

# AS-Interface Safety at Work

## Quick Reference



**EUCHNER**  
More than safety.

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# 1 EUCHNER Safety Parts

## 1.1 *Parameters for all EUCHNER electromechanical safety switches, non-contact safety system and enabling switches*

### **Parameters for all electromechanical safety switches with and without locking and non-contact safety switches CESx1 (094230 + 096631)**

Safe slaves are built according to Specification 2.11 for standard slaves

All parameters of safety switches are pre-programmed at delivery and can be read with a programming device.

The following values are adjusted:

IO Code:	7
ID Code:	B
ID 1:	F
ID 2:	E

### **Parameters for enabling switches and non-contacts safety switches CESx4 (097660 + 100206)**

Safe slaves are built according to Specification 2.11 for standard slaves

All parameters of safety switches and enabling switches are pre-programmed at delivery and can be read with a programming device.

The following values are adjusted:

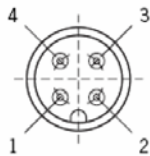
IO Code:	0
ID Code:	B
ID 1:	F
ID 2:	E

## 1.2 Failure programming an AS-i address of EUCHNER safety switch

With a Schneider AS-i address programming device type ASI TERV 2 or Siemens handheld device type 3RK1 904-2AB00 a failure can occur in programming an EUCHNER AS-i safety switch with M12 connector.

The display of the handheld shows: dbIAdd Duplicate Address

Workaround: use an M12 cable where only pins 1 and 3 are used (AS-i + and AS-I - )



- 1 ▶ AS-Interface +
- 2 ▶ Auxiliary voltage 0 V
- 3 ▶ AS-Interface -
- 4 ▶ Auxiliary voltage 24 V

## 1.3 States of ASi safety parts

LED State		Description
ASI green	Fault or State red	
on	off	Normal operation AS-Interface power connected
on	on	No data transfer between master and slave. Reason: <ul style="list-style-type: none"> <li>- Master in STOP-Mode</li> <li>- Slave not in LPS</li> <li>- Slave with wrong IO/ID</li> <li>- Reset at slave active</li> </ul>
blinking *	on	No data transfer between master and slave. Reason: Slave-Address = 0
blinking or on	blinking *	Device failure in slave. Please contact EUCHNER.

\* Blinking LEDs are not supported from all safety switches

LPS List Projected Slaves

IO/ID Slave profile to identify a slaves (Defined by manufacturer)

### CET:

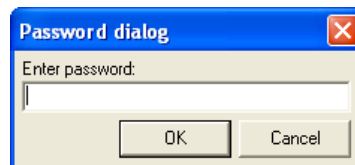
State LED ASI	Description
Green	Normal operation
Red	No data transfer between master and slave. Reason: <ul style="list-style-type: none"> <li>- Master in STOP-Mode</li> <li>- Slave not in LPS</li> <li>- Slave with wrong IO/ID</li> </ul>
Red / Yellow Alternately blinking	No data transfer between master and slave. Reason: Slave-Address = 0
Red/green Alternately blinking Red blinking	Auxiliary power not connected or device failure in slave. Please contact EUCHNER.

## 2 SFM Safety Monitor

### 2.1 Password forgotten or lost

Read-out of the configuration from a monitor without password

1. Remove the AS-I cable from the monitor
2. Connect the ASiMon software PC to the monitor
3. In the ASi-Mon software under the menu item monitor >> Stop, click info the following window



4. Press OK without entering anything here. The monitor will stop without having the password
5. Now, go to the menu item monitor >> configuration protocol >> request and read-out the protocol from the monitor
6. In line 8 of the protocol, you will find the code (B1B4 in this example)

```

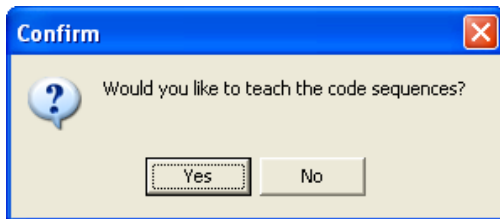
0000 *****0
0001 CONFIGURATION AS-INTERFACE SAFETY MONITOR 1
0002 IDENT: "GMO Masterkoffer" 2
0003 *****3
0004 MONITOR SECTION 4
0005 *****5
0006 MONITOR VERSION: 03.00 enhanced 6
0007 CONFIG STRUCTURE: 02.01 7
0008 PC VERSION: 02.02 8
0009 DOWNLOAD TIME: 2007/04/30 15:09 9
0010 VALIDATED: 2007/04/30 15:09 BY: "jr" CODE: B1B4 COUNT: 0009 0
0011 MONITOR ADDRESS: 1 DIAGNOSIS: assigned devices 1
0012 MODE: two independent output groups 2
  
```

7. Call EUCHNER and indicate this code; a replacement password can be ordered
8. Use the replacement password ONLY for changing of the password to a new one

## 2.2 Delete Safety Monitor

A configured safety monitor can be deleted by the following method:

1. Stop safety monitor
2. Read configuration from safety monitor by menu **Monitor→Monitor -> PC...**
3. Load this configuration by menu **Monitor→PC -> Monitor...**
4. In the following picture click on no button



5. The safety monitor has a configuration, but is not verified and not learnt. He behaves like an empty safety monitor.

Monitor is „empty“ when the 3 LEDs are alternately blinking



Ready



ON



OFF / Fault

### **2.3 Replacing a defective Slave (without teach-in of actuator)**

All safety slaves without necessity for teach-in of an actuator can be replaced without using a PC with ASiMon according to this method.

