MANUAL

LOGO switch box

for user and installer

Version: 2023-07

Manual LOGO switch box

This manual contains information regarding the PLC program, required for the installation and use of the LOGO switch box.

Contents

1 SIEMENS LOGO MODULE

The LOGO switch box is equipped with a Siemens LOGO module and a display in the door. (fig. 1). This display shows information regarding the status of the belt filter. With the function keys, parameters can be adjusted easily.

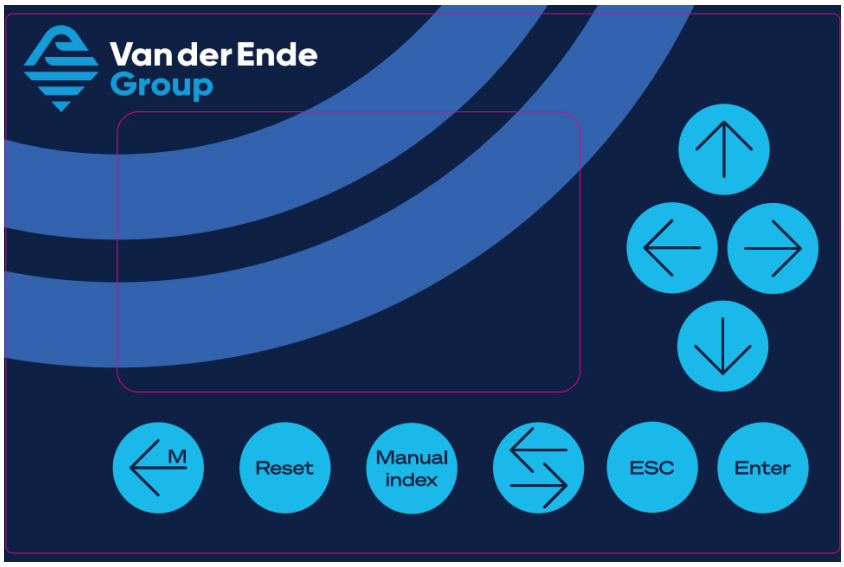
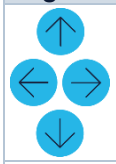
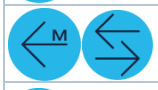


Figure 1: Siemens display

Figure	Function name	Function
	Arrow keys	Used to adjust parameters.
	Enter	Used to confirm your action/adjustment.
	Escape	Used to return to the program or cancel your adjustment.
	Scroll-keys	Used to scroll through the program.
	Reset	Used to reset an alarm.
	Manually change filter fleece	Used to manually provide new filter fleece. **Note:** This function has a second delay.

2 LAY-OUT PLC MENU

The program consists of 14 different screens

- Main screen
- Submenu 1 Run-on time clean water pump
- Submenu 2 Fleece float delay
- Submenu 3 Run-on time fleece
- Submenu 4 Fleece maximum running time
- Submenu 5
- Submenu 6 High water level clean water tank
- Submenu 7 Delay supply pump after high water level
- Fault channel 1 General thermal failure
- Fault channel 2 No filter fleece present
- Fault channel 3 Failure water level switch belt filter
- Fault channel 4 High water level clean water tank belt filter
- Fault channel 5 High water level clean water reservoir
- Fault channel 6 Low water level waste water reservoir

Use the scroll keys to scroll through the program.

- Switch to previous screen: 

- Switch to next screen: 

3 START UP

As soon as the main switch is switched on, the Siemens LOGO module will automatically start up. The startup screen is displayed. (Fig. 2)

