

Fault diagnostics

During operation, 3 LEDs indicate the units' operating status and the fault conditions.

The unit is ready for operation when:

- The "POWER" LED lights up and
 - The LEDs "CH.1" and "CH.2" are both lit (high signal at the safety outputs)
- or
- The LEDs "CH.1" and "CH.2" are both out (low signal at the safety outputs).

LED CH.1 is assigned to safety output 14,
LED CH.2 to safety output 24.



INFORMATION

Supply interruptions lasting longer than 20 ms are detected as an error. The LEDs indicate an error and the safety outputs carry a low signal. The plant or machinery driven via the safety outputs will be shut down. The unit can only be restarted by switching the supply voltage off and then on again.

Errors

Fault conditions are indicated by flashing the LEDs. Some errors are displayed through periodic flashing (see Table 1); with other errors it is possible to establish an error code through the number of flashes (Table 2).

These errors are always indicated by three short flashes at LED CH.1 or CH.2. After a longer pause, the LED will then flash at one

second intervals. The number of LED flashes corresponds to a digit in the error code. The error code can consist of up to 4 digits. The digits are separated by a longer period without flashing. The entire sequence is constantly repeated.

The error code can also be read into a PLC via the diagnostic output. In this case the error code will appear as a hexadecimal sequence. The process of reading and

transferring data to a PLC is described in the PLC Drivers manual.



INFORMATION

Leading zeros are not transmitted.
Error code 0: 16 flashes

LED	Error	Remedy
LEDs unlit	Supply voltage is missing, too low, wrongly connected	Apply supply voltage: A1 - +24 VDC and A2 - 0 VDC Permitted voltage range: 19.2 ... 30 VDC
POWER flashing	Unknown operating mode, initialisation phase, start not executed	Depending on operating mode: Press reset button or perform start-up test
PNOZ e1p: CH.1 and Ch.2 periodically flash at the same time	Error in the wiring of input circuit S11, S12, S21, S22	Rectify wiring error, restart unit
All units except PNOZ e6.1p, PNOZ e6vp: CH.1 and CH.2 flash alternately	1.) Feedback loop open on start-up 2.) Only one channel of the input circuit is open or is partially operated	1.) Close feedback loop, open input circuit, start unit again 2.) Open both input circuit channels
PNOZ e6.1p, PNOZ e6vp: CH.1 and CH.2 flash alternately	1.) Feedback loop open on start-up 2.) Only one channel of the input circuit is open or is partially operated 3.) External feedback loop closed on start-up, but internal feedback loop faulty	1.) Close feedback loop, open input circuit, start unit again 2.) Open both input circuit channels 3.) No remedy available to user - send unit to Pilz
PNOZ e2.1p, PNOZ e2.2p: CH.1 or CH.2 flashes briefly (50 ms on, 250 ms off)	Simultaneity conditions not met	Release the two-hand button and press it again.
PNOZ e2.1p, PNOZ e2.2p: CH.1 and CH.2 flash briefly (50 ms on, 250 ms off)	A pushbutton is defective or there is a wiring error	Change pushbutton or rectify wiring error
CH.1 or CH.2 flash a code	Error coding, see Table 3	See Table 3

Table 1: Display of fault conditions

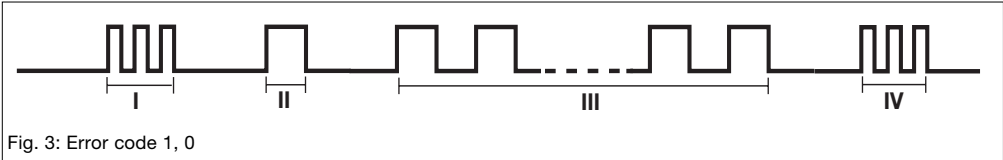
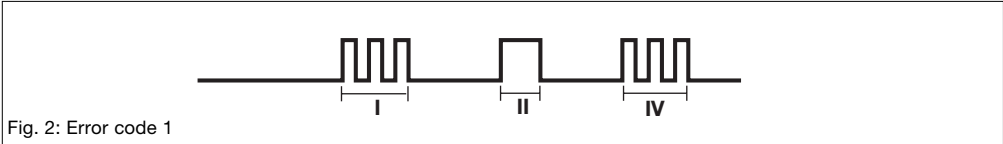
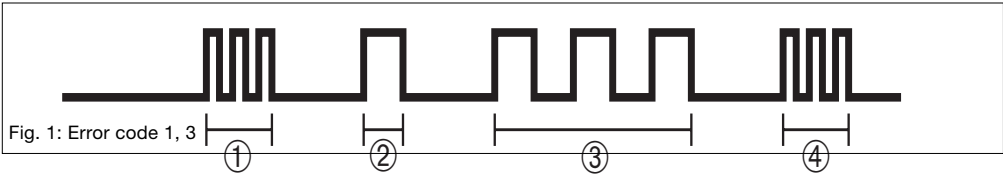
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Examples

