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Machinery Directive 2006/42/EC Annex. IX
EC type-examination certificate for logic units to ensure safety functions
(ref. Annex IV – 21)

Certificate No.:	TUV IT 0948 10 MAC 010 B Rev.04
Name and address of manufacturer:	STEM S.r.l. Via della Meccanica, 2 27010, Cura Carpignano (PV) Italy
Designation:	Safety module
Model/type:	NC85 - NC86 <input type="checkbox"/> Single sample <input checked="" type="checkbox"/> Group of samples
Reference Standards:	EN ISO 13849-1:2023 - EN ISO 13849-2:2012 EN ISO 13850:2015 - EN 60204-1:2018 EN 61496-1:2021
Test report:	RRTR-25-0948-MAC-722379812-06

We herewith certify, as per Notified Body no.0948, that the product for the respective scope of application stated in the annex to this EC type-examination certificate meets the requirements of the Directive:

2006/42/CE

Issue date:	28/03/2025
Expiry date:	29/03/2030



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TÜV Italia S.r.l.
Notified Body, Identification N° 0948

Alberto Carelli
Industrie Service Division Manager

First Issue date:	30/03/2010
Expiration date of the last certification cycle:	29/03/2025



Annex to EC type-examination certificate n° TUV IT 0948 10 MAC 010 B Rev.04

1. Scope:

The NC85-NC86 safety modules are able to control the status of contacts coming from magnetic sensors, emergency buttons, mechanical safety switches, RFID sensor and general interlocks of movable guards.

The NC85 only can handle also the static outputs of safety photoelectric barriers (PNP or NPN).

The output is activated by pressing the start button (if present) only if both contacts of the sensor are closed. The opening of even a single input contact determines a safety situation putting the safety outputs in the open state preventing them from closing even after the contact has been closed (both contacts need have to be opened and closed to allow a restart).

Manual reset, although possible, does not fully satisfy the requirements of the EN ISO 13849-1 standard regarding the manual reset safety function.

The component falls under Annex IV point 21 of the Machinery Directive 2006/42/EC as it belongs to the category *“Logic units to ensure safety functions”*.

2. Reference Standard:

EN ISO 13849-1:2023 - EN ISO 13849-2:2012

EN ISO 13850:2015 - EN 60204-1:2018

The standards cited on the reference certificate of this Annex (see above)

- ☒ have been fully applied
☐ have been partially applied

EN 61496-1:2021 (NC85 only)

The standards cited on the reference certificate of this Annex (see above)

☐ have been fully applied

☒ have been partially applied

3. Main technical characteristics

General characteristics of the safety module

Power supply: 24 V ac 50 ÷ 60 Hz +/- 15%

24 V dc +/- 15%

Current consumption max: 100 mA (24 Vdc, no-load)

Short circuit protection: Resettable fuse 750 mA

Housing material: PA 6.6

Mounting: 35 mm standard DIN rail (EN50022)

Protection degree: IP20

Operating temperature: 0°C ÷ +55°C

Storage temperature: -20°C ÷ +70°C

Connections: screw terminals (tightening torque 0.5 Nm)

Synchronization time between inputs (with START button pressed): 600 ms

Maximum voltage on safety outputs (terminals 13-14, 23-24): 250 Vac/dc

Maximum current on the safety outputs: 3 A

Maximum power on the safety outputs (ohmic load): 750 VA

Maximum collector-emitter voltage of the auxiliary output phototransistor:
55 V

Maximum collector current of the auxiliary output phototransistor: 60 mA

Mechanical life: > 10⁷ operations



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SIGNALS:

POWER, yellow LED = power supply

S1, green LED = channel contact S11- S12

S2, green LED = channel contact S21- S22

START, green LED = START button contact

OUT, green LED = safe outputs closed

TERMINAL FUNCTION:

A1: Power supply +24 Vdc / 24 Vac

A2: Power supply GND / 24 Vac

Inputs*:

S11-S12: First channel - "Dry" contact or NPN

S21-S22: Second channel - "Dry" contact or PNP

S31-S32: Second channel - Dry contact or NPN (NC95 ONLY)

S41-S42: First channel - Dry contact or PNP (NC95 ONLY)

*The main inputs for the sensors are S11-S12 and S21-S22. If you want to use static transistor output sensors of the same type (both NPN or PNP) you must use the S31-S32 or S41-S42 inputs depending on the case.

S33-S34: START (to be short-circuited in case of automatic reset)

X1-X2: Inputs for feedback of external contactors or relays

Outputs:

13-14: First safe output

23-24: Second safe output

Y1: Non-safety auxiliary output (phototransistor collector opto-isolated output)

Y2: Non-safety auxiliary output (phototransistor emitter opto-isolated output)



Reliability data

Stop Category	0 according to EN 60204-1 and EN ISO 13850					
Safety Category and PL (EN ISO 13849-1)	Cat. 4 (1 safety switch)		Cat. 3 (more than one safety switch)			
	PL - e	PL - e	PL - d	PL - e	PL - e	
nop (number of operation /years)	61320	17520	61320	30000	17520	N° cycles/ year
MTTFd	30	100	30	62	100	years
PFHd	2,47x10 ⁻⁸	9,54x10 ⁻⁸	2,65x10 ⁻⁷	8,84x10 ⁻⁸	4,29x10 ⁻⁸	
TM	20					years

4. Conditions of validity of the certificate

The connection of the NC86 board to the control circuit of the machines must not cause:

- Restarting the machine following the reset of the safety module, but enabling the start-up of the machine to be done in an intentional manner by a dedicated start-up button (§9.2.5.4.2 of EN 60204-1:2018, EN ISO 13850:2015);
- Starting a dangerous operation of the machine following the reclosing or reactivation of a mobile guard or protection (§9.3.1 of EN 60204-1:2018).

The validity of the EC type examination certificate is subject to review every five years. If the validity is not extended, the manufacturer has the obligation to stop placing the machine on the market.

The manufacturer has the obligation to communicate any modification made to the approved type. TÜV Italia reserves the right to confirm the validity of the EC type examination certificate issued.

5. Note

In accordance with the provisions of the Machinery Directive 2006/42/EC, the applicant must inform the notified body regarding the modifications, even of minor importance, that he has made or intends to make to the model of the machine to which the certificate refers.

Copy of the test report n.: **RRTR-25-0948-MAC-722379812-06** is delivered to the Manufacturer.

This annex is an integral part of the EC type examination certificate n°

TUV IT 0948 10 MAC 010 B Rev.04

Milan, 28/03/2025

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Information regarding the TÜV Italia Certificate

This certificate is only valid for the referenced company and its facilities stated on the certificate. Only the Certification Body is allowed to transfer (assign) it to a third party.

The right to use the marking depicted on the certificate covers solely products, which match with the type approval and the specifications within the test report or within its complementary (additional) agreements.

Each product has to contain (be accompanied) the necessary operating and assembly instructions. Each product must bear the clearly visible identification of the manufacturer or importer as well as a type plate, in order to identify the compliance of the type approval with the product placed on the market.

The holder of the TÜV Italia certificate is obliged to continuously observe if the manufacture of the marked products complies with the test requirements; he is obliged to perform the control tests defined within the test requirements or by the Certification Body in an orderly manner.

Aside from the conditions referenced above, the conditions within the General Contract are effective for the TÜV Italia certificate.

It is valid as long as the state of the art requirements on which the test (approval) was based, are effective, if it was not withdrawn prior on conditions within the General Contract.

If this certificate expires or is withdrawn it has to be returned to the Certification Body immediately.