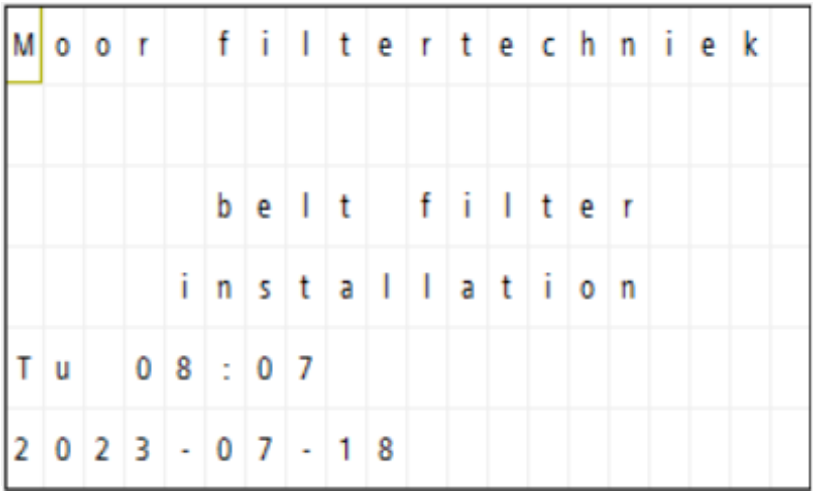


Figure 2: Start-up screen

After 5 seconds the main screen is displayed (Fig. 3). In this main screen, the status of the most vital components of the belt filter is presented.

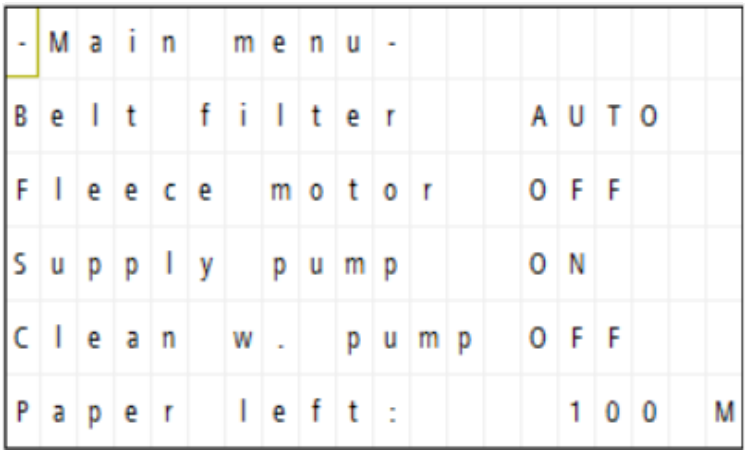


Figure 3: Main screen

Component	Notification
Belt filter	Auto
	Manual
	Off
Supply pump	On
	Off
Clean water pump	On
	Off
Fleece motor	On
	Off
Low water notification	No low water
	Low water

4 FIRST START-UP

In case the belt filter is started up for the first time, all submenus and fault channels must be checked.

1. Open the control box. Check whether all not used contacts are connected. (use the wiring diagram)
2. Check the parameters in all submenus
3. Check the direction of rotation of the motors
4. Rule out dry running pumps
5. Rule out flooding of the belt filter
6. Simulate faults to check whether the fault channels are being activated.
7. Check whether a malfunction of the belt filter is communicated with connected systems (if used)
8. Check whether the water supply to the belt filter is stopped after the supply pump is switched off. (avoid siphoning)

In case the supply pump is not connected to the switch box of the belt filter:
Check whether the water supply is stopped in the event of a fault on the belt filter.
Overflow of the belt filter must be ruled out.

5 ADJUST PARAMETERS

Every parameter is processed in a submenu (H3 Lay-out PLC menu)
The following steps must be taken to adjust a parameter:

- Push the escape key for about 2 seconds. Around the parameter appears a black flashing block.
- Press enter to adjust the parameter, the block will stop flashing.
- Use the arrow keys to adjust the value
- Press enter and then escape.
- The parameter has been adjusted.

After changing parameters in the program, the functionality of the belt filter must be thoroughly tested.

Changing of parameters in the program may only be carried out be appropriately trained personnel.

5.1 Submenu 1 Run-on time clean water pump

The clean water pump is the pump in the reservoir beneath the belt filter. The run-on time is the period that the pump continues running after the float has fallen off. With the delay, the entire content of the reservoir is used.

If there is no clean water pump connected, this signal can be used as a start-up signal for a connected system (e.g. disinfection systems). The run-on time must be set to 0 seconds.

Setup: The set value (default 0 seconds)
Value: Real-time value during operation.