1. Disconnect the defective slave from AS-Interface Bus
2. Press the service button on the monitor
  - The monitor stores which slave address is missing
3. Connect new slave with address 0 AND bring it into a safe state
  - The master addresses this slave automatically
4. Press the service button on the monitor
  - The monitor has a check on the safety function of the new slave





## 2.4 Replacing a defective Slave (with teach-in of actuator)

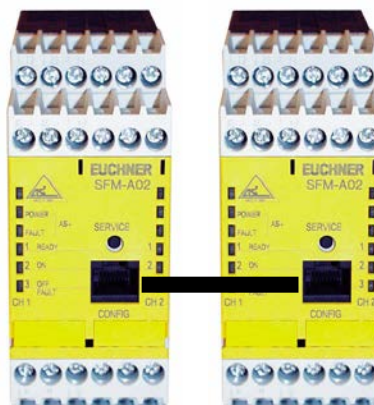
All safety slaves with necessity for teach-in of an actuator like CES and CET can be replaced without using a PC with ASiMon according to this method.

1. Disconnect the defective slave from AS-Interface Bus
2. Connect new slave with address 0. Close locking if necessary.
  - The master addresses this slave automatically
3. Teach-in of actuator according to operation manual
4. Disconnect new slave from AS-Interface Bus
5. Press the service button on the monitor
  - The monitor stores which slave address is missing
6. Connect new slave AND bring it into a safe state
7. Press the service button on the monitor
  - The monitor has a check on the safety function of the new slave

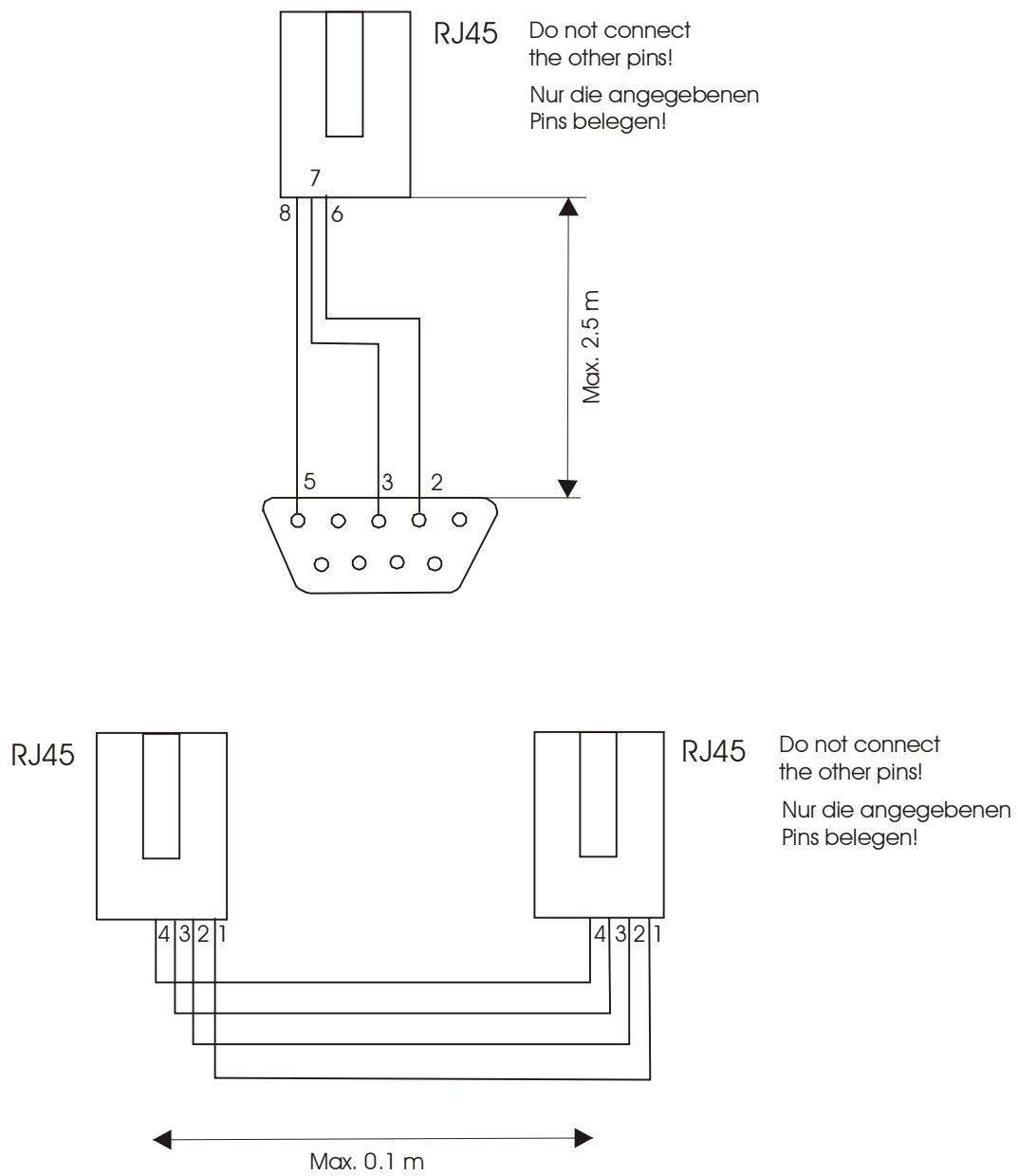


## 2.5 Replacing a defective Monitor

1. Separate the defective monitor completely
2. Connect new monitor but not power supply
3. Plug-in download cable to the new monitor
4. Connect the new monitor to power supply
  - The monitor receives the data from the old monitor
  - The yellow LED „Ready“ is permanently on during the data transmission
  - The green LED is additionally permanently on when the data transmission is completed
5. Disconnect the new monitor from power supply
6. Remove download cable and the old monitor, connect new monitor
7. Reconnect power to the new monitor



