

# Fire Module 4 Outputs V3

Alarm monitoring module for fire alarms and other alarm devices

350-024  
Publication date 2025-06-04



## Table of Contents

1. Mounting .....	3
1.1. Four module 4 outputs in S .....	4
1.1.1. Wall mounting .....	4
1.2. Installation of optional boards with plastic spacers in FLX M or FLX L .....	5
1.3. Mounting of optional boards on sheet metal in FLX M or FLX L .....	5
1.4. Installation of optional card in 19 rack module holder .....	6
1.4.1. Positions for cards in 19 rack module holder .....	7
2. Connection .....	8
2.1. Description Fire module 4 outputs .....	9
2.2. Connecting Fire module 4 outputs to battery backup .....	10
2.3. 24 V connection from battery backup to optional card .....	10
2.4. Plugging in load on Fire module 4 outputs .....	11
2.4.1. Alarm priority .....	12
2.4.2. Negative and positive logic - overview of examples of connection .....	12
Alarm settings: negative and positive logic .....	12
2.4.3. Example of connection 1 - Negative logic common control, factory setting. ....	14
2.4.4. Example of connection 2 - Negative logic individual control .....	15
2.4.5. Example of connection 3 - Positive logic - joint control .....	16
2.4.6. Example of connection 4 - Positive logic individual control .....	17
2.4.7. Alarm settings: negative and positive logic .....	18
Turning on alarm settings in case of negative logic .....	18
Disable input 3-4* .....	18
Turning on alarm settings in case of positive logic .....	18
Constant or pulsating alarm outputs .....	19
2.4.8. Connection of fireman control .....	19
2.4.9. Switching on the alarm device .....	19
Example of plugging in loops .....	19
2.4.10. Calibration and programming .....	20
Resetting settings .....	21
2.4.11. Programming alarm type after alarm output .....	21
2.5. What is shown on the card display? .....	22
2.5.1. Matrix for display .....	22
List of what the display can display .....	23
2.6. Acknowledgment of alarms shown on the display .....	28
3. Maintenance - PCB .....	29
3.1. CE marking .....	29
3.2. Warranty .....	29
4. Technical data: Fire module 4 outputs .....	29
5. About translation of this document .....	30
6. Loop Troubleshooting .....	30
7. Contact us .....	31

## 1. MOUNTING

The card can be mounted in battery backup from the factory, in its own enclosure or sent as a loose card.



## IMPORTANT

The card must [calibrated \[20\]](#) before use.

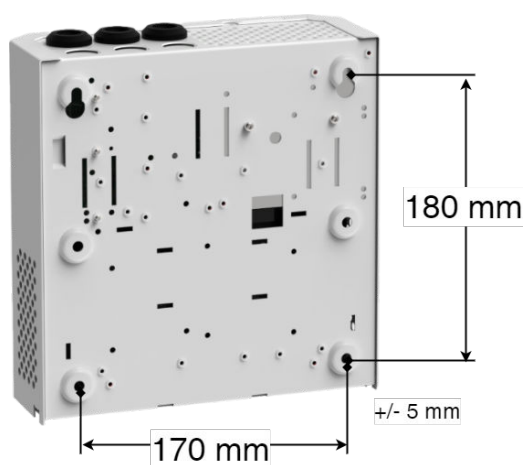
### 1.1. Four module 4 outputs in S

Fire module 4 outputs are delivered mounted in S-enclosure, ready for installation.



#### 1.1.1. Wall mounting

Distance between screw head and wall should be 1.5–2 mm. Preferably leave a 100 mm air gap around the unit.





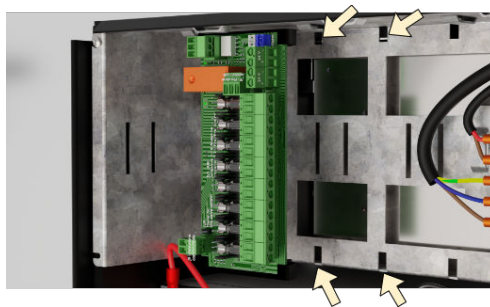
## 1.2. Installation of optional boards with plastic spacers in FLX M or FLX L



### NOTICE

The card in the picture is in the larger form factor. There are more cards in this form factor, but they are mounted in the same way. This means that the card in the picture may be different from the card you are mounting.

- Snap the card into the tray underneath.



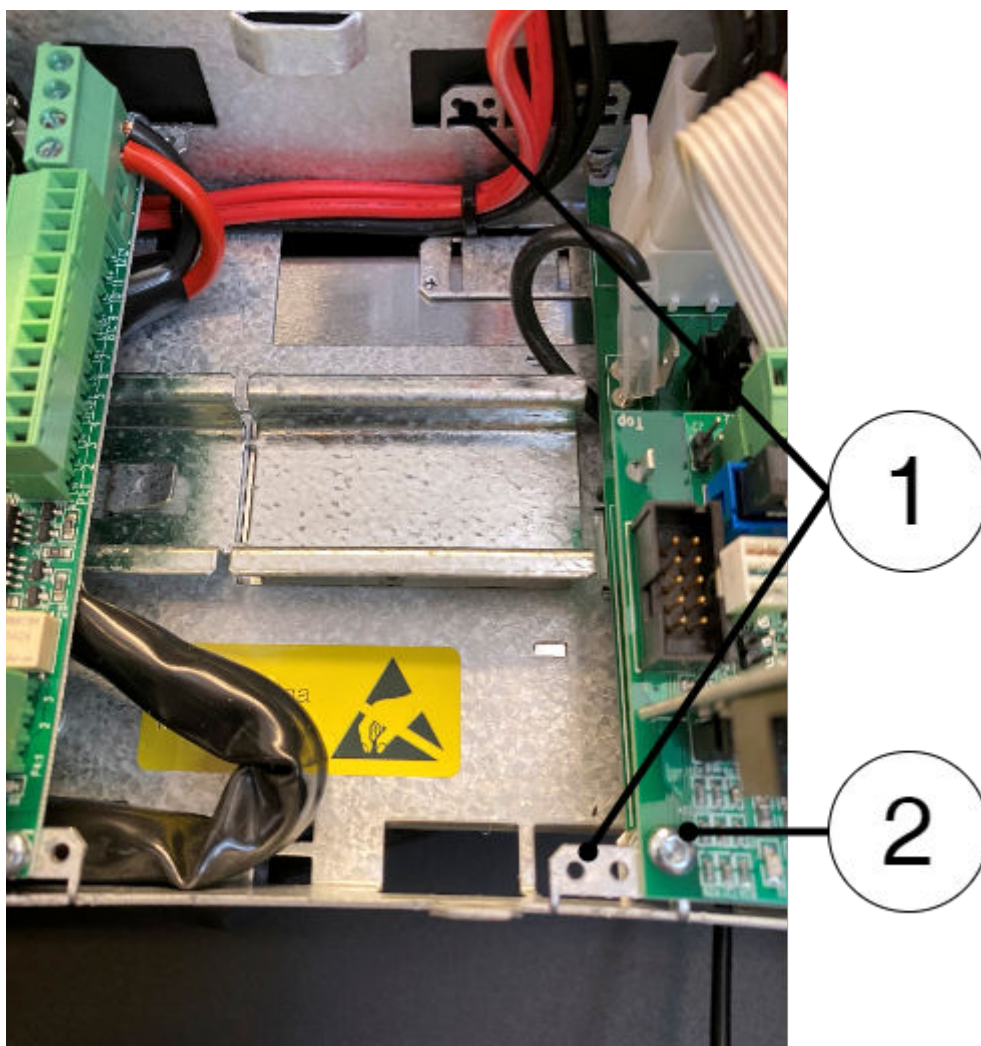
## 1.3. Mounting of optional boards on sheet metal in FLX M or FLX L



### NOTICE

The card in the picture is in the larger form factor. There are more cards in this form factor, but they are mounted in the same way. This means that the card in the picture may be different from the card you are mounting.