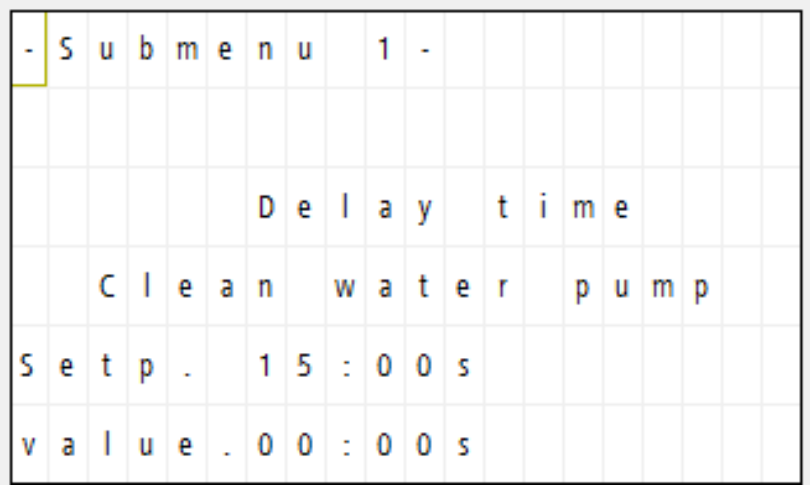


Figure 4: Submenu 1

After changing the run-on time of the clean water pump, dry running of the pump must be ruled out.

5.2 Submenu 2 Fleece float delay

The ‘fleece index’ is the name for providing new filter paper to the belt filter. The fleece index is depending on the water level in the belt filter. This water level is measured by a level switch. This parameter determines the minimum period that the level switch must me switched on, before the belt filter is provided with new filter fleece. This parameter prevents the motor of the belt filter for constantly switching on and off by the movement of the water

Setup: The set value (default 1 seconds)
Value: Real-time value during operation.

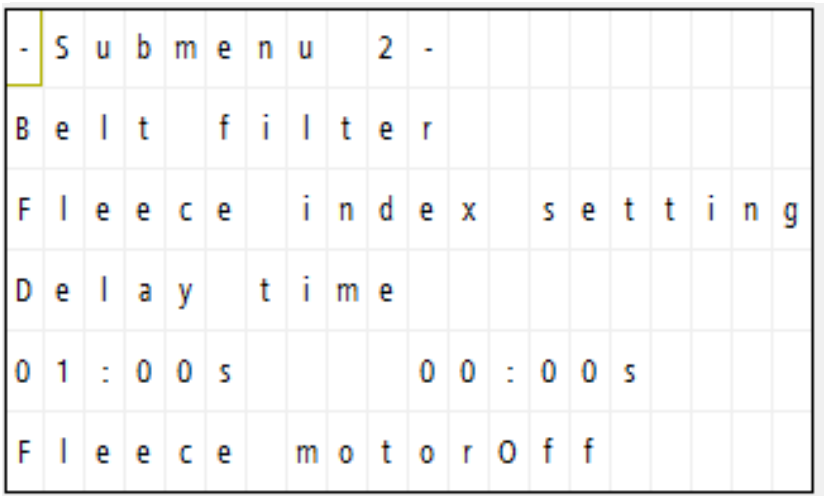


Figure 5: Submenu 2

ATTENTION! Never set this parameter to more than 5 seconds. The belt filter can flood over as the belt filter is not supplied with new fleece in time.

5.3 Submenu 3 Run-on time fleece

This submenu determines the number of seconds the belt filter is provided with new filter fleece.

Setup: The set value (default 1 seconds)
Value: Real-time value during operation.