## 2.6 Cable pin configuration for safety monitor



## **2.7 Faults shown at monitor and solution**

Fault shown: Fault red blinking at monitor

Description: At exchange of a safe slave the monitor started blinking

Possible reason: The cable between monitor and PC is plugged in

Solution: Switch off monitor, plug off cable and repeat exchange of safe slave

Fault shown: Fault red blinking at monitor

Description: A safety door, which is configured as 2-channel dependant, was closed

Possible reason: The door does not stop totally in closed position

Solution: Use configuration 2-channel independent or 2-channele dependent with filtering

Fault shown: Ready is yellow blinking at monitor

Description: A safety door configured with 2-channel debounced is opened and immediately closed again

Possible fault: The door was not open fort he full debouncing time

Solution: Door open again and let open minimum fort he debouncing time, then close again

## LED diagnostics at SFM monitors

■ ■ ■ According LED on  
▨ ▨ ▨ According LED  
 blinking

LED off  
 Don't care

LEDs	Reason	Action
	Monitor defective	Replace monitor
	Failure on AS-i Monitor has no data transfer to master	Check AS-i bus, setup of master
	Monitor waits for new slave or is empty	Push service button or load monitor new empty
	Monitor waits for new slave or is empty	Push service button or load monitor new empty

LEDs	Ursache	Maßnahme
	Non resettable fault at safe slave.  Fault is NOT in monitor!	Connect PG with ASIMON and check which address is in state „red blinking“. teach this slave new or replace it.
	Non resettable fault at safe slave.  Fault is NOT in monitor!	Connect PG with ASIMON and check which address is in state „red blinking“. teach this slave new or replace it.
	Resettable fault at safe slave.  Fault is NOT in monitor!	Quick help: power off and on of monitor.  Help: Connect PG with ASIMON and check which address is in state „yellow blinking“.
	Resettable fault at safe slave.  Fault is NOT in monitor!	Quick help: power off and on of monitor.  Help: Connect PG with ASIMON and check which address is in state „yellow blinking“.

**Important:**

With many of these failures there is no fault in the monitor. With some failures a quick help is given by switching off and on the monitor. For long term help the failure has to be detected.

### 3 GMOX Safety Monitor

#### 3.1 Password forgotten or lost

If the password is lost for your configuration, proceed as follows:

##### Alternative 1

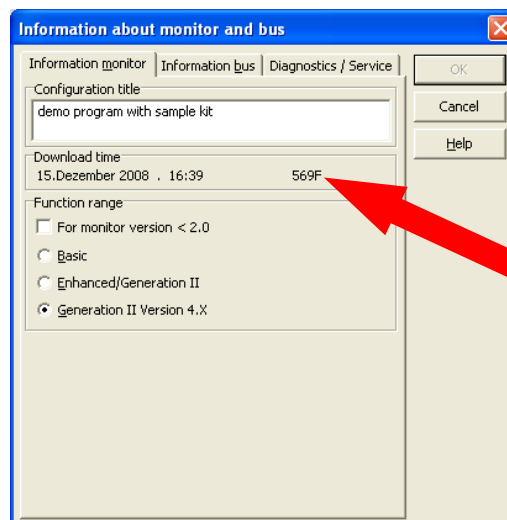
Find the valid configuration protocol for the AS-i Safety Monitor whose password is missing (printout or file). In the configuration protocol in line 10 (Monitor Section, Validated) you will find a 4-digit code.

```

0000 ***** 0
0001 CONFIGURATION AS-INTERFACE SAFETY MONITOR 1
0002 Ident: "GOMx" 2
0003 ***** 3
0004 Monitor Section 4
0005 ***** 5
0006 Monitor Version: 4.0 6
0007 Config Structure: 3.0 7
0008 PC Version: 2.3 8
0009 Download Time: 2008-11-21 08:39 9
0010 Validated: 2008-11-21 08:49 by: "knaus" code: C176 count: 56 0
0011 Monitor Address: AS-i 1: none 1
0012 AS-i 2: none 2
  
```

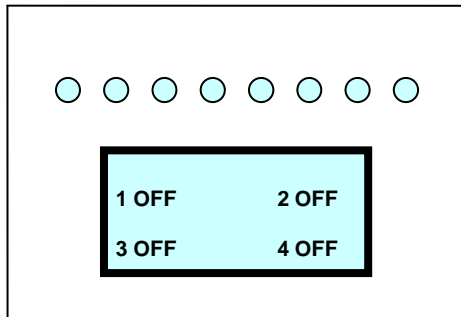
##### Alternative 2

1. Connect the AS-i safety monitor whose password is missing to the PC and start the ASIMON software.
2. Start the diagnostics function in ASIMON using **Monitor→Diagnostics** and select a neutral configuration. Wait until the current configuration appears on the screen. This may take up to 1 minute.
3. Open the window **Edit→Information about monitor and bus**. On the Title tab you will find the 4-digit code in the Download time window area.