1. Start by folding the plate into the battery backup where the card will be located, see picture.
2. Screw the board with the supplied screw, missing screw use plate screw (2.9 x 6.5), before making connections, (to avoid short circuit).

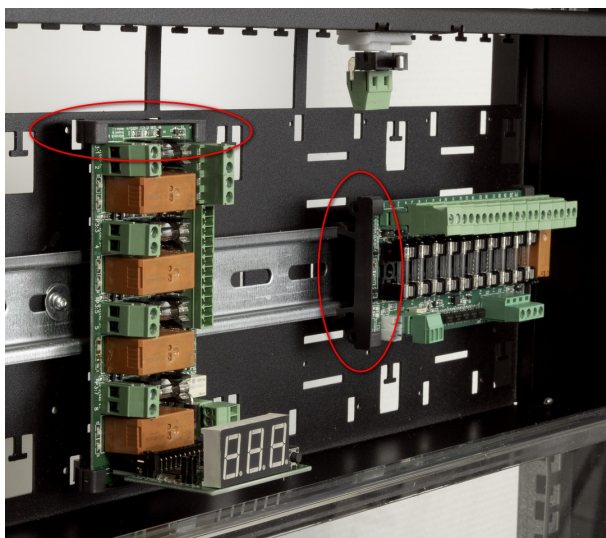


Fold down the “ears” and screw the board.

#### 1.4. Installation of optional card in 19 rack module holder

- Snap the card to any position (1-4, a-c, depending on the card's form factor / size).





#### 1.4.1. Positions for cards in 19 rack module holder

Number of slots for circuit boards with a larger form factor: 4 pieces - marked 1-4 in the picture.

Number of places for circuit boards in the smaller form factor (L-module): 12 pcs - marked a-c in the picture. However, 8 (horizontal) optional cards have the most space (a, c), as the grooves in the middle (b) are adapted for standing cards.

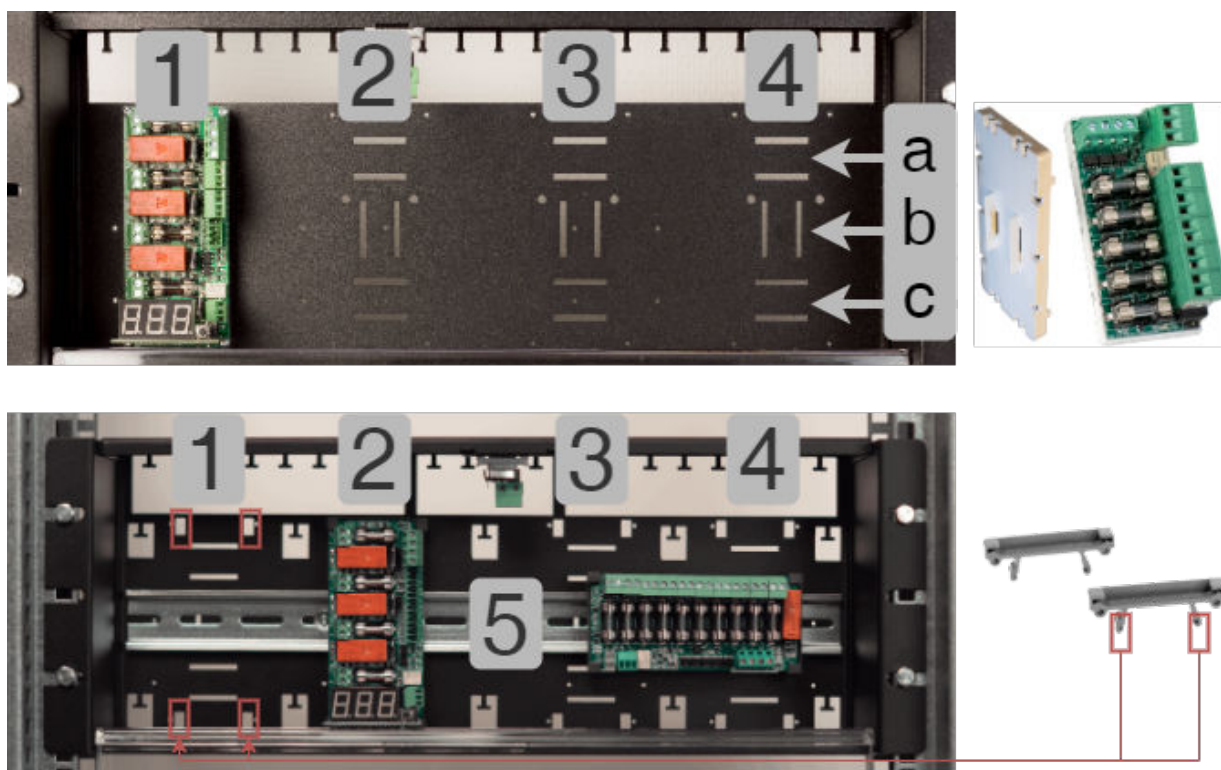


#### NOTE

It is the responsibility of the installer to consider wiring and cable lengths when installing circuit boards.



Figure 1. 19 rack module holder with a card mounted in place 1



To the right is a card in the smaller form factor, for place a-c.

At the bottom right are plastic ends short of the larger form factor. These can be in place 1-4 or (5) DIN rail.

## 2. CONNECTION

The following pages describe the card, how it is connected, other connections and configurations.