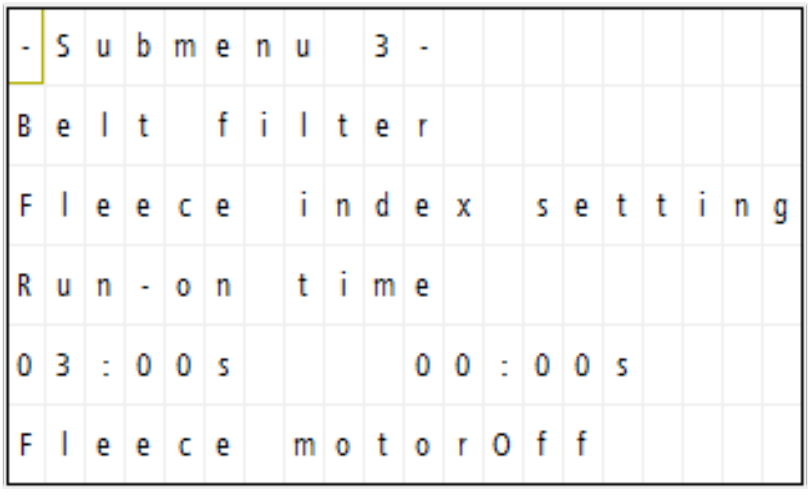


Figure 6: Submenu 3

5.4 Submenu 4 Fleece maximum running time

As the level switch on the belt filter switched on for a longer time, this parameter determines the maximum running time of the filter fleece. As soon as the maximum running time is passed the belt filter stops providing new filter fleece and the supply pump is switched off.

This parameter prevents the belt filter for flooding in the event that the belt filter is provided with new filter fleece, but the water level does not drop. This situation can occur with an increased amount of contamination in the water, or a higher water flow.

Setup: The set value (default 7 seconds)
Value: Real-time value during operation.

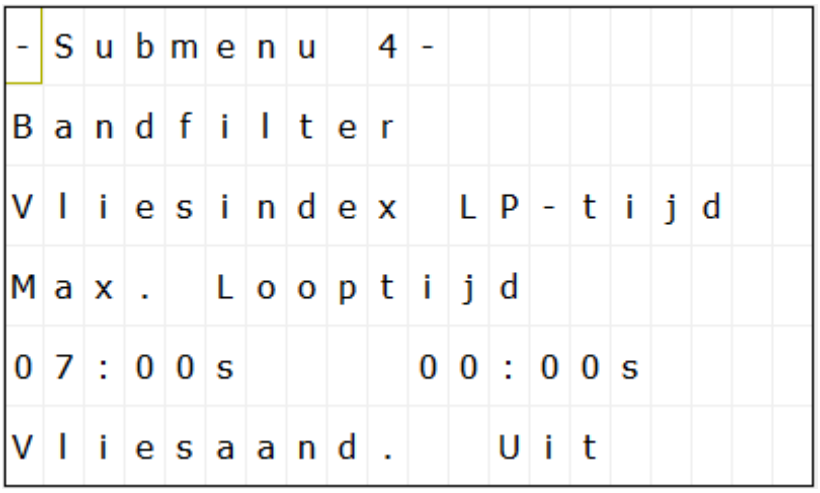


Figure 7: Submenu 4

5.5 Submenu 5

Submenu 5 is a continuation of submenu 4. If the level switch of the belt filter is continuously switched on, the parameter in submenu 4 switches off the supply pump and stops the fleece. After that, the water level should drop. If not, and the level switch keeps switched on, the belt filter will generate a fault signal after the time set in submenu 5.

Setup: The set value (default 20 seconds)
Value: Real-time value during operation.

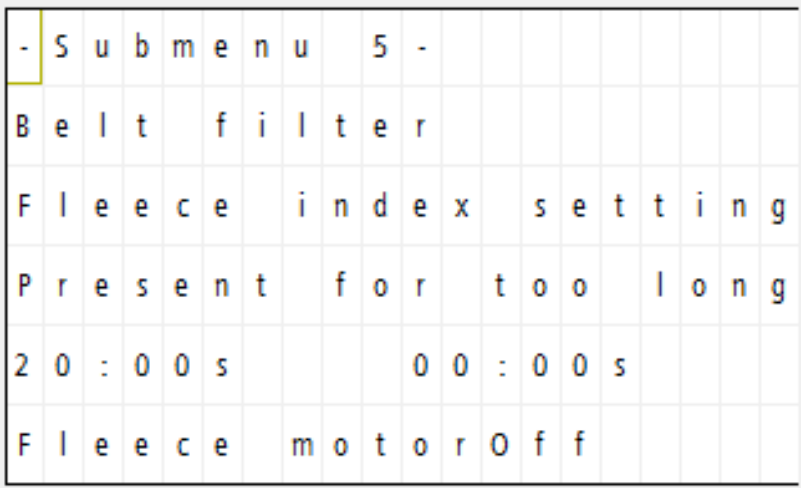


Figure 8: Submenu 5

As soon as the time in submenu 5 is passed, the program will generate alarm. The screen will light up red and –ALARM- appears on the screen. Fault channel 3 is activated.