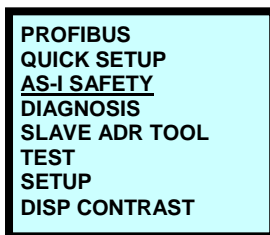


**Alternative 3** (it must be a memory card in the device)

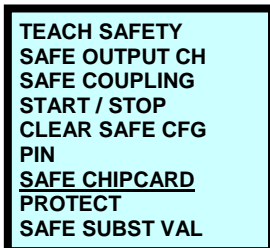
1. Press OK-button



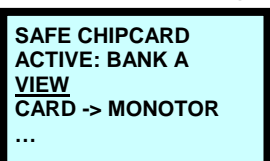
2. Select AS-I SAFETY and press OK-button



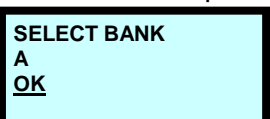
3. Select SAFE CHIPCARD and press OK-button



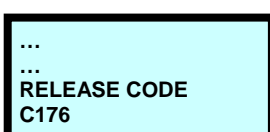
4. Select VIEW and press OK-button



5. Select OK and press OK-button



6. With the arrow-button completely down



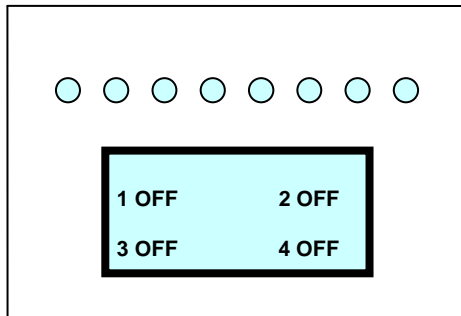
If you have the 4- digit code ...

1. Contact technical support at EUCHNER and enter the 4-digit code.
2. From this code a master password can be generated which can be used to access the stored configuration.
3. Use this master password to stop the AS-i Safety Monitor and enter a new user password. Select in the ASIMON software the menu **Monitor→Password changing...**

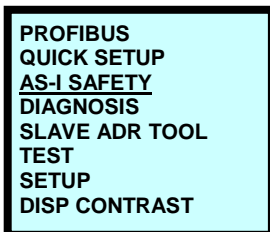


### 3.2 Delete Safety Monitor

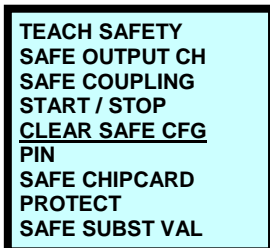
1. Press OK-button



2. Select AS-I SAFETY and press OK-button



3. Select CLEAR SAFE CFG and press OK-button



4. Select OK and press OK-button



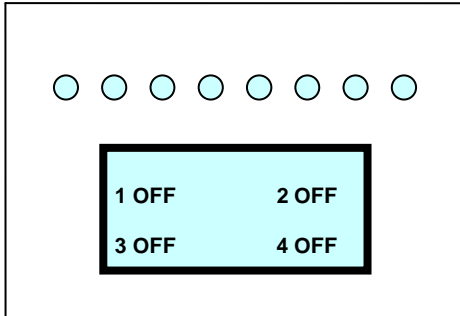
5. Select CLEAR and press OK-button



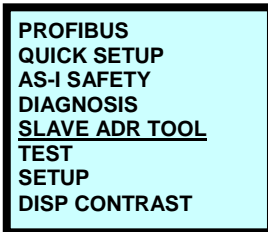
### 3.3 Slave-Address-Tool in the Safety Monitor

This function enables setting and changing the addresses of both new and already configured AS-i slaves.

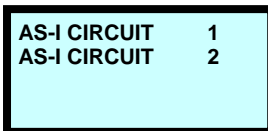
1. Press OK-button



2. Select SLAVE ADR TOOL and press OK-button



3. Select AS-I circuit in which is the Slave and press OK-button



4. Select CONNECT NEW SLV and press OK-button



5. Edit old and new address by OK-button
6. Select PRG and press OK-button



### **3.4 Replacing a defective slave (without teach-in of actuator)**

If an AS-i safety slave is defective, it can be replaced even without a PC or reconfiguration of the AS-i Safety Monitor by pressing the ESC/Service key on the AS-i Safety Monitor.

All safety slaves without necessity for teach-in of an actuator can be replaced without using a PC with ASiMon according to this method.

Proceed as follows:

1. Disconnect defective slave from AS-i bus.
2. Press the ESC/Service button on the AS-i Safety Monitor approx. 3 seconds.

**SLAVE 6 TO  
BE CONNECTED  
THEN PRESS  
SERVICE LONG**

3. Connect new slave with address 0 AND bring into safe state  
The monitor addresses this slave automatically
4. Press the ESC/Service button on the AS-i Safety Monitor approx. 3 seconds.  
The code table for the new slave is taught and checked for correctness. If this is OK, the AS-i Safety Monitor changes to protecting mode.