## 2.1. Description Fire module 4 outputs

Figure 2. Fire module 4 outputs v3.2

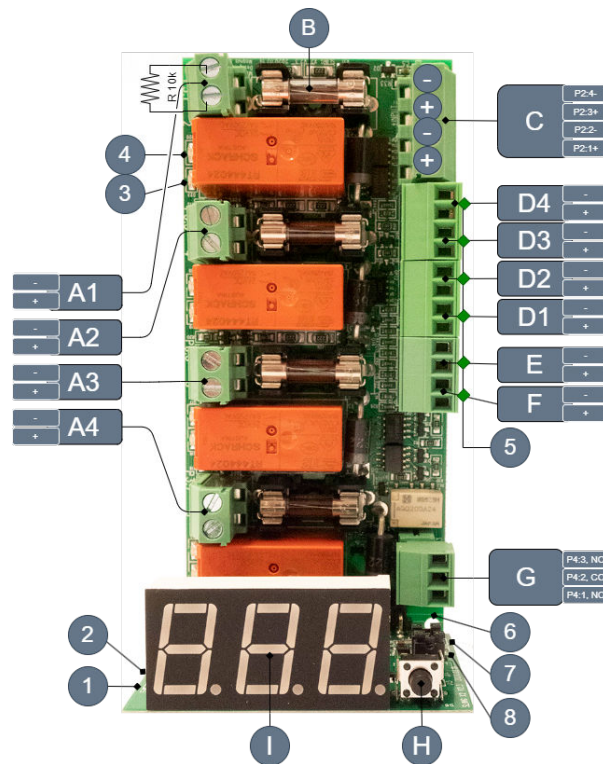


Table 1. Circuit board overview

On picture	On circuit boards	Explanation
And 1-4	(R10 k $\Omega$ resistor)  Plus: P3: 2, 4, 6, 8 (in case of alarm)  Minus: P3: 1,3, 5, 7 (in case of alarm)	Connecting the alarm device on loop. On each output, a 10 k $\Omega$ resistor is mounted. Remove this when switching on the alarm device <a href="#">Example of plugging in loops [19]</a>  Plus output on the board is polarity in case of alarm, (on the contrary, in sensing mode).
B	F2, F3, F4, F6	Load fuses
C	+INPUT-	Entrance 24V (double entry). Supply voltage  + (plus against display).  - (minus).
D 1-4	D 1-4 plus  D 1-4 Minus	Switching control signal for individual control, see <a href="#">Example of connection 2 - Negative logic individual control [15]</a> , <a href="#">Example of connection 3 - Positive logic - joint control [16]</a> , <a href="#">Example of connection 4 - Positive logic individual control [17]</a>  + (plus against display).  - (minus).
E	+E-	Activate all alarm device outputs on A 1-4.  Input E is not enabled (factory reset). The input is activated by bridging J13.  + (plus against display).  - (minus).



On picture	On circuit boards	Explanation
F	+F-	Activate all alarm outputs on A 1-4. 24 V input from the alarm center activates all outputs. + (plus against display). - (minus).
G	P4:1-3	Alarm output in case of loop failure.  P4:1 = NC P4:2 = CO P4:3 = NO
H	S6	Push Button
I	U1	Display

Table 2. Brackets, LEDs and fuses on cards.

In picture	On circuit board	Explanation
1	J21	In the case of the jumper, output 1 and output 2 will not alarm for loop failure.
2	J16	Not jumpered: Negative logic, (factory reset). Jumpered: Positive logic
3	D13, D16, D19, D23	Glow with solid green light when all loops are ok. Flashes green when alarm is controlled via (alarm control) input D 4 - 1
4	D15, D17, D18, D20	Glow with solid red light in case of loop failure. Flashes red if a fuse is broken when alarm is controlled via (alarm control) input D 4 - 1, E and F.
5	D32-37	Glow with solid green light if 24 V is connected to input D4-1, E, F.
6	D12	Glow with solid green light when loops are ok, it is off, alarm relay is activated.
7	J14	Not jumpered: Disable input D 1-4 (factory reset). Jumpered: Enable input D 1-4
8	J13	"Fireman control" Used to activate input P1:3-4 (E). Delivered unbridged = not activated input, (jumper activates this input).

## 2.2. Connecting Fire module 4 outputs to battery backup

Fire module 4 outputs must be connected to the motherboard (on the sum alarm output) in the battery backup.

Main Board, PRO1	-	Fire module 4 outputs
Alarm: J15	Connects to	Alarm output CO/NC
Load: Load output 1	Connects to	IN 24V
Main board: PRO2 or PRO2 V3		Fire module 4 outputs
Alarm: J7	Connects to	Alarm output CO/NC
Load: Load output 1	Connects to	IN 24 V
Main board: PRO3		Fire module 4 outputs
Alarm: J10	Connects to	Alarm output CO/NC
Load: Load output 1	Connects to	IN 24V

## 2.3. 24 V connection from battery backup to optional card

The input voltage on optional boards is connected at any input input for supply voltage (INPUT).

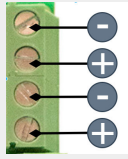
The board must be powered by 24 V DC.

The card has dual inputs for smooth bridging if the battery backup has more optional cards fitted.





Table 3. Connect on any input.

P2:1,3	+/- Plus vs display.
	

## 2.4. Plugging in load on Fire module 4 outputs

The connection of the alarm device on Fire module 4 outputs is done on A1-A4, see [Description Fire module 4 outputs \[9\]](#)



### CAUTION

Maximum load is 2 A per load output (F2A is fitted from the factory) and the card's total load must not exceed 8 A.

1. Connect load cable to A.  
Connection of alarm device on loop. A 10K ohm resistor is mounted on each output. Remove this when connecting the alarm system, see [Example of plugging in loops \[19\]](#). 10K ohm resistors must be placed on each subloop end to ensure monitoring of the subloop. Several partial loops can be set see, [Example of plugging in loops \[19\]](#).
2. Connection of control voltage to the alarm device is connected to D, E and F (D1-4). E is disabled by default.
3. Alarm output for alarms from loop is connected to G.
4. Only then should the battery backup be deployed. See manual for battery backup

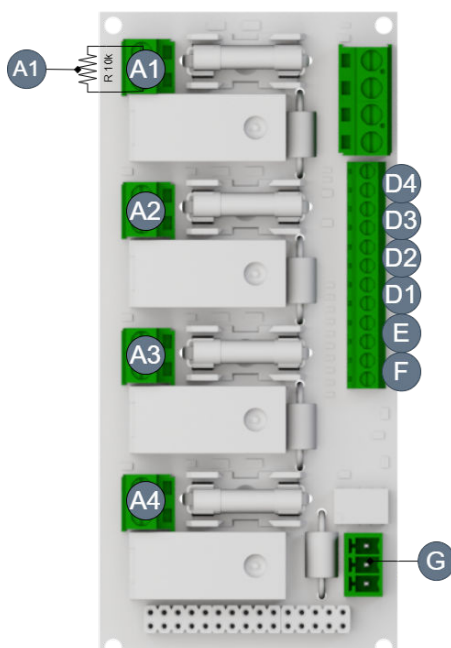




Table 4. Control of load

Explanation
D4 controls A1
D3 controls A2
D2 controls A3
D1 controls A4
F controls A1-A4 (although E is active).

### 2.4.1. Alarm priority

If several sources are alarming, the priority is this:

1. Fire. On display AL.L
2. Activate all. On display A.LL
3. Individual entrance. On display A1, A2, A3 or A4.

### 2.4.2. Negative and positive logic - overview of examples of connection

## ALARM SETTINGS: NEGATIVE AND POSITIVE LOGIC



#### NOTE

The card is set to negative logic from factory and the J16 is not jumpered.

The card should be jumpered on J16 for positive logic.