- Error code 1, 3:
LED CH.1 or CH.2 flashes
- 3 times, briefly
 - Pause
 - Once for one second
 - Pause
 - 3 times for one second each

- Error code 1:
LED CH.1 or CH.2 flashes
- 3 times, briefly
 - Pause
 - Once for one second

- Error code 1, 0:
LED CH.1 or CH.2 flashes
- 3 times, briefly
 - Pause
 - Once for one second
 - Pause
 - 16 times for one second each



- I Code for error message
II Code for 1st digit
III Code for 2nd digit
IV Code for error message repeated

Table 2 shows the relationship between the number of flashes and the error code. The key to the error code is described overleaf in Table 3.

Number of flashes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Decimal error code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	0

Table 2: Relationship between number of flashes and decimal error code

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Error codes

Decimal error code	Number of flashes	Description	Remedy
1	3x short - 1x long - 3x short	Faulty wiring, short circuit	Rectify wiring error at terminals S34, S11-S14, S21-S24, Y6 or Y4
2	3x short - 2x long - 3x short		
3	3x short - 3x long - 3x short	Operating mode changed during operation	Rectify wiring error at terminal Y4, Y6, Y7, Y37 or S36
4	3x short - 4x long - 3x short	In the initialisation phase, short circuit between the safety outputs and +24 VDC	Rectify wiring error at terminals 14, 24
...	...		
9	3x short - 9x long - 3x short		
10	3x short - 10x long - 3x short	During operation, short circuit between the safety outputs and +24 VDC	Rectify wiring error at terminals 14, 24
...	...		
1, 0	3x short - 1x long - 16x long - 3x short		
1, 1	3x short - 1x long - 1x long - 3x short		
1, 9	3x short - 1x long - 9x long - 3x short		
10, 1	3x short - 10x long - 1x long - 3x short		
14, 5	3x short - 14x long - 5x long - 3x short		
1, 2	3x short - 1x long - 2x long - 3x short	During operation, short circuit between the safety outputs and 0 VDC or $U_g < 19.2$ VDC	Rectify wiring error at terminals 14, 24; Keep within the supply voltage range of 19.2 ... 30 VDC
1, 3	3x short - 1x long - 3x long - 3x short		
1, 12	3x short - 1x long - 12x long - 3x short		
1, 13	3x short - 1x long - 13x long - 3x short		
1, 4	3x short - 1x long - 4x long - 3x short	Operating mode changed during operation	Check wiring at terminals S23, Y6 or Y7
1, 5	3x short - 1x long - 5x long - 3x short	Unexpected status at S36	Check wiring at terminal S36
1, 6	3x short - 1x long - 6x long - 3x short	Wiring of operating mode "with detection of shorts across contacts" faulty	Rectify wiring error at terminal S12, S22 or S24
1, 7	3x short - 1x long - 7x long - 3x short		
1, 8	3x short - 1x long - 8x long - 3x short	1.) Feedback loop open	1.) Close feedback loop at terminal Y6 and Y7
1, 11	3x short - 1x long - 11x long - 3x short	2.) PNOZ e6.1p, PNOZ e6vp: External feedback loop closed, but internal feedback loop faulty	2.) No remedy available to user - send unit to Pilz
1, 10	3x short - 1x long - 10x long - 3x short	Open circuit	Check the safety mat wiring
5, 10	3x short - 5x long - 10x long - 3x short	$U_g < 19.2$ VDC	Keep within the supply voltage range of 19.2 ... 30 VDC

Table 3: Error code, part 1

Fault diagnostics

Decimal error code	Number of flashes	Description	Remedy
8,1	3x short - 8x long - 1x long - 3x short	Invalid operating mode	Rectify wiring error at terminal S34, Y4, Y6 or Y7
8, 2	3x short - 8x long - 2x long - 3x short	Supply interrupted, possibly caused by a short to earth	Rectify wiring error at terminal A1 or check supply voltage
8, 3	3x short - 8x long - 3x long - 3x short		
14, 13	3x short - 14x long - 13x long - 3x short		
2, 0, 0	3x short - 2x long - 16x long - 16x long - 3x short	$U_B < 19.2 \text{ VDC}$	Keep within the supply voltage range of 19.2 ... 30 VDC
2, 0, 1	3x short - 2x long - 16x long - 1x long - 3x short		
2, 0, 2	3x short - 2x long - 16x long - 2x long - 3x short	In the initialisation phase, short circuit between the safety outputs and +24 VDC	Rectify wiring error at terminals 14, 24
2, 0, 3	3x short - 2x long - 16x long - 3x long - 3x short	$U_B < 19.2 \text{ VDC}$	Keep within the supply voltage range of 19.2 ... 30 VDC

Table 3: Error code, part 2