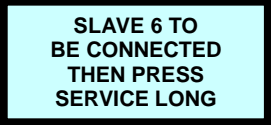
## 3.5 Replacing a defective slave (with teach-in of actuator)

If an AS-i safety slave is defective, it can be replaced even without a PC or reconfiguration of the AS-i Safety Monitor by pressing the ESC/Service key on the AS-i Safety Monitor.

All safety slaves with necessity for teach-in of an actuator like CES and CET can be replaced without using a PC with ASiMon according to this method.

Proceed as follows:

1. Disconnect defective slave from AS-i bus.
2. Connect new slave with address 0  
The monitor addresses this slave automatically
3. Teach-in of actuator according to operation manual
4. Disconnect new slave from AS-Interface Bus
5. Press the ESC/Service button on the AS-i Safety Monitor approx. 3 seconds.



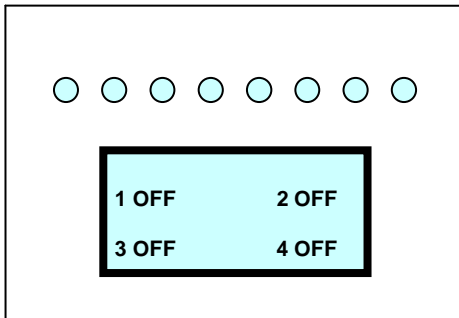
SLAVE 6 TO  
BE CONNECTED  
THEN PRESS  
SERVICE LONG

6. Connect new slave AND bring into safe state
7. Press the ESC/Service button on the AS-i Safety Monitor approx. 3 seconds.  
The code table for the new slave is taught and checked for correctness. If this is OK, the AS-i Safety Monitor changes to protecting mode.

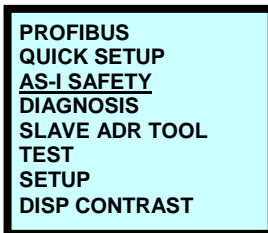
### 3.6 Reset Safety Error (caused by exchange of a safety slave)

When exchanging safety slaves, especially within combined machines a safety error can occur, when the method according to 4.4 "Replacing a defective slave" was not used. When one GMOx did not learn the new safety code, this fault occurs. This device can learn the new code also without repeating the full procedure.

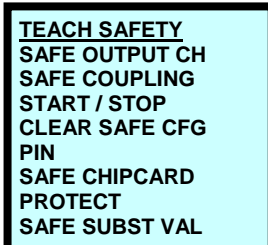
1. Press OK-button



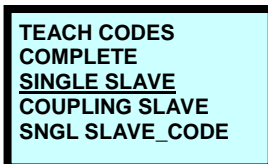
2. Select AS-I SAFETY and press OK-button



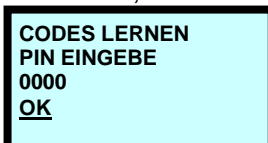
3. Select TEACH SAFETY and press OK-button



4. Select SINGLE SLAVE and press OK-button



5. Enter PIN, when used and select OK and press OK-button



6. Select AS-I circuit for the slave to teach and press OK-button

AS-I CIRCUIT	1
AS-I CIRCUIT	2

ATTENTION: The monitor now switches all outputs off

7. Key in SLAVE ADDR of the slave to teach, select OK and press OK-button

TEACHING CODES	
SLAVE ADDR	1
ESC	<u>OK</u>

### 3.7 Replacing a defective AS-i Safety Monitor

If an AS-i Safety Monitor is defective and needs to be replaced, the replacement unit does not necessarily have to be newly configured using the ASIMON software, and rather it is possible to copy the configuration of the defective device using a chip card.

If the card and device are not empty at start and the data are not identical, an error message is displayed and the card is not synchronized with the device. The following menu is then automatically opened:

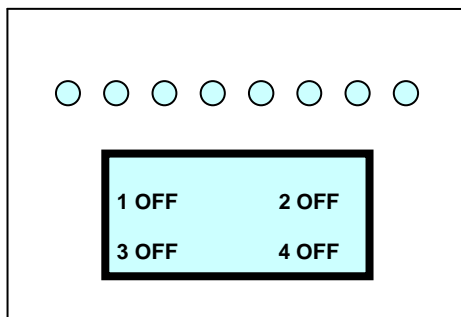
```

CHIPCARD AND
AS-I DATA
DIFFERENT
CHIPCARD -> MASTER
MASTER -> CHIPCARD
CONTINUING
    
```

Command	Description
CHIPCARD > MASTER	Chip card data are copied to the master
MASTER -> CHIPCARD	Master data are copied to the chip card
CONTINUING	No change to the data

To choose the menu manually:

1. Press OK-button



2. Select AS-I SAFETY and press OK-button

```

PROFIBUS
QUICK SETUP
AS-I SAFETY
DIAGNOSIS
SLAVE ADR TOOL
TEST
SETUP
DISP CONTRAST
    
```

3. Select SLAVE ADR TOOL and press OK-button

```
TEACH SAFETY
SAFE OUTPUT CH
SAFE COUPLING
START / STOP
CLEAR SAFE CFG
PIN
SAFE CHIPCARD
PROTECT
SAFE SUBST VAL
```

4. Select CARD -> MONITOR and press OK-button

```
SAFE CHIPCARD
ACTIVE: BANK A
VIEW
CARD -> MONITOR
MONITOR -> CARD
CLEAR CODES
CLEAR SAFE CARD
```