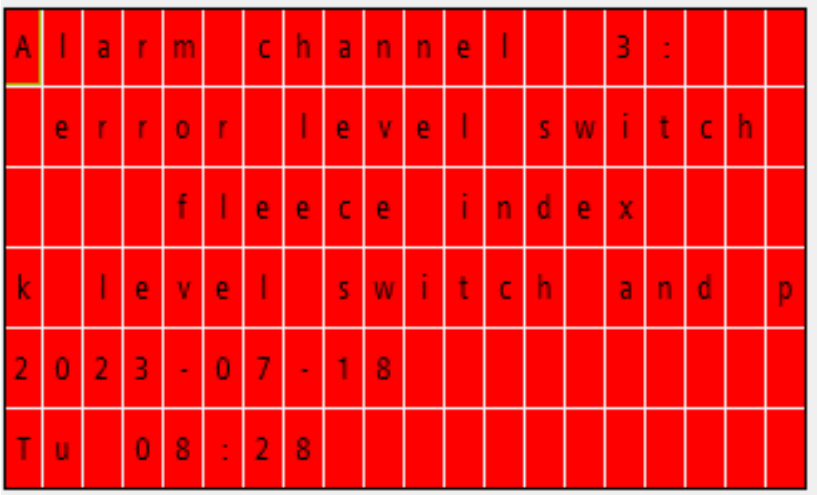


Figure 9: Fault channel 3

This alarm must be reset on the switch box. The date and time the alarm occurred is displayed. See chapter 6.3 for the checks that must be carried out.

5.6 Submenu 6 High water level clean water tank

Submenu 6 only applies if use has been made of the high-level sensor in the reservoir under the belt filter. With the parameter in submenu 6, the high-water level alarm is delayed.

In the event of a high-water signal, the supply pump will be switched off and fault channel 4 is activated. This alarm does not need a reset. As soon as the water-level drops, the supply pump is switched on again. The date the alarm occurred is stated in fault channel 4. See chapter 6.4 for the checks that must be carried out.

Setup: The set value (default 5 seconds)
Value: Real-time value during operation.

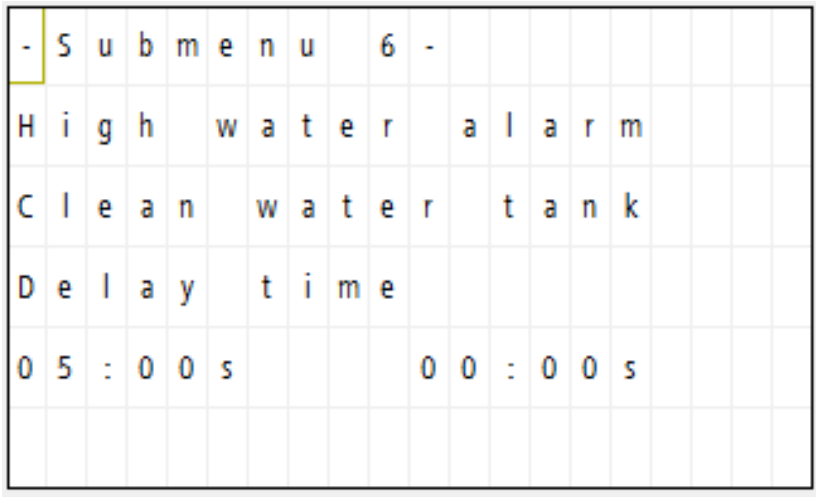


Figure 10: Submenu 6

Figure 11: Fault channel 4

5.7 Submenu 7 Delay supply pump after high water level

Submenu 7 is a continuation of submenu 6. As soon as there is a high-water signal in the clean water reservoir, the supply pump is switched off. If the water-level drops the supply pump will start again. The parameter in submenu 7 is the delay for the supply pump to start, after the high water sensor is switched off.

Setup: The set value (default 5 seconds)
Value: Real-time value during operation.