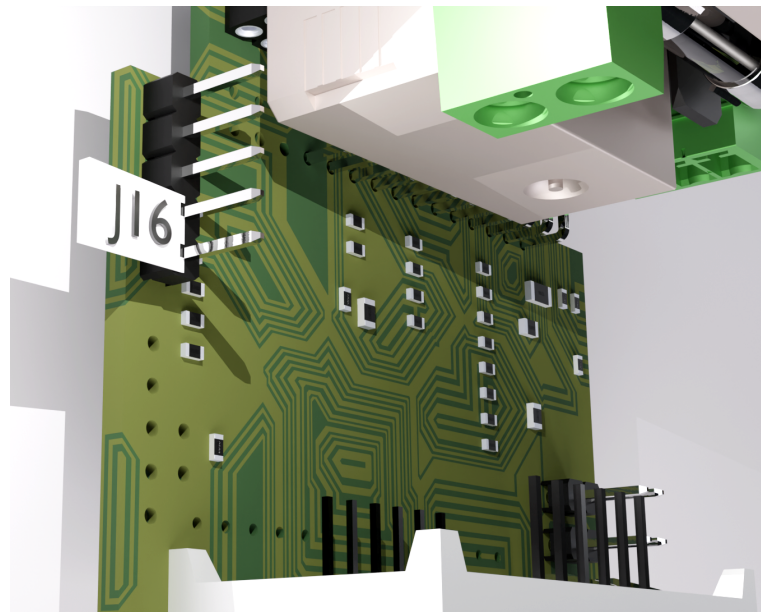
Negative logic = Activates alarm outputs when control voltage is broken, (0 V). J16 not jumpered, factory setting

Positive logic = Activates alarm device outputs when control voltage gives 24 V. J16 jumpered. The alarm inputs (D1-4, E, F), are not powered from the board. 24 V to the alarm inputs can be supplied by external 24 V or from the 24 V terminal +INPUT- .





Figure 3. The jumper sits on the display board.



The J16 is not jumpered from the factory.



### **IMPORTANT**

Green = closed jumper.



2.4.3. Example of connection 1 - Negative logic common control, factory setting.

Figure 4. Negative logic common control, factory setting.

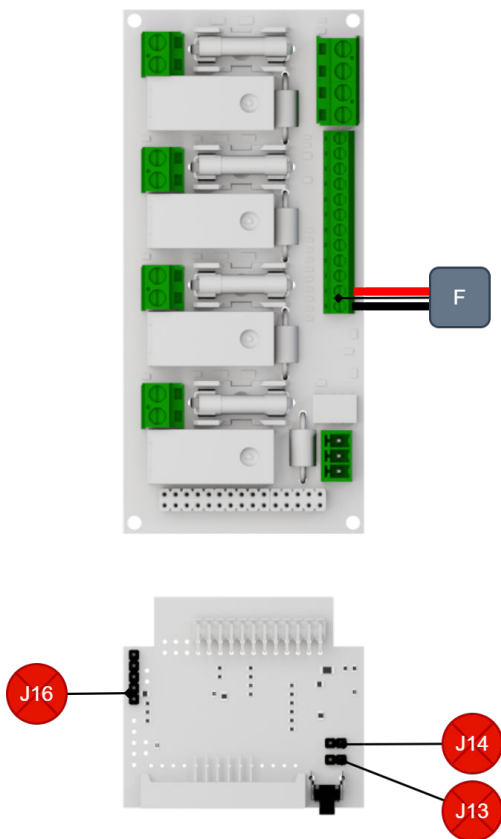


Table 5. Jumpers at Negative logic - common control.

On circuit board		Explanation
J16		Not jumpered, negative logic.
J14		Not jumpered, common steering.
J13		Not jumpered, Input E is not used.

Table 6. 24 V DC/0 V DC at Negative logic - common control.

Denomination	Explanation	24V DC	0 V DC
F	+/-	Normal/monitoring mode.	Fire alarm mode (activated outputs, A1 - A4).





### 2.4.4. Example of connection 2 - Negative logic individual control

Figure 5. Negative logic individual control

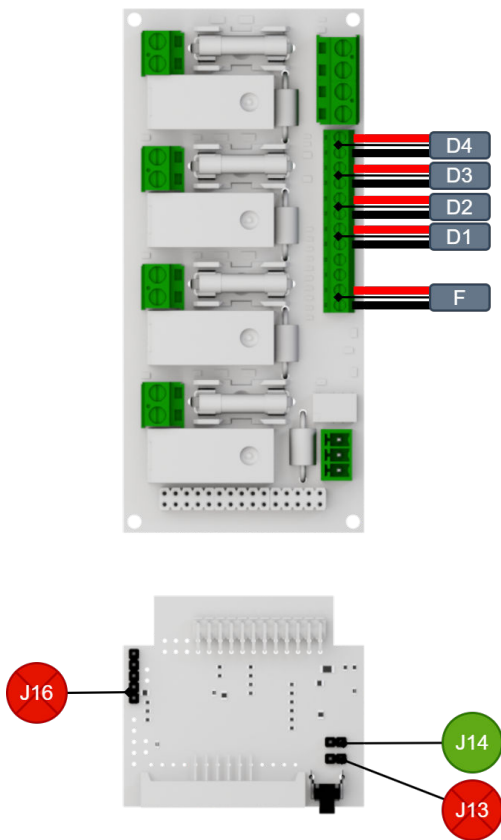


Table 7. Shackles at Negative Logic - Individual Control.

On circuit boards	Explanation
J16	Not jumpered, negative logic.
J14	Jumpered, individual control.
J13	Not jumpered, input E is not used.



#### IMPORTANT

Green = closed jumper.

Table 8. 24 V DC/0 V DC at Negative logic - individual control.

Denomination	Explanation	24V DC	0 V DC
D1	+/-	Normal/monitoring mode	Fire alarm mode (activated output A1).
D2	+/-	Normal/monitoring mode	Fire alarm mode (activated output A2).
D3	+/-	Normal/monitoring mode	Fire alarm mode (activated output A3).
D4	+/-	Normal/monitoring mode	Fire alarm mode (activated output A4).
F	+/-	Normal/monitoring mode	Fire alarm mode (activated outputs A1-A4).



2.4.5. Example of connection 3 - Positive logic - joint control

Figure 6. Positive logic - common governance

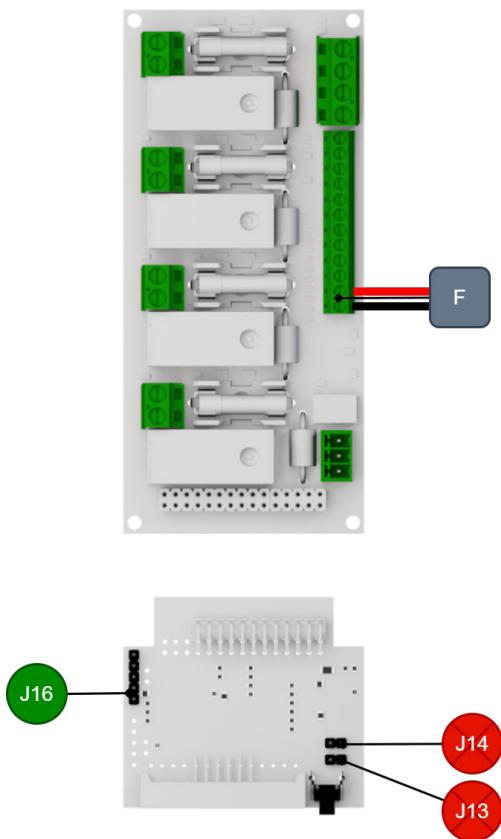


Table 9. Shackles in Positive Logic - Joint Governance.