5. Select OK and press OK-button

```
CARD -> MONITOR
ENTER PIN
0000
OK
```

6. Select A, B, C ,D and press OK-button

```
SELECT BANK
A
OK
```

7. With the arrow-button completely down

```
COPY BANK A TO
MONITOR
COMPLETE
CONFIGURATION
...
...
...
```

8. Enter the Code (B275) and press OK-button

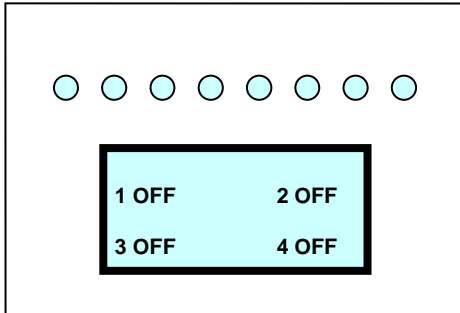
```
...
...
RELEASE CODE
B275
-----
RELEASE CODE?
0000 OK
```



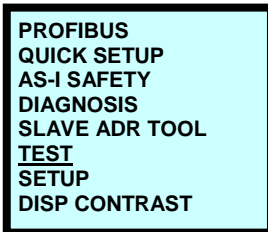
### 3.8 Set outputs of the slaves

With this function the outputs of the slaves can be tested.

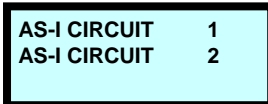
1. Press OK-button



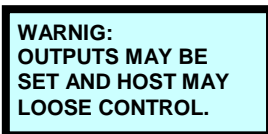
2. Select TEST and press OK-button



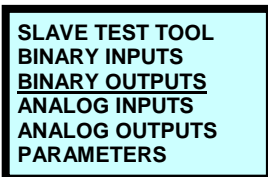
3. Select AS-I circuit in which is the Slave and press OK-button



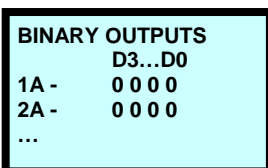
4. Press OK-button



5. Select BINARY OUTPUTS and press OK-button

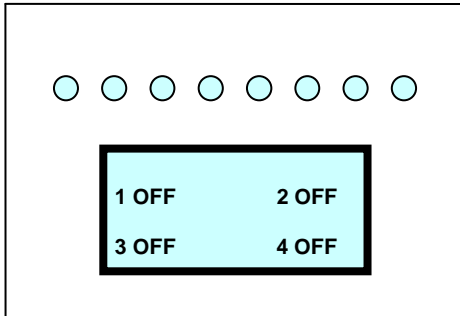


6. Select desired Slave by arrow buttons and press OK-button.
7. Set output by arrow buttons and press OK-button to go to the next output

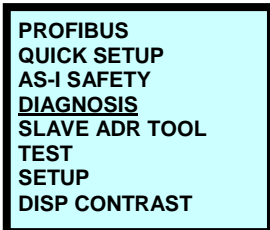


### 3.9 Diagnostics of slaves in Safety Monitor

1. Press OK-button



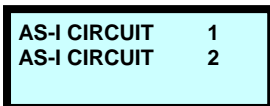
2. Select DIAGNOSIS and press OK-button



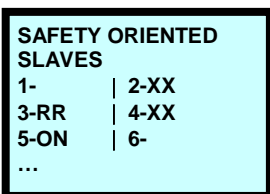
3. Select SAFETY SLAVES and press OK-button



4. Select AS-I circuit in which is the Slave and press OK-button



5. With the arrow-buttons up and down



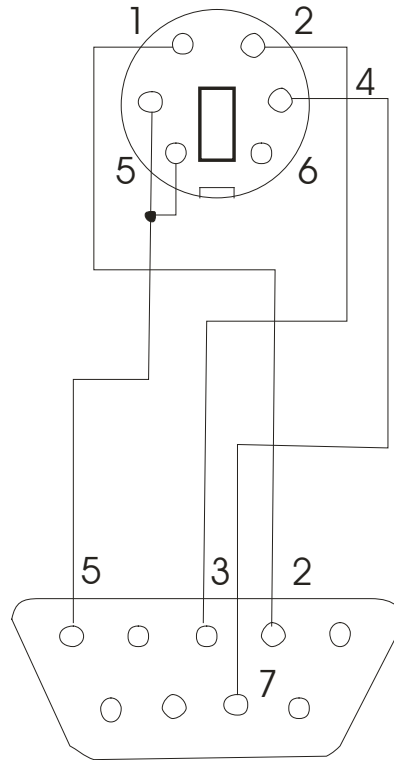
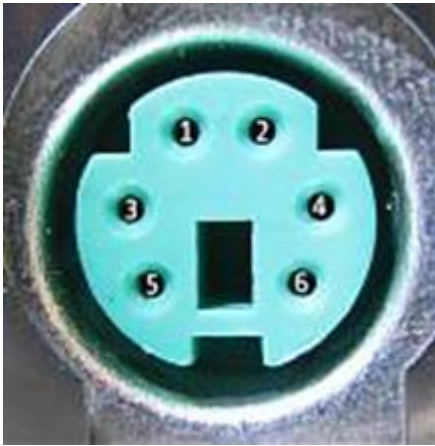
X => channel is OK  
R => channel has released  
ON => output on  
OFF => output off  
? => output state unknown

