

## SAFEMASTER Interface Module HL 3094N



### Your Advantages

- Simple contact extension and re-inforcement also of safety modules
- Cost and space saving alternative compared to contactors
- Simple contact monitoring via forcibly guided NC contact
- Large wire cross section 0.5 - 2.5mm<sup>2</sup> (12-24 AWG) reduces thermal load on wires

### Features

- Acc. to DIN EN 61810-1, IEC 60664-1, IEC/EN 60947-5-1, EN 50155
- With forcibly guided contacts according to IEC 61810-3
- **Models with soldered in or pluggable PCB safety relay,** consisting of
  - plug in socket HL 3094N and safety relay OA 5601
- With polarity protected diode
- With free-wheeling diode between A1+ and A2
- Optionally AgNi + 0.2 µm Au or AgNi + 5 µm Au
- For DIN rail mounting according DIN EN 60715
- Width: 36 mm

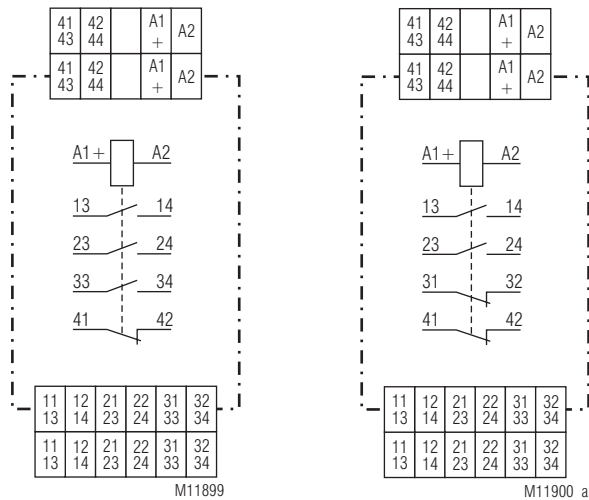
### Product Description

The interface module HL 3094N has forcibly guided contacts. Therefore it can be used to safely separate control and load circuits. Double terminals für easy looping of the signals. Spring clamp terminal blocks ensures constant contact forces and vibration-proof connection technology.

### Approvals and Markings



### Circuit Diagrams



HL 3094N.48C

HL 3094N.52C

HL 3094NC/10\_  
+ OA5601.48

HL 3094NC/10\_  
+ OA5601.52

### Connection Terminals

Terminal designation	Signal designation
A1+	L / +
A2	N / -
41, 42	NO contact
All other contacts seerelevant circuit diagram	NC contacts / or NO contacts

## Technical Data

### Input

<b>Nominal voltage <math>U_N</math>:</b>	DC 24, 110 V other voltages on request
<b>Voltage range:</b>	0.8 ... 1.1 $U_N$
<b>Nominal consumption:</b>	1.0 W