On circuit boards	Explanation
J16	jumpered, positive logic.
J14	Not jumpered, common steering.
J13	Not jumpered, input E is not used.



**IMPORTANT**  
Green = closed jumper.

Table 10. 24 V DC/0 V DC at Positive logic - common control.

Denomination	Explanation	24V DC	0 V DC
F	+/-	Fire alarm mode (activated outputs).	Normal/monitoring mode.







### 2.4.6. Example of connection 4 - Positive logic individual control

Figure 7. Positive Logic Individual Governance

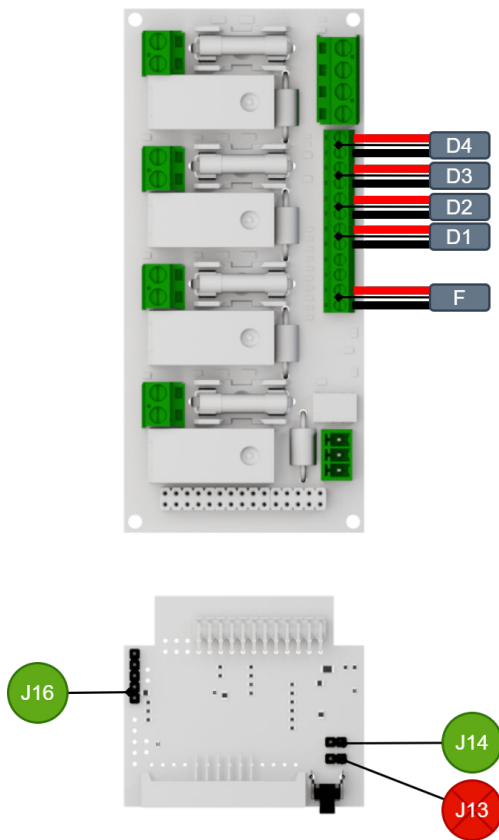


Table 11. Shackles in positive logic - individual control.

On circuit boards	Explanation
J16	Jumpered, positive logic.
J14	Jumpered, individual control.
J13	Not jumpered, not used.



**IMPORTANT**  
Green = closed jumper.

Table 12. 24 V DC/0 V DC at positive logic - individual control.

Denomination	Explanation	24V DC	0 V DC
D1	+/-	Fire alarm mode, (activated output A1).	Normal/monitoring mode.
D2	+/-	Fire alarm mode, (activated output A2).	Normal/monitoring mode.
D3	+/-	Fire alarm mode, (activated output A3).	Normal/monitoring mode.
D4	+/-	Fire alarm mode, (activated output A4).	Normal/monitoring mode.
F	+/-	Fire alarm mode (activated outputs).	Normal/monitoring mode.



## 2.4.7. Alarm settings: negative and positive logic



### NOTE

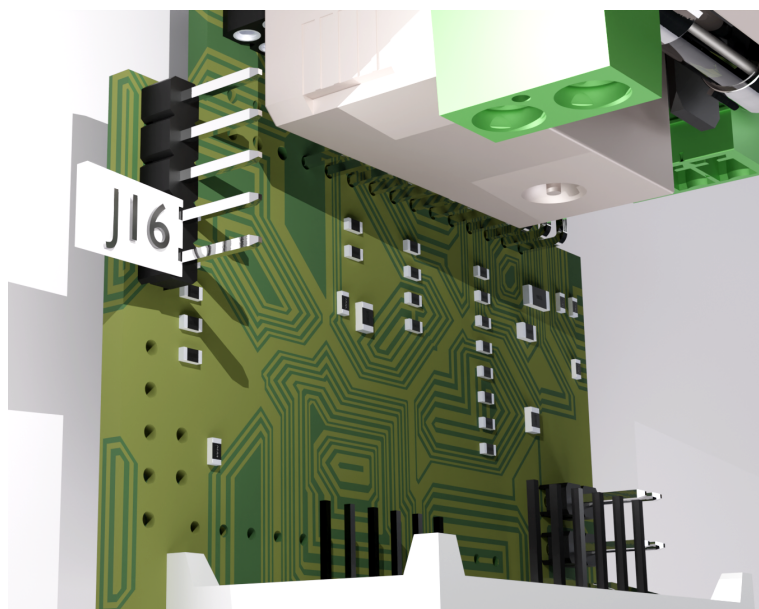
The card is set to negative logic from factory and the J16 is not jumpered.

The card should be jumpered on J16 for positive logic.

Negative logic = Activates alarm outputs when control voltage is broken, (0 V). J16 not jumpered, factory setting

Positive logic = Activates alarm device outputs when control voltage gives 24 V. J16 jumpered. The alarm inputs (D1-4, E, F), are not powered from the board. 24 V to the alarm inputs can be supplied by external 24 V or from the 24 V terminal +INPUT- .

Figure 8. The jumper sits on the display board.



The J16 is not jumpered from the factory.

### TURNING ON ALARM SETTINGS IN CASE OF NEGATIVE LOGIC

Joint control only. Control on P1:1-2. J16, J14 and J13 = not jumpered.

Individual control: J14 jumpered. Controls via D1, D2, D3 and D4 .

### DISABLE INPUT 3-4\*

Remove jumper at 7 (J13) to enable input 3-4.

\*Fireman control

### TURNING ON ALARM SETTINGS IN CASE OF POSITIVE LOGIC

Joint control only: Jumper on J16. Steering via F. If J13 is jumpered also controls E.

Individual control: J14 and J16 jumpered, control via D1-D4.





## CONSTANT OR PULSATING ALARM OUTPUTS

type of alarm is selected when programming cards. See: [Programming alarm type after alarm output \[21\]](#)

### 2.4.8. Connection of fireman control



#### NOTICE

Fireman control can also be called sum control.

Input E is not enabled (factory reset). The input is activated by bridging J13.

On [E and F \(P1:1-4\) \[9\]](#) fireman control is connected.

Negative logic: 24V on either inputs in normal operation, 0 V activates all alarm device outputs.

Positive logic: 0 V on either input in normal operation, 24V activates all alarm device outputs.

### 2.4.9. Switching on the alarm device

Each output can have up to five monitored (star mesh) alarm loops/alarm devices.

This means that each output can give a general alarm when something is wrong, but the system cannot specify exactly which of the up to five loops connected to the same output is causing the error. In other words, the alarm indicates a problem on the specific output, but does not identify which specific loop within that output has the error .

## EXAMPLE OF PLUGGING IN LOOPS

Each output (A1-A4) can have up to five monitored loops. To monitor each loop, a resistor is required to be mounted at the end of the loop. In case of interruption or short circuit, the load output indication diode, alarm on the alarm output, indicates (P 4:1-3) and is displayed on display .

20 pieces of 10k  $\Omega$  resistors included. A resistor shall be fitted at the end of each loop.



#### CAUTION

Unique alarm is given only per output.

Each individual subloop on an output does NOT receive a unique alarm.

In the case of multiple alarm devices on loop, each individual alarm device does NOT receive a unique alarm.