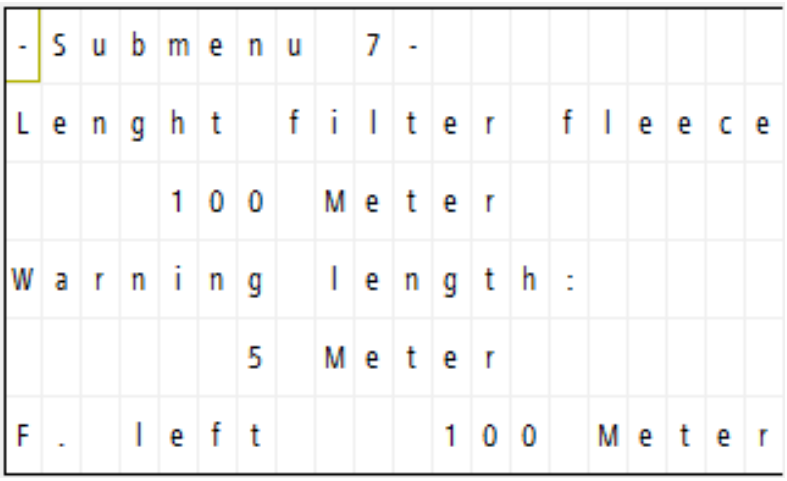
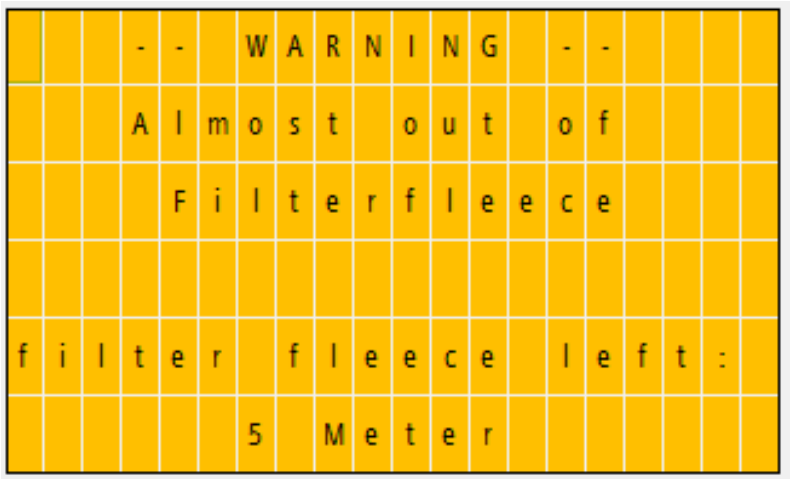


Figure 12: Submenu 7

As soon as the remaining length of filter fleece is equal to or less than the warning length. The following warning occurs:



The calculated value of how much fleece is left is automatically reset as soon as the end of fleece sensor is activated.

6 FAULTS BELT FILTER

The PLC program has several fault channels

- Fault channel 1 General thermal failure
- Fault channel 2 No filter fleece present
- Fault channel 3 Failure water level switch belt filter
- Fault channel 4 High water level clean water tank belt filter
- Fault channel 5 High water level clean water reservoir
- Fault channel 6 Low water level waste water reservoir

As soon as a fault occurs, the screen light us red or orange and –ALARM- flashes in the screen. In this case one or more fault channels have been activated. Use the scroll keys to check the interference channels. The fault is displayed in an active fault channel. ‘’ No active failure’’ is stated in a passive fault channel (Fig. 13).

