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Date : 2025-05-05

RE : Commissioning checklist for the Mode Switching Safety Module AI (CE-SA-018-0001__2)

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1. Introduction

The Mode Switching Safety Module AI is a safety device realizing safety logic.
Therefore, it is essential to verify that it is correctly integrated and that the safety functions that it supports are performed as expected.

2. Supported safety functions

System emergency stop output at the Safety OUT connector from the Safety IN port:
When the OSSD signals of the input unit connected to the safety IN port go low, the OSSD signals at the Safety OUT port go low.
This function is latched. It means that the OSSD signals at the safety OUT port cannot be closed until a reset is requested.

System emergency stop output at the Safety OUT port with mode switching :
This function is made for not full body entry applications.
When the OSSD signals of the safety device ports 1A or 2A are high, respectively, the OSSD signals of the safety device ports 1B and 2B are not monitored.
When the OSSD signals of the safety device ports 1A or 2A go low, respectively, the OSSD signals of the safety device ports 1B and 2B are monitored and if they go low, the OSSD signals at the Safety OUT port go low.
This function is latched. It means that the OSSD signals at the safety OUT port cannot be closed until a reset is requested.

System reset propagation from the Safety IN port to the Safety OUT port:
When a reset signal is received from the Safety IN port, a reset signal is sent to the Safety OUT port.

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3. Checklist

Compliance to the requirements of table 1 shall be verified

Table 1 Commissioning checklist for safety

Requirement	Description	YES	NO	N/A	Comments / Reference
System ES from Safety IN	4.1				
Mode Switching	4.2				
System reset propagation	4.3				

Signature

Name	
Function / Title	
Signature	

4. Procedures

4.1. System ES from Safety IN

The state of the redundant safety signal of the Safety IN port is propagated to the Safety OUT port. This safety function shall be verified as per the following procedure.

Procedure :
If a estop-reset-module is installed upstream to the module (Safety IN port):

- Press the emergency stop button;
- Release the emergency stop button;
- Press the reset button of the estop-reset-module.

Behavior :
Following the above procedure, the system emergency stop shall be activated and reseted :

- When pressing the emergency button or activating the system emergency stop at the Safety IN port, the LED shall turn solid red and the connected end effectors (Machine Motion and robot) shall goes in emergency stop;
- When releasing the emergency button or restoring the system emergency stop signal at the Safety IN port, the LED should turn flashing red;
- When pressing the reset button, the LED should go back to solid green

4.2. Mode Switching function

For each pair of device ports used (1A /1B or 2A/2B) the following shall be verified.

Procedure :

1. Put to low the safety signal of the port xA;
2. Put to low the safety signal of the port xB;
3. Put to high the safety signals of the ports xA and xB;
4. Reset the cell;
5. Put to low the safety signal of the port xB;
6. Put to low the safety signal of the port xA;
7. Put to high the safety signals of the ports xA and xB;
8. Reset the cell;

Behavior:
Following the above procedure, the mode switching feature shall be activated as following:

- At item 1 of the procedure, the LED shall flash BLUE and the end effectors (MachineMotion and robot) shall remain in there operational states;

- At item 2, the LED shall flash RED and the end effectors shall be in there emergency states;
- At item 4, the LED shall become solid GREEN and the end effectors shall get back to there operational state;
- At item 5, the LED shall stay solid GREEN and the end effectors shall remain in there operational states;
- At item 6, the LED shall flash RED and the end effectors shall be in there emergency states;
- At item 8, the LED shall become solid GREEN and the end effectors shall get back to there operational state;

4.3. System reset propagation

The reset propagation is verified with the reset of other modules or the MachineMotion. When performing 4.1 and 4.2, verify if other modules and the MachineMotion (if applicable) reset.