Alarms are indicated per output and sum alarms are given.

Each alarm device must be equipped with or have a built-in rectifier diode.

10k  $\Omega$  resistors shall be connected at the end of each subloop.

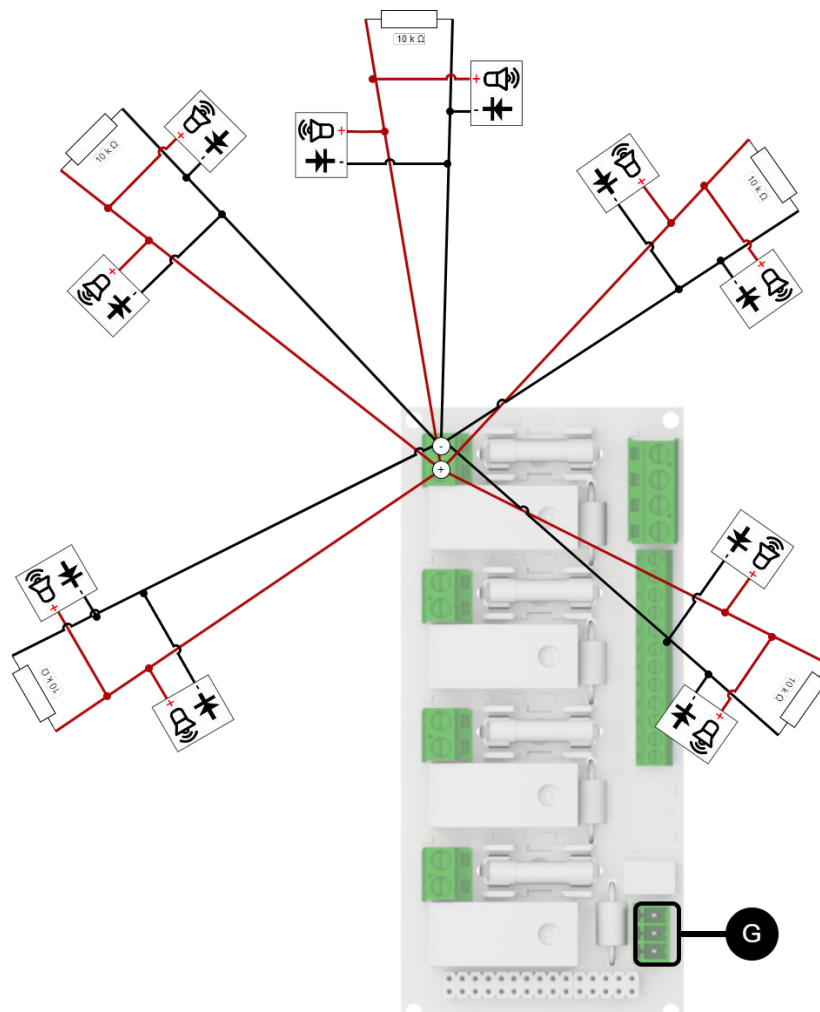


Table 13. Example - alarm on a loop

Output	Loop	Alarm on loop	Alarm on output	Alarm appears on display?	Alarm on output
1	1	No	Yes	Yes (E1A, E1-E1O.)	G
	2	Yes			
	3	No			
	4	No			
	5	No			

## 2.4.10. Calibration and programming

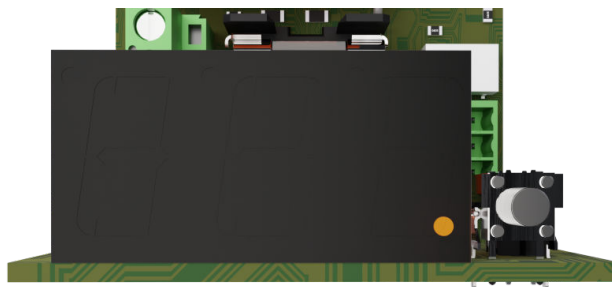


### IMPORTANT

The card must be calibrated before use.

In order to calibrate the board, all loops must be properly connected to resistors. When the card is started for the first time, it is not calibrated, at the bottom right of the display a dot flashes orange





To calibrate the first time:

1. Make sure that the dot at the bottom right of the display flashes orange.
2. Press and hold the button next to the display until CAL appears on the display.
3. Release the button. The card now takes measurements on all connected loops and
4. When the point at the bottom right of the display flashes green, calibration is complete.



#### NOTE

Recalibration? Do steps 2-4.

If E1, E2, E3, or E4 are displayed during calibration, check that 10k $\Omega$  resistors are correctly connected.

The alarm device must have a rectifier diode.



#### IMPORTANT

In the case of alarm control Axx it is not possible to start calibration. Turn off alarm control to calibrate.

## RESETTING SETTINGS

- Make the card voltage free.
- Hold the button.
- Voltage mode board.
- Press and hold the button until display shows: rSt.
- At the bottom right, the dot flashes orange.
- Recalibrate the card.

### 2.4.11. Programming alarm type after alarm output

It is possible to choose fixed alarm or pulsating alarm. If no selection is made, the alarm type is fixed.

- Point at the bottom right of the display should flash green.



- Press the button, but do not hold the button.
- It says c1 on display and how many resistors are plugged into that channel. Example: If there are 2 resistors connected to channel 1, it says c12.
- If you hold the button in this position for about 5 seconds, the last character starts blinking P. The pulsating alarm is now activated.
- Press the button briefly or wait for about five seconds and the mode will end automatically.
- Repeat the procedure for each channel.

Table 14. Select the channel with the button

Button press	Display should show	Explanation
1 short print.	C1x	Channel <sup>a</sup> and x=the number of loops with resistors (1-5). x alternately flashes P if pulsating alarm is activated.
2 short prints.	C2X	
3 short prints.	C3x	
4 short prints	C4x	

<sup>a</sup>Channel controls alarm output A 1- 4.

## 2.5. What is shown on the card display?

The display shows different status of connection to Fire module 4 outputs. Press the button to view different status and information. Display shows information in green, alerts in orange and alarms in red

Normal operation: All numbers are off and a flashing green dot appears in the lower right corner.

Push button: Pressing the button displays information.

### 2.5.1. Matrix for display

Green		
Letter	Load output/channel no	Number of loops
c (Channel)	1-4	1-5
Example display shown: C25=load output 2 has 5 loops connected.		

Orange (information)		
Letter	Load output/channel no	Third sign
A (Enabled)	1-4	Off / not displayed
Example display shown: A2=Load output 2 activated via alarm control.		
Yellow text: A.L.L all load outputs activated via firefighter control or A.L.L to activate all don. It says A.L.L. are both activated.		