### Output

<b>Contacts:</b>		
HL 3094N.52, OA 5601.52:	2 NO and 2 contacts	
HL 3094N.48, OA 5601.48:	3 NO and 1 contacts	
<b>Contact material:</b>	AgNi + 0.2 $\mu$ m Au, AgNi + 5 $\mu$ m Au other on request	
<b>Contact type:</b>	spring contact	
<b>Operate time:</b>	typical 27 ms	
<b>Release time:</b>	typical 30 ms	
<b>Measured nominal voltage:</b>	AC 250 V	
<b>Thermal current <math>I_{th}</math>:</b>	3 x 8 A	
<b>Switching capacity</b> to AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60947-5-1
NC contact: nach DC 13	2 A / AC 230 V	IEC/EN 60947-5-1
NO contact:	2 A / DC 24 V	IEC/EN 60947-5-1
NC contact:	2 A / DC 24 V	IEC/EN 60947-5-1
according to DC 13		
NO contact:	6 A / 24 V at 0.1 Hz	
NC contact:	6 A / 24 V at 0.1 Hz	
<b>Electrical life</b> to AC 230 V / 6 A $\cos\phi = 1$ : at DC 24 V / 5 A ohmic:	$\geq 5 \times 10^5$ switching cycles $\geq 6 \times 10^6$ switching cycles	
<b>Permissible switching frequency:</b>	10 switching cycles / s	
<b>Switching voltage min./max.:</b>	AC/DC 10 V / AC/DC 250 V (AC/DC 2 V / AC/DC 60 V for AgNi-contacts + 5 $\mu$ m Au)	
<b>Switching current min./max.:</b>	10 mA / 8 A (2 mA / 0.3 A for AgNi-contacts + 5 $\mu$ m Au)	
<b>Switching power min./max.:</b>	0.1 VA / 2000 VA (10 mVA / 12 VA for AgNi-contacts + 5 $\mu$ m Au) 0.1 W / 200 W (10 mW / 12 W for AgNi-contacts + 5 $\mu$ m Au)	
<b>Short circuit strength</b> <b>max. fuse rating:</b>	8 A gG / gL	IEC/EN 60947-5-1
<b>Mechanical life:</b>	$\geq 30 \times 10^6$ switching cycles	

### General Data

<b>Operating mode:</b>	Continuous operation	
<b>Temperature range:</b>		
Operation:	- 40 ... + 55 °C	
Storage:	- 40 ... + 70 °C	
<b>Relative air humidity:</b>	93 % at 40 °C	
<b>Altitude:</b>	< 2000 m	
<b>Clearance and creepage distances</b> rated impulse voltage / pollution degree		
Input / output:	6 kV / 2	IEC 60664-1
Output / output:	4 kV / 2	IEC 60664-1
Overvoltage category:	III	
Insulation test voltage, type test:	2.5 kV; 1 min	
<b>EMC</b> Statische Entladung (ESD):	8 kV (air)	IEC/EN 61000-4-2
HF-Einstrahlung:		
80 MHz ... 1 GHz:	20 V / m	IEC/EN 61000-4-3
1 GHz ... 2.7 GHz:	10 V / m	IEC/EN 61000-4-3
Fast transients:	4 kV	IEC/EN 61000-4-4
Surge voltages between wires for power supply: between wire and ground: HF-wire guided: Interference suppression:	1 kV 2 kV 10 V Limit value class B	IEC/EN 61000-4-5 IEC/EN 61000-4-5 IEC/EN 61000-4-6 EN 55011

## Technical Data

### Degree of protection

Housing:	IP 40	IEC/EN 60529
Terminals:	IP 20	IEC/EN 60529
<b>Housing:</b>	Thermoplastic	
<b>Vibration resistance:</b>	Amplitude 0.35 mm frequency 10 ... 55 Hz,	IEC/EN 60068-2-6
<b>Climate resistance:</b>	Humid heat	IEC/EN 60068-2-30
<b>Terminal designation:</b>	EN 60947-1	
<b>Fire behaviour</b>		
DIN rail socket:	V0	UL 94
PCB:	V0	UL 94
Connection terminals:	V0	UL 94
<b>Wire connection:</b>	0,5 ... 2,5 mm <sup>2</sup> solid 0,5 ... 2,5 mm <sup>2</sup> flexible	
<b>Wire fixing:</b>	Cage clamp terminals	
<b>Schnellbefestigung:</b>	DIN rail	IEC/EN 60715
<b>Nettogewicht:</b>	approx. 140 g	

### Weight

### Width x height x depth

HL 3094N._.C:	36 x 106 x 68 mm
HL 3094NC mit OA 5601:	36 x 106 x 79 mm

## Classification to DIN EN 50155

<b>Vibration and shock resistance:</b>	Category 1, Class B	IEC/EN 61373
<b>Ambient temperature:</b>	T1, T2, T3 and TX compliant	
<b>Voltage range:</b>	0.7 ... 1.25 $U_N$ with operational limitations	
<b>Protective coating of the PCB:</b>	No	