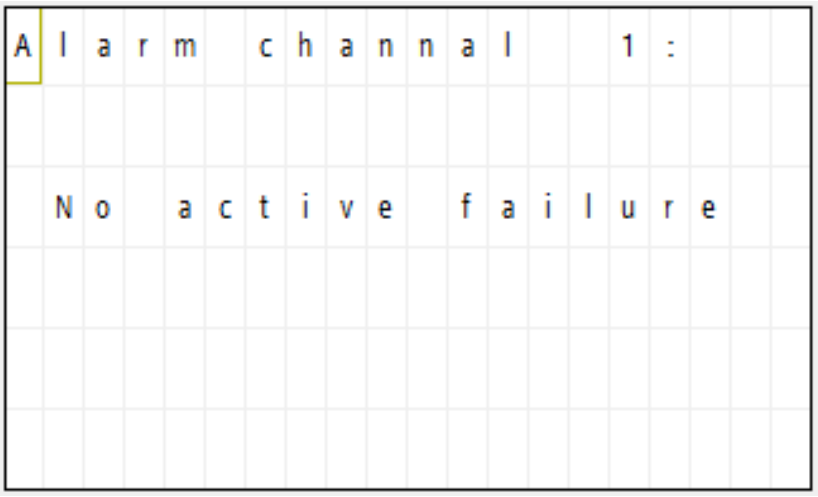


Figure 13: Fault channel 1

6.1 Fault channel 1, General thermal failure

Fault channel 1 is activated as one or more motors or pumps are thermally switched off.

1. Open the switch box
2. Check which motor or pump is thermally switched off.
3. Check the relevant motor or pump.
4. Return the thermal protection back to 1.
5. Press reset

If the fault persists, consult the installer

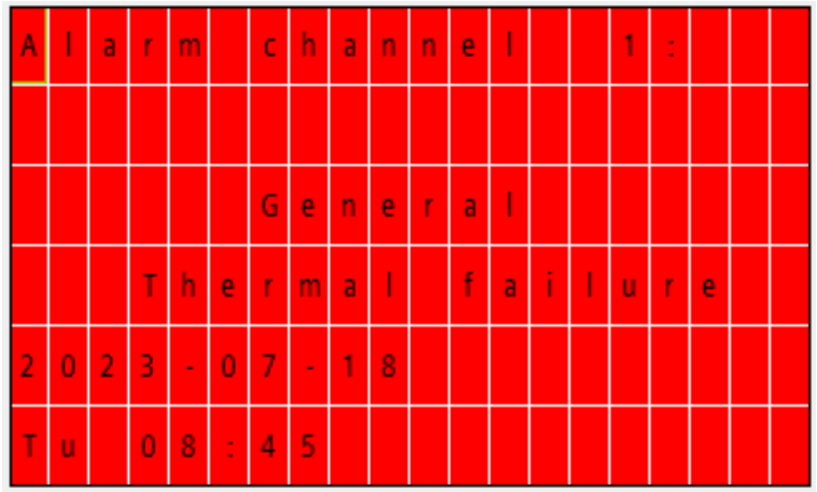


Figure 14: Fault channel 1

6.2 Fault channel 2, No filter fleece present

As the belt filter is running out of filter fleece, this is detected by the end of fleece detection. Fault channel 2 is activated, the supply pump stops running. Install a new roll of filter fleece according to the manual and press reset. If the fault remains active after reset, check the functionality of the end of fleece detection.

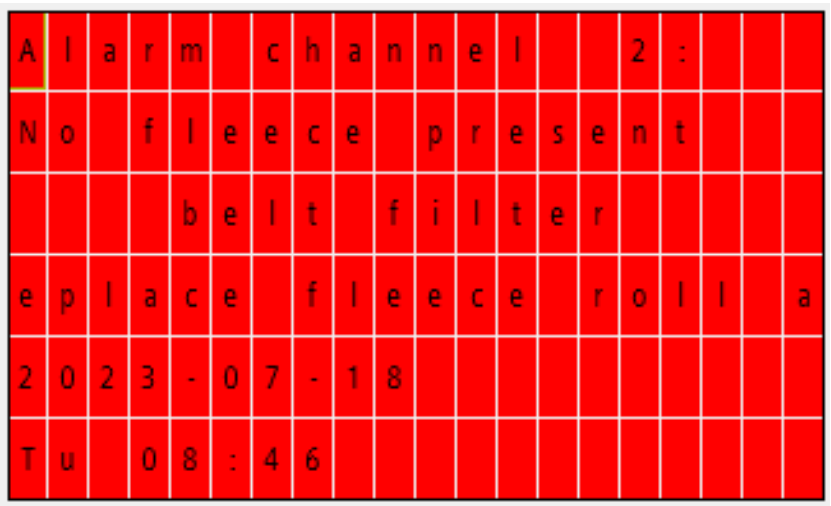


Figure 15: Fault channel 2

ATTENTION! The end of fleece detection doesn't work if the filter roll unrolls incorrectly. Consult the manual of the belt filter.

