W direct to motor contactor – K1 (2-4-6)

2.1.3 Power supply

Primary voltages 0 - 208 V, 230 V 380 V, 400 V, 440 V, 500 V, 550 V

Secondary voltages

0 V AC - 230 V AC

0 V AC - 20 V AC

Control voltage 230 V AC

Control circuit board supply voltage

2.1.4 Fuse protection

Fuses in the control cabinet

F1 to F4

each 1 A

Fuses on the control circuit board

Fuse F1

0.8 A slow-blow

Fuse F2

2.0 A slow-blow



2.2 Control circuit board inputs / outputs

2.2.1 Optocoupler inputs (E1 - E5), terminals 31 - 40

2.2.2 Potential-free relay outputs

Outputs A1 - A15 Messages 1 - 5 (change- Terminals 16 - 30
over contact)



NOTE

The connections and designations can be found in the control cabinet diagram.

2.3 Circuit diagram

The circuit diagram for the controller is contained in the appendix of these operating and installation instructions.

3 Operation

3.1 Device functions and control sequence

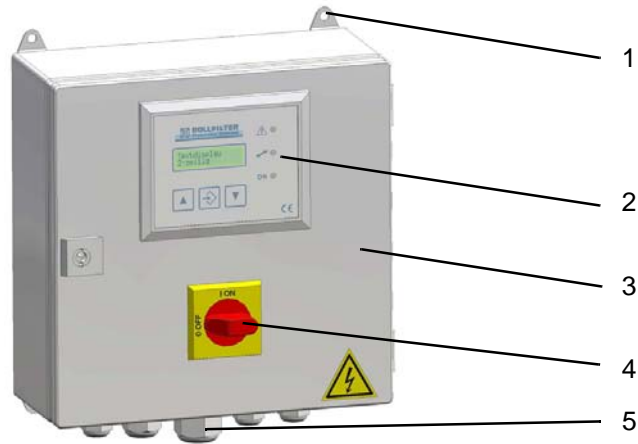


Fig. 3-1 Electronic controller type 2210

- 1 Fastening
- 2 Display and operating elements
- 3 Housing
- 4 Master switch
- 5 Connection

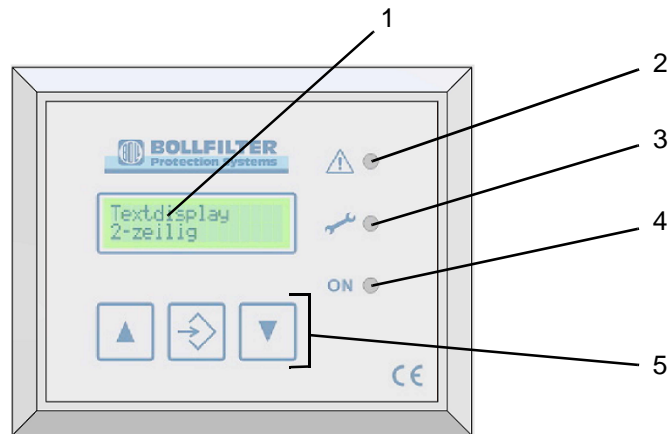


Fig. 3-2 Display and operating elements

- 1 Display screen for text display, 2 lines of 16 characters
- 2 "Alarm" LED (red)
- 3 "Service" LED (yellow)
- 4 "Operation" LED (green)
- 5 Keypad



NOTE

The three keys on the keypad are assigned to the key references displayed above them in the second line of the display as follows:

Key **C**: When pressed, shows the number of flushes

Key **F**: When pressed, triggers manual flushing

Key **Q**: When pressed, acknowledges the alarm messages

3.1.1 Master switch operation feedback contact

When the master switch is in the "On" position, a contact is made.

3.1.2 Control voltage monitoring

As soon as the master switch is actuated, the power supply is activated and the controller is working properly, the green "Operation" LED lights up and the "Control voltage monitoring" relay is activated. In the event of operating voltage failure or a fuse fault on the control circuit board, no LED lights up and the "Control voltage monitoring" relay is no longer activated.

3.1.3 Motorstörung

If the measured motor current exceeds the set setpoint value for parameter P9, a message appears in the display and a potential-free signal is sent to the relay outputs. The motor and the backflushing function switch off immediately. Once the fault has been remedied, the user has to acknowledge the alarm message by pressing the Q key.

3.1.4 DP – too high, backflushing filter (100 %)

The signal transmitter is a pressure switch contact which is connected to the "Differential pressure indicator DP too high, backflushing filter" optocoupler input. If the message is active for longer than 2 seconds, an alarm message appears in the display screen and the red "Alarm" LED lights up. Once the fault has been remedied, the user has to acknowledge the alarm message by pressing the Q key.

3.1.5 Key C (number of flushes)

When key C (number of flushes) is pressed, the number of flushing cycles which have been performed is shown on the display screen for 3 seconds.

3.2 Display for "Operation" mode

The green "Operation" LED lights up once the power supply has been switched on and the controller is at operation level ("Operation" mode).



3.3 Text messages

3.3.1 Text display after switching on

Boll & Kirch

Company name

xxxxxxxxxx

Programme number

After a short delay, the parameterised controller type is displayed in the second line of the display.