## Standard Types with soldered relay

HL 3094N.48C/900 DC 24 V	
Article number:	0067990
• 3 NO contacts, 1 NC contact	
• Contact material AgNi + 0.2 $\mu$ m Au	
• Width:	36 mm

## Ordering Example

HL 3094N. . . C / . . . DC 24 V	
_____	Nominal voltage
_____	0: Ag Ni
_____	1: AgNi + 5 $\mu$ m Au
_____	0: Standard
_____	9: With free-wheeling diode and LED
_____	C: Cage clamp terminal
_____	Contacts
_____	Type

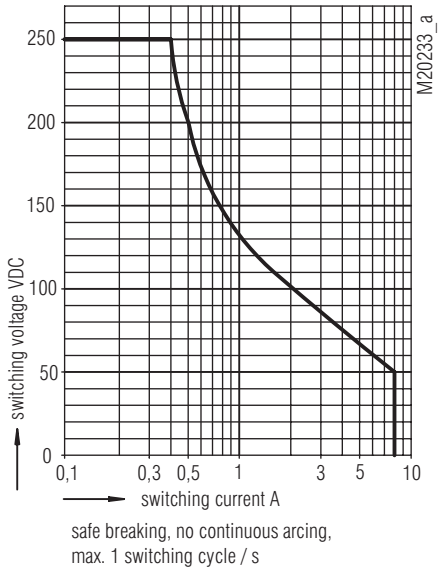
## Standard Types for plug in relay

<b>Plug in socket</b>	
HL 3094NC/102 DC 24 V:	With free-wheeling diode and LED Article number: 0067991
Suitable relay:	OA 5601.48/2133L1 DC 24 V 3 NO, 1 NC Contact material: AgNi + 0,2 $\mu$ m Au Article number: 0046563