6.3 Fault channel 3, Failure water level switch belt filter

Fault channel 3 is activated if the maximum running time of the filter fleece is exceeded. This fault occurs with an extremely high degree of pollution, high water flow or a faulty water level sensor.

1. Check the functionality of the water level sensor
2. Check whether the filter paper is fed correctly
3. Press reset
4. Check the water flow, adjust the flow if necessary
5. Check whether the degree of contamination of the water is higher than normal.

Consult the installer if the fault persists.

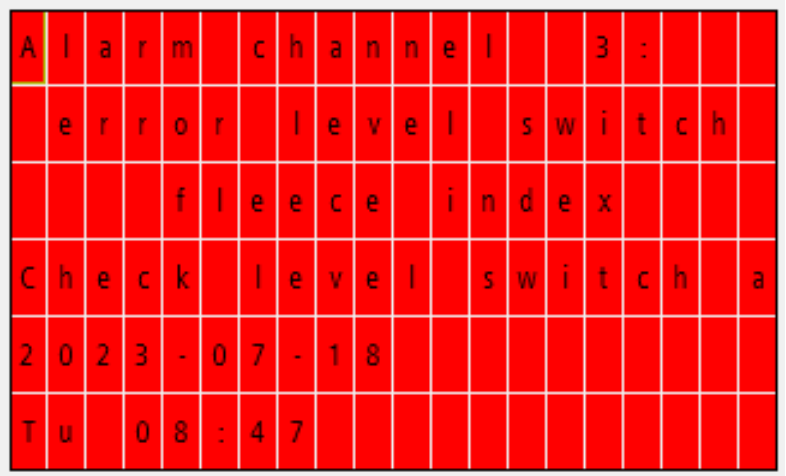


Figure 16: Fault channel 3

6.4 Fault channel 4, High water level clean water tank belt filter

In the event of a high water level signal in the reservoir under the belt filter, the supply pump is switched off and fault channel 4 is activated. This alarm does not need a reset. As soon as the water level drops the supply pump is switched on again.

The high water signal occurs if the clean water pump is not switched on in time, or if the water supply is higher than the capacity of the clean water pump.

1. Check the functionality of the clean water pump
2. Start the belt filter
3. Check whether the capacity of the clean water pump is greater than the water supply.

Consult the installer if the fault persists.

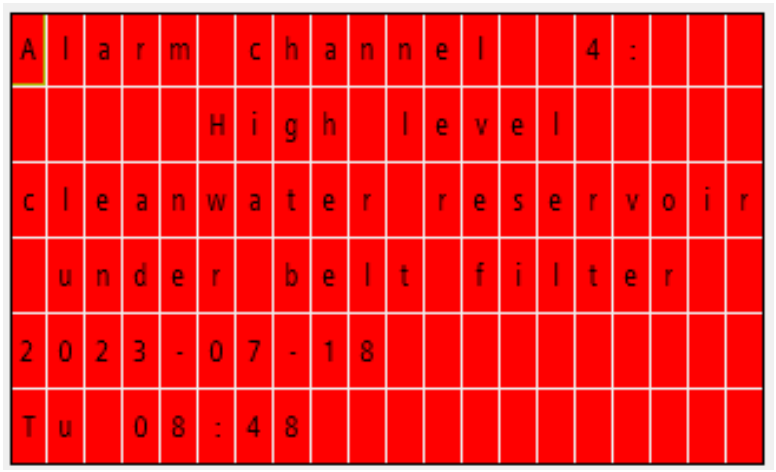


Figure 17: Fault channel 4

6.5 Fault channel 5, High water level clean water reservoir

The clean water pump pumps the water to a clean water storage. The supply pump and clean water pump are switched off as soon as there is a high water signal in the clean water storage. In this case an alarm is generated. The screen lights up red and fault channel 5 is activated.

The belt filter starts again as the high water level signal falls off.

Figure 18: Fault channel 5

6.6 Fault channel 6, Low water level waste water reservoir

The supply pump extracts water from a reservoir. In case of a low water level in this reservoir, the supply pump stops and a warning is given. The screen lights up orange. The belt filter starts up again as soon as the level in this reservoir rises.

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