6.18

Controller type 0

fi

Circuit diagram Z46327



3.3.2 Text display in "Operation" mode

forced fl. 00:01 Remaining time till forced flushing is triggered 00 h 01 min

C - F - Q Reference to keys

When flushing has been triggered, the following messages appear in the first line (depending on the source):

Manual flushing When flushing is triggered by the F key

Forced flushing When flushing is triggered by time-controlled backflushing

DP flushing When flushing is triggered by backflushing filter differential pressure

When flushing has been triggered, the following messages may in the second line (depending on the source):

Flush. time 3S Remaining flushing time



NOTE

3S indicates that the remaining flushing time is 3 seconds.

If the C key is pressed, the following message appears on the display screen:

No.of flushes

xxxxxx cycles Number of flushing cycles

The number of flushing cycles is saved and backed up in the event of a mains failure.

3.3.3 Alarm messages



NOTE

- The red "Alarm" LED lights up every time an alarm message is issued.
 - All alarm messages are saved and backed up in the event of a mains failure.
 - The alarm message and the operation messages are shown alternately in the second line of the display, switching every 2 seconds.
 - When the Q key is pressed, all alarm messages are deleted, but only if the respective cause of the alarm has been remedied. If the cause of the alarm is not remedied, the alarm message appears again.
-

Alarm messages in the display:

Motor fault In the event of a "Motor fault" alarm

DP too high In the event of "Differential pressure to high Filter 100%"



3.4 Setting and operation

3.4.1 Setting level - Viewing and selecting parameters

In order to access the setting level "Selecting and viewing parameters" press keys Δ and ∇ together until the green "Operation" LED is extinguished (approximately 3 seconds). The first display line shows the parameter and the second line shows the parameter value. All parameters can now be displayed by repeatedly pressing the key Δ or ∇ .

3.4.2 Setting level - Changing and saving parameters

In order to access the setting level "Changing and saving parameters", press the middle key until the green "Operation" LED flashes (approximately 3 seconds). The parameter can now be changed by repeatedly pressing the key Δ or ∇ . In order to save the value and return to the setting level "Selecting and viewing parameters", press the middle key until the green "Operation" LED is extinguished (approximately 3 seconds).

3.4.3 Return to operation level

In order to access the operation level, press keys Δ and ∇ together until the green "Operation" LED lights up (approximately 3 seconds).



3.5 List and description of parameters

3.5.1 P0 Filter type

Adjustable in steps of one Range 0 - 17
Factory setting Initial value 0

Text display, line 1 **P0 Filter type**
Text display, line 2 **6.18**

3.5.2 P2 Time-controlled backflushing

Adjustable in steps of one hour Range 0 - 59 h
Factory setting Initial setting 2 h

Text display, line 1 **P2 forced flush.**
Text display, line 2 **XXX hours**

3.5.3 P3 Time-controlled backflushing

Adjustable in steps of one minute Range 0 - 59 min
Factory setting Initial value 0 min

Text display, line 1 **P3 orced flush**
Text display, line 2 **XXX minutes**



3.5.4 P4 Back-flushing Time

Adjustable in steps of one second Range 5 - 100 s
Factory setting Initial value 20 s

Text display, line 1 **P4 flushing time**
Text display, line 2 **XXX seconds**

3.5.5 P9 Motor Fault

Adjustable in steps of 0.01 A Range 0.10 to 0.99 A
Factory setting Initial value 0.4 A

Text display, line 1 **P9 Motor fault**
Text display, line 2 **0000 mA**

3.5.6 P11 Language

You can select from German, English, French and Spanish.

Setting D German
 ES Spanish
 F French
 GB English

Factory setting Initial setting D German

Text display, line 1 **P11 Language**
Text display, line 2 **GB English**



3.5.7 P12 Test Code



NOTE

This parameter is **only** visible with filter type P0 = 0.



NOTE

The test code switches the controller to a test mode which is provided **for authorised persons only**.

Adjustable in steps of one
Factory setting

Range 0 to 250
Initial value 0

Text display, line 1
Text display, line 2

P12 Testcode
XXX



4 Description and function of controller

4.1 Controller type 6.18

Inputs

Pressure switch "DP reached, backflushing filter" fi 75 %

Pressure switch "DP too high, backflushing filter" fi 100 %

Outputs

Motor

Flushing valve

Potential-free contacts

- | | |
|---|----------------------|
| 1) "Control voltage monitoring" alarm | Output A1, A2, A3 |
| 2) Collective fault, comprising:
- "Maximum differential pressure reached" alarm
and
- Alarm "Motor fault: Actuator or gear motor" | Output A4, A5, A6 |
| 3) "Actuator closed" alarm | Output A7, A8, A9 |
| 4) "Actuator closed" message | Output A10, A11, A12 |
| 5) "Flushing active" message | Output A13, A14, A15 |

Functional description 6.18

See the operating instructions for the filter's function.

Flushing is triggered by:

- 1) Key F
- 2) The forced flushing time elapsing
- 3) Pressure switch "DP reached, backflushing filter"

Special attributes

- All alarms are displayed and signalled and saved via potential-free contacts.
- If the controller is in parameterisation mode, flushing cannot be triggered manually.
- If the "Controller type" parameter is changed, the functions are re-started.





5 Appendix

5.1 Worldwide sales and service network, subsidiaries and representatives

If you require service or spare parts, please contact the main site or our subsidiaries, representatives or service points.

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 Geschäftsstelle Süd
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- | | | |
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