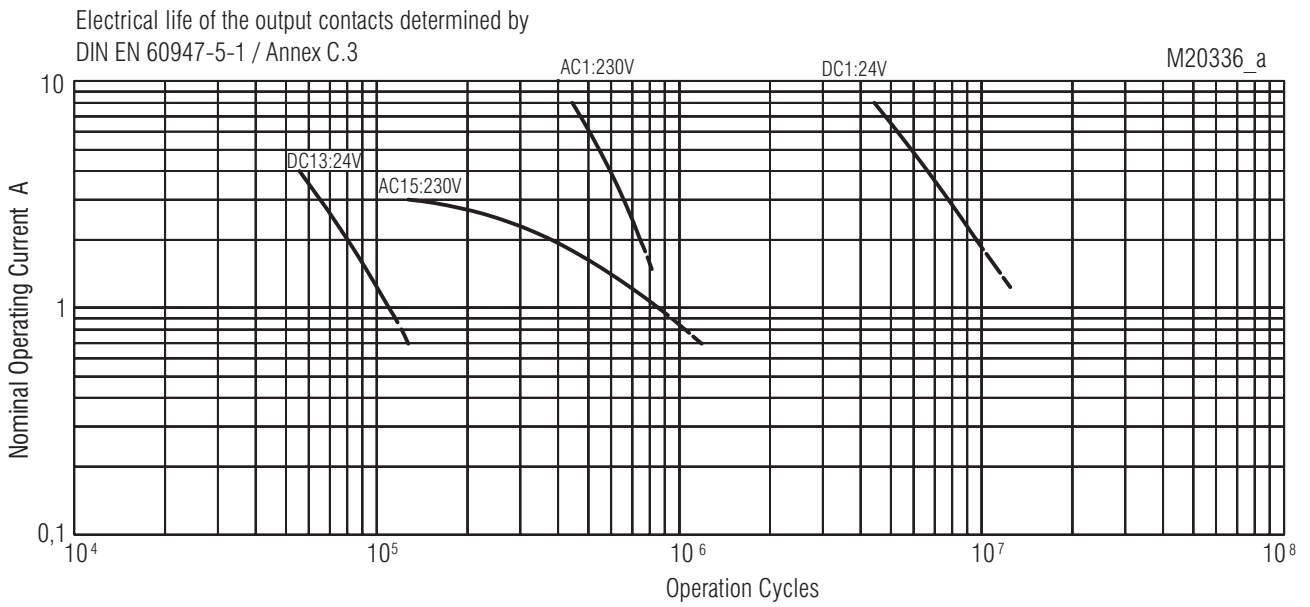
further variantes on request

## Ordering Example

HL 3094NC/1 0 2 DC 24 V	
_____	Nominal voltage
_____	2: Free-wheeling diode and LED
_____	0: Standard
_____	1: Plug in socket
_____	C: Cage clamp terminal
_____	Type



Arc limit curve under resistive load



Electrical contact service life

## Connection Example for HL 3094NC/10\_

Relay: OA 5601.48  $\cong$  3 NO and 1 NC contact (standard)

A1	A2	Contact	Contact-type	Connection
11 13 12 14	21 23 22 24	1	NO contact	13, 14
41 43 42 44	31 33 32 34	2	NO contact	23, 24
		3	NO contact	33, 34
		4	NC contact	41, 42

The terminal assignment is according to the diagram on the installed relay



### Safety Notes



**Dangerous voltage.**  
Electric shock will result in death or serious injury.



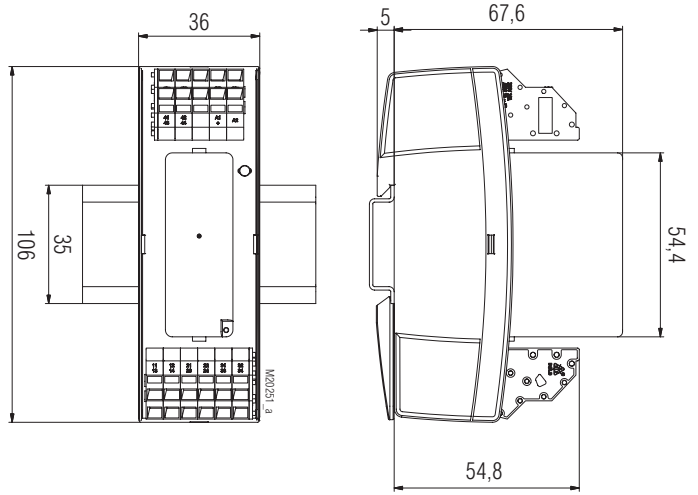
Disconnect all power supplies before servicing equipment.



The installation must only be done by a qualified electrician!

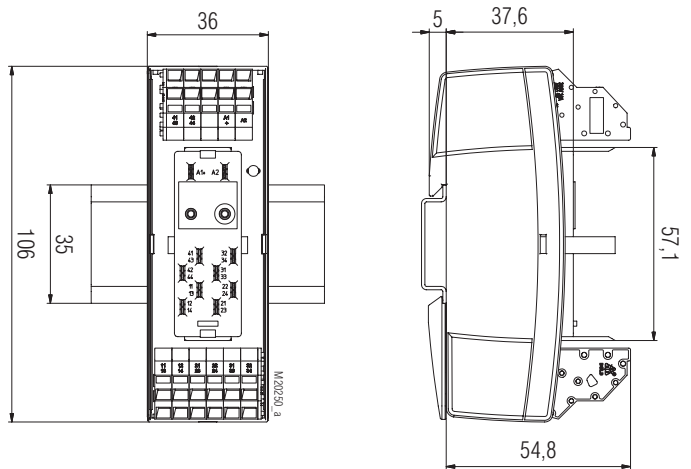
- Faults must only be removed when the relay is disconnected.
- The user has to make sure that the device and corresponding components are installed and wired according to the local rules and law (TUEV, VDE, Health and safety)
- Installation work must only be done when power is disconnected.

## Dimensions with safety relay



HL 3094N.\_\_C

## Dimensions with plug in socket



HL 3094NC