### 3.10 Cable pin configuration for GMOX

Pinning:

Sub Min D 9	PS/2 Connector
2	1
3	2
5	3 and 5
7	4

View PS/2 connector at GMOx:



### 3.11 Fatal Errors

#### List of „Fatal Errors“ in SMOx und GMOx devices

Fatal Error	Comment	Help
154 159 007 002	Fault at semiconductor output	Check the connections to the device. Check 24V, probably shortcut or overload at semiconductor at output 4. The maximum load for semiconductor outputs is 500mA.
154 159 007 130	Fault at semiconductor output	Check the connections to the device. Check 24V, probably shortcut or overload at semiconductor at output 4. The maximum load for semiconductor outputs is 500mA.
154 159 015 002	Fault at semiconductor output	The safety CPU cannot switch off output 4 for testing purposes for less than 1ms.Reasons may capacities or supplying 24V.
154 159 015 130	Fault at semiconductor output	The safety CPU cannot switch off output 4 for testing purposes for less than 1ms.Reasons may capacities or supplying 24V.
154 159 025 001	Internal device fault	Send back device to manufacturer
154 159 081 004	Relay fault	Send back device to manufacturer
154 159 096 002	Relay fault	Send back device to manufacturer
154 159 103 004	Internal device fault	Send back device to manufacturer
154 159 105 130	Relay fault	Send back device to manufacturer
154 159 128 003	Relay fault	Send back device to manufacturer
154 159 137 002	Relay fault	Send back device to manufacturer
154 159 174 002	Fault at semiconductor output	Check the connections to the device.
154 159 190 001	Fault at semiconductor output	Check the connections to the device. Check 24V, shortcut or overload possible.
154 159 196 002	Fault at semiconductor output	The safety CPU cannot switch off output 3 for testing purposes for less than 1ms.Reasons may capacities or supplying 24V.
154 159 198 001	Fault at semiconductor output or supply voltage	Check the connections to the device. Check 24V, shortcut or overload at semiconductor output or breakdown of 24V power supply possible.
154 159 198 129	Fault at semiconductor output	Check safe output connections.
154 159 221 002	Fault at semiconductor output	Check safe output connections.
154 159 240 001	Fault at semiconductor output or supply voltage	Check the connections to the device. Check 24V, shortcut or overload at semiconductor output or breakdown of 24V power supply possible.
154 159 246 003	Internal device fault	Send back device to manufacturer
159 175 116 129	Internal device fault	Send back device to manufacturer
159 175 245 128	Internal device fault	Send back device to manufacturer
188 214 093 004	Internal device fault	Send back device to manufacturer

## Hint to „Fault at semiconductor output “

There are several possible reasons for getting this fault:

- When the output is having an internal overload.
- When the adjacent 24 V DC at pin “24 V” is missing and the output is switched ON
- Wiring fault at electronic output (e.g.: 0V off electronic outputs is missing at the monitor device).

The failure is often laying in the external wiring Please check especially whether the 24 V DC are connected permanently (NOT switched) at pin “24 V”.

Typically the device works after Power on Reset.

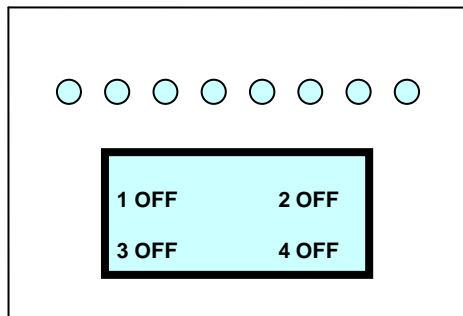
## Fault codes, not contained in this list

The list of fault codes is not complete. If there is another fault code shown in the display please contact EUCHNER in order to get the description.

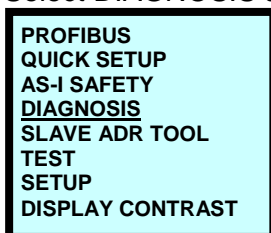
Additionally to the fatal error code please prepare the Identno or the name of the device and the version number (on a side sticker of the device)

Very helpful is to know about the internal software version. The version is to be found in the menu of the device. For getting the versions please follow the instructions below:

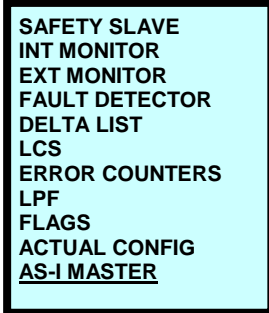
1. Press OK-button



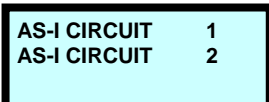
2. Select DIAGNOSIS and press OK-button



- Select AS-I MASTER and press OK-button



- Select AS-i CIRCUIT 1 and press OK-button










- Read Software IDs  
For analysing the fault, please write down „SWID“, „Safe CPU-A“, „Safe CPU-B“, „UART 1“, „UART 2“.