Red (Alerts and Alarms)			
Letter	Load output/channel no	Third sign	Explanation, third sign
E (Erro)	1-4	O (Open)	Interruptions
		-	Short circuit
		A (Atención)	Impedance error <sup>a</sup> .
			Calibration error





Red (Alerts and Alarms)
<p>Example display is shown: E 2 0= interruption of load output 2.</p> <p>Example of display is shown, third character: 4 = 4 detected loops.</p> <p>Extinguished = error in calibration.</p> <p>After activated alarm for more than 60 seconds, display will count down 300 seconds (five minutes). This is to avoid that heated diodes can leak. Alarms will not be activated during this time, however fire alarms can activate these outputs. If the alarm is less than 60 seconds, the display will count down 20 seconds. The countdown appears within 10 seconds. During the countdown time, the device alarms for loop errors and/ or impedance errors.</p>

<sup>a</sup>May indicate the wrong resistance value or the wrong polarity when switching the alarm device on the respective loop

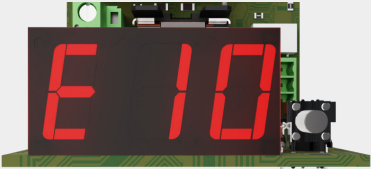
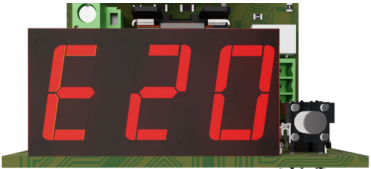
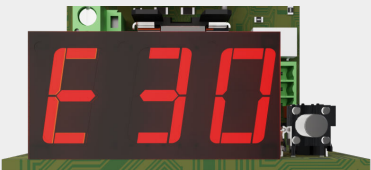


## IMPORTANT

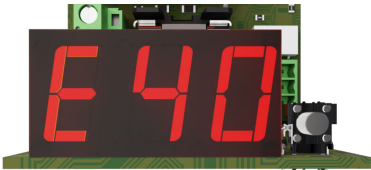
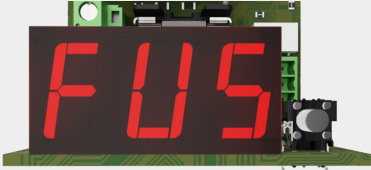


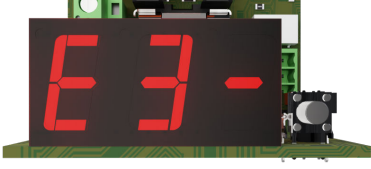
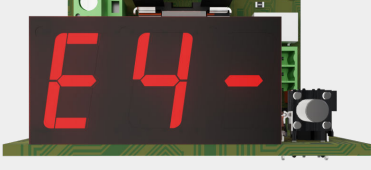
Prerequisites are that connected fire alarm devices have rectifier diode installed.

## LIST OF WHAT THE DISPLAY CAN DISPLAY

Table 15. List of display

Row	On display	Explanation
Other display information	C18 or C28	If the device is buggy to have channels 1 and 2 turned off for loop alarms, and the resistors on those channels are subsequently disconnected, "C10" and "C20" do not appear in the C menu as expected. Instead, "c18 appears. "and "c28, respectively. "with green text. This does not affect the functionality, but should be noted as an alternative mode of display in this mode
1		Error Channel 1 - interrupt (0=Open/open).
2		Error Channel 2 - interrupt (0=Open/open).
3		Error Channel 3 - interrupt (0=Open/open).


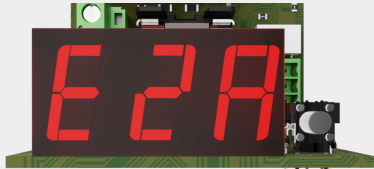
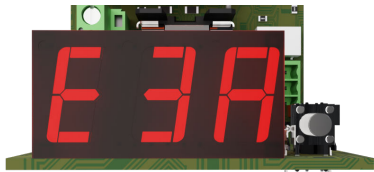
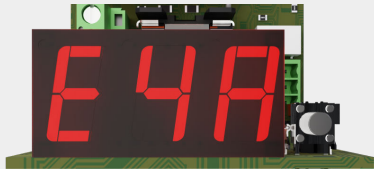
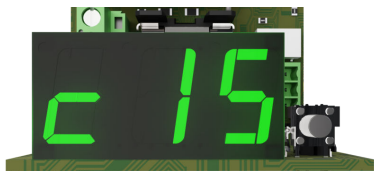
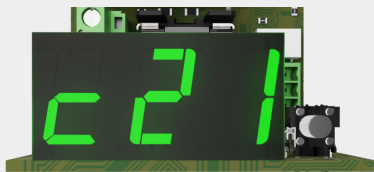


Row	On display	Explanation
4		Error Channel 4 - interrupt (0=Open/ open).
5		Loop failure on fuse/triggered fuse on any output, (A1-A4).  Also the text xx0 can mean triggered fuse.
6		Loop fault (Error) Channel 1 - short circuit
7		Loop error (Error) Channel 2 - short circuit.
8		Loop error (Error) Channel 3 - short circuit.
9		Loop error (Error) Channel 4 - short circuit.







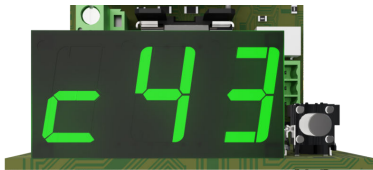
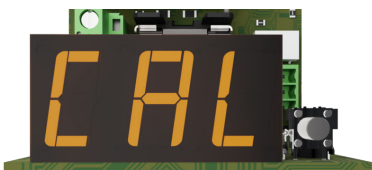




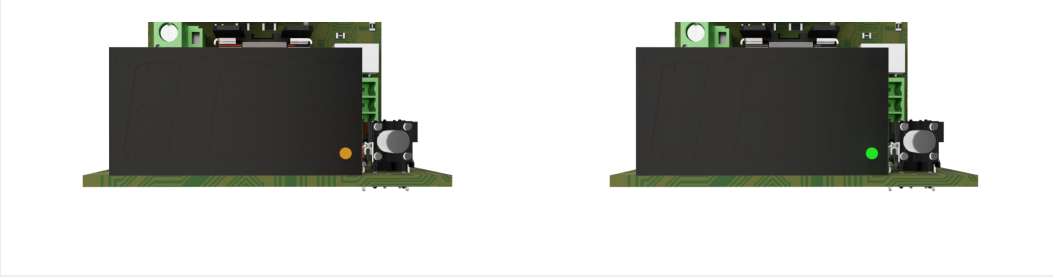
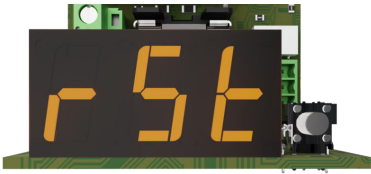
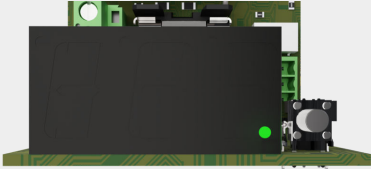



Row	On display	Explanation
10		Loop Error Channel 1 - Impedance error, (A=Attention).
11		Loop Error Channel 2 - Impedance error, (A=Attention).
12		Loop Error Channel 3 - Impedance error, (A=Attention).
13		Loop Error Channel 4 - Impedance error, (A=Attention).
14		Information Channel 1 (with 5 resistors/loops detected).
15		Information Channel 2 (with 1 resistor/loop detected).





Row	On display	Explanation
16		Information Channel 3 (with 4 resistors/loops detected),
17		Information Channel 4 (with 3 resistors/loops detected).
18		Pulsating alarm,
19	<div></div> <p>Pulsating alarm, display switches.</p>	
20		Calibration.



Row	On display	Explanation
21	 <p>Flashes orange on uncalibrated system and flashes green on calibrated system.</p>	
22		Restore/reset
23		Green blink, sleep mode. Calibrated system. No active alarms
24		Ongoing error acknowledgement.
25		All load outputs activated via firefighter control. E-input
26		All load outputs enabled. F input





Row	On display	Explanation
27		Active alarm on load output A1.
28		Active alarm on load output A2.
29		Active alarm on load output A3.
30		Active alarm on load output A4.

## 2.6. Acknowledgment of alarms shown on the display



### IMPORTANT

Alerts for errors are displayed on display until they are acknowledged.

- Alarm for failure can be set off by a short press of the button or by rebooting (on/off).



### NOTE

Only the display of alarms needs to be acknowledged. Alarm relay is not locked and returns as soon as the fault has disappeared, (without acknowledgment).





## 3. MAINTENANCE - PCB

The circuit board must be installed in an indoor environment, class 1. The circuit board requires no maintenance.

### 3.1. CE marking

Each product has a CE label with information about the product and contact information for the manufacturer. If you are missing something or need more information, you should firstly turn to retailers who will also be able to answer questions about warranty and support. You can always contact the manufacturer if you have questions about the product's performance.



### 3.2. Warranty

The product has a two-year warranty, from the date of purchase (unless otherwise agreed). Support during the warranty period can be reached at [support@milleteknik.se](mailto:support@milleteknik.se) or telephone, +46 31-34 00 230. Compensation for travel and / or working hours in connection with locating faults, installing repaired or replaced goods is not included in the warranty. Contact Milleteknik for more information. Milleteknik provides support during the product's lifetime, however, no later than 10 years after the date of purchase. Switching to an equivalent product may occur if Milleteknik deems that repair is not possible. Support costs may (at Milleteknik's discretion) occur after the warranty period has expired.

## 4. TECHNICAL DATA: FIRE MODULE 4 OUTPUTS

Table 16. Fire module 4 outputs v3.2

Info	Explanation
Article title	Fire module 4 outputs
E-number	5257467
Article number	A-FU002404FS01
Product description	The Fire module 4 outputs alarm monitoring module has four individually controllable outputs with the possibility of a star network and up to five loops on each output. Alarm functions for both positive and negative logic. Alarm for fuse failure/loop failure. Fire man control and the possibility of individually pulsed outputs. Display for easy reading and configuration. The card replaces previous SlingX cards (52 696 18).
Measure	120 mm. x 55 mm. x 52 mm.
Inputs (24 V)	Two entrances. (For alternative power supply when changing power supply. In order not to break the load voltage.) A terminal can be used as a superstructure for the next optional card, (only if the battery backup has room for two cards).
Clamping	27.3 V DC.
Power consumption (at rest)	100 mA.
Power consumption (in case of alarm)	200 mA in case of alarm on all channels.



Info	Explanation
Leakage current	The card assumes that connected devices do not have leakage current. If leakage current is present in devices connected to the product, it may behave beyond specification. Warranty does not apply if devices with leakage current are connected to the product .
Tension	27.3 V DC
Outputs	Four
Insurance	Load output: plus (+) fused with F2A.
Max load	Max load is 2A per load output. The card's total load must not exceed 8 A.
Alarm inputs	Six.
Alarm outputs	Alarm outputs: Sum alarm in case of fuse failure and loop break. Alarm via potential-free relay connector.
Alarm via	Triggered load securing and loop break via potential-free shifting.
Indication	Display showing operating status, alarms and errors. Operating indication: one indication diode per load output +/- . Fixed green light = normal operation. Green LED on inputs
The product fits in:	Own enclosure with separate power supply.
*The product is not co-certified with NOVA/EN54 and may not be used if certificates are to be maintained.	

Manufactured in Milleteknik's factory in Partille, Sweden.

This translation is not verified and should be cross referenced with the swedish original before use.

## 5. ABOUT TRANSLATION OF THIS DOCUMENT

User manual and other documents are in the original language in Swedish. Other languages may be machine translated and/or not reviewed, errors may occur.

## 6. LOOP TROUBLESHOOTING

In the idle state, a stable voltage is located on the load output that depends on the number of connected resistors, it can be verified by measuring the voltage on the load output with multimeter in mode "DC". The voltage follows the supply voltage, see examples for 20, 24 and 27.3V

Number resistance	Type voltage on loop (V)			Approved Type voltage range (V)			Approved Interval
	20	24	27,3	20	24	27,3	
0 (Interrupt)	18,8	22,6	25,7	>13.0	>15.6	>17.8	> 63%
1 (10kΩ)	10,6	12,7	14,3	10,1 - 11,2	12,0 - 13,4	13,5 - 15,1	± 2.93%
2 (5.0kΩ)	7,40	8,80	10,1	6,90 - 7,94	8,15 - 9,45	9,36 - 10,8	± 2.75%
3 (3.3kΩ)	5,60	6,72	7,74	5,20 - 6,03	6,20 - 7,24	7,15 - 8,33	± 2.20%
4 (2.5kΩ)	4,60	5,52	6,35	4,40 - 4,84	5,23 - 5,81	6,01 - 6,69	± 1.25%
5 (2.0kΩ)	3,80	4,56	5,29	3,65 - 3,95	4,38 - 4,74	5,08 - 5,50	± 0.81%
Interruptions if the voltage is more than 63% of the supply voltage. Short circuit if the voltage is below 0.5V							
If "A" appears on the third character of the display, it is an impedance error, which means that the voltage value is outside the approved range.							
Check that the alarm devices on the loop have the correct polarity, are equipped with a diode, and that the loop ends with a 10kΩ resistor.							
Check the resistance of the loop according to the table.							



Display codes in case of deviations			
If the load output voltage at rest is above 63% of the supply voltage (>17.8V at 27.3V supply), interruption is assumed. Display shows one of the following four options:			
E10	E20	E30	E40
If the load output voltage at rest is below 0.5V, a short circuit is assumed. Display shows one of the following options:			
E1-	E2-	E3-	E4-
If the load output voltage is outside the approved range, the display indicates one of four options:			
E1A	E2A	E3A	E4a
In case of failure of multiple load outputs, the errors appear one at a time, in series.			

Test of the loop
* Disconnect at least one of the wires from the load output on the board and measure the resistance on the loop (eg 3.3k $\Omega$ ), then compare with table.
* Does the value deviate greatly, check the polarity of the alarm device and that there is good tolerance on used end termination resistances (1% or better).
* Relocate the load, voltage the board, and then measure the supply voltage and load output voltage at idle.
* If the expected voltage (in this case 7.74V at 27.3V supply voltage) does not match the number of resistors, the cause may be an incompatible alarm device that must be connected with the diode in series so as not to affect the impedance at rest.

## 7. CONTACT US

Milleteknik AB

Ögärdesvägen 8 B

S-433 30 Partille

Sweden

+46 31-34 00 230

[www.milleteknik.se](http://www.milleteknik.se)

This page is intentionally left blank.