### 3.12 States of GMOX Safety Monitor

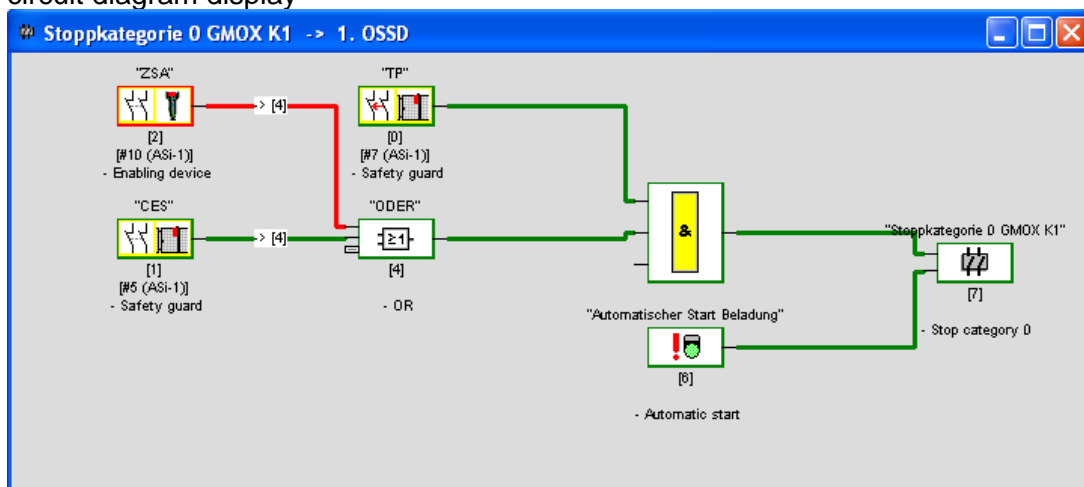
Display	
LCD	AS-i-Slave-Addresses, Fault messages
LED power	Power ON
LED PROFIBUS	PROFIBUS-Master detected
LED config error	Configuration wrong
LED U AS-i	AS-i-Power OK
LED AS-i active	AS-i-operation normal
LED prg enable	Automatic slave addressing possible
LED prj mode	Project mode active
LED AUX	Auxiliary power connected
4 x LED EDM/Start	State of inputs of external feedback loop monitoring LED off: circuit open LED on: circuit closed
4 x LED output circuits	State of output circuits LED off: circuit open LED on: circuit closed

## 4 Software ASiMon

### 4.1 Diagnostics with Software ASiMon

Display	Colour	Meaning
	green, continuous	Device is in the ON state (switched on)
	green, flashing	Device is in the ON state (switched on), but already in the process of being switched to the OFF state, e.g. switch-off delay
	yellow, continuous	Device is ready, but still waiting for another condition, e.g. local acknowledgement, diagnosis stop or start button
	yellow, flashing	A (start) test must be performed, bring slave into OFF state and then into ON state
	red, continuous	Device is in the OFF state (switched off)
	rot, flashing	The error lock is active, release by means of one of the following actions: Reset of error condition with the Service button Power OFF/ON AS-Interface bus OFF/ON
	grey, off	No communication with the AS-interface slave

#### circuit diagram display



With Strg + T and Strg + S can be switched between circuit diagram display and tree structure display

#### Tree structure display



## 4.2 State of AS-i Safety Switches

<b>GP, NZ, NX, SGP</b>	
<b>Programming: dual channel dependent</b>	
<b>State</b>	<b>Monitor diagnostics</b>
Door closed	green With local acknowledgment: yellow blinking at startup
Intermittent state at closing or opening of door: channel 1 (internally) open	At opening: yellow blinking At closing: red After rundown of synchronization time: yellow blinking
Intermittent state at closing or opening of door: channel 2 (internally) open	
Door open	red
Address 0 or no communication	grey

<b>TP..AS2</b>	
<b>Programming: dual channel dependent</b>	
<b>State</b>	<b>Monitor diagnostics</b>
Door closed, lock open or closed	green
Intermittent state at closing or opening of door: channel 1 (internally) open	At opening: yellow blinking At closing: red After rundown of synchronization time: yellow blinking
Intermittent state at closing or opening of door: channel 2 (internally) open	
Door open	red
Address 0 or no communication	grey



CET, TP, STP, STA, TZ, BI, all AS1	Programming: dual channel conditionally dependent
State	Monitor diagnostics
Door closed and locked	green
Door closed and lock open	yellow blinking
Invalid state (Door open, Lock closed)	red blinking (monitoring of invalid state)
Door open	red
Address 0 or no communication	grey

CET, TP, STP, STA, TZ, BI, alle AS1	Programming: dual channel independent
State	Monitor diagnostics
Door closed and locked	green
Door closed and lock open	red
Invalid state (Door open, Lock closed)	red (no monitoring of invalid state)
Door open	red
Address 0 or no communication	grey

CET, TP, STP, STA, TZ, BI, alle AS1	Programming: dual channel dependent, Synchronization time $\infty$
State	Monitor diagnostics
Door closed and locked	green, when door was open before or after startup yellow blinking, when only lock was open
Door closed and lock open	yellow blinking, when door was close before red, when door was open before
Invalid state (Door open, Lock closed)	yellow blinking, when door was close before red, when door was open before
Door open	red
Address 0 or no communication	grey

<b>CES</b>	
<b>Programming: dual channel dependent, Synchronization time 0,5s</b>	
<b>State</b>	<b>Monitor diagnostics</b>
Door closed	green
Door open, transponder half detected	yellow blinking (Please refer to the operation manual for further help)
Door open	red
Address 0 or no communication	grey