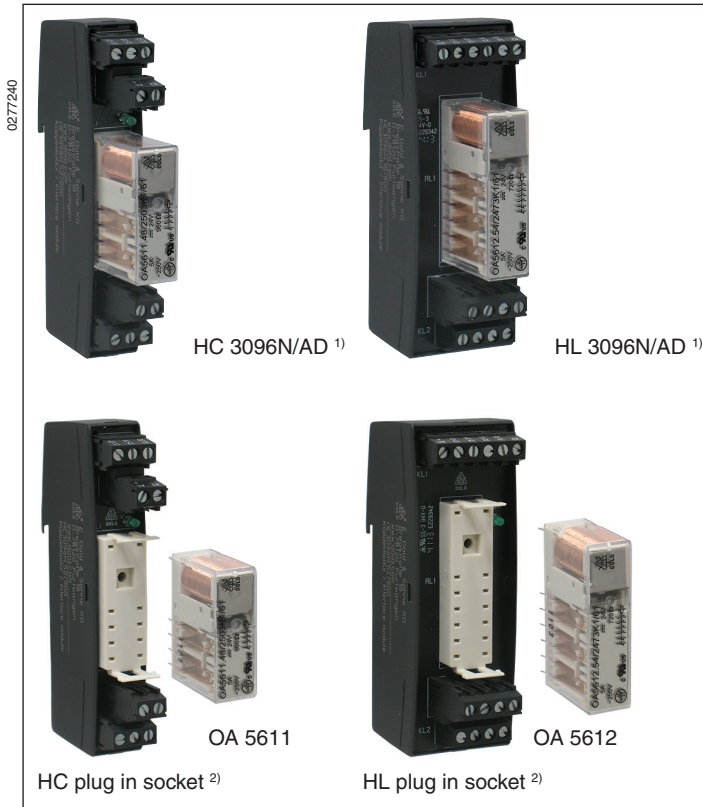


**SAFEMASTER**  
Interface Module  
HC 3096N/AD, HL 3096N/AD



**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 - 2.5 mm<sup>2</sup> (12-24 AWG) reduces thermal load on wires

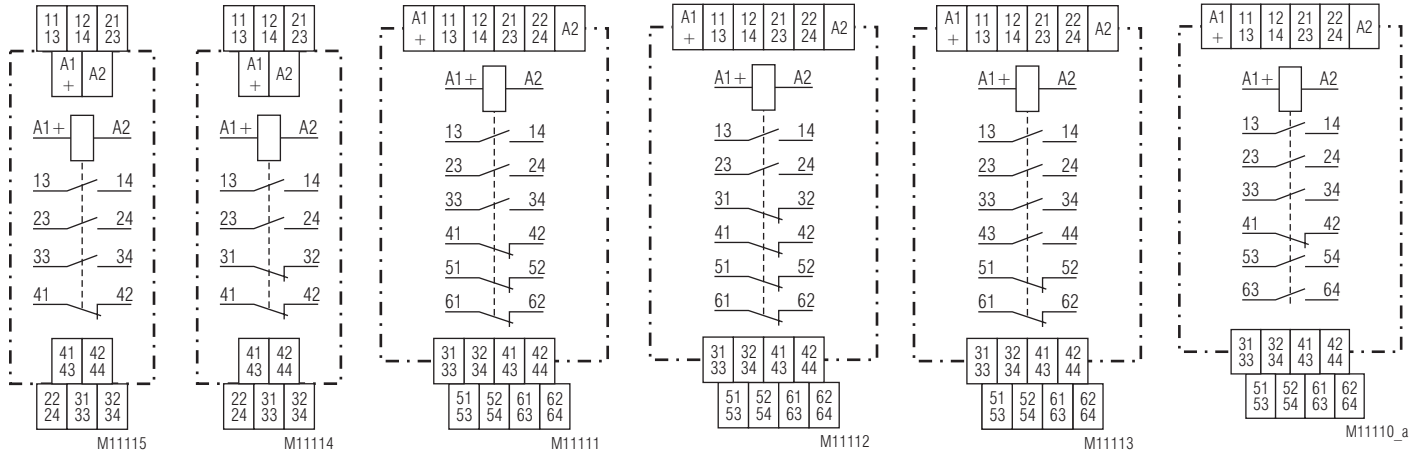
**Features**

- According to DIN EN 61810-1, IEC 60664-1, IEC/EN 60 947-5-1
- With forcibly guided contacts according to IEC 61810-3
- Models with soldered in or plug-in PCB safety relay consisting of:
  - plug in socket HC 3096N/AD and safety relay OA 5611
  - plug in socket HL 3096N/AD and safety relay OA 5612
- With polarity protected diode
- With free-wheeling diode across A1+ and A2
- For DIN rail mounting according IEC/EN 60715
- HC 3096N/AD: width 18 mm
- HL 3096N/AD: width 36 mm

**Approvals and Markings**



**Circuit Diagrams**



HC 3096N.48/AD (Art. No. 0068111)	HC 3096N.52/AD (Art. No. 0068112)	HL 3096N.18/AD (Art. No. 0068115)	HL 3096N.50/AD (Art. No. 0068116)	HL 3096N.54/AD (Art. No. 0068117)	HL 3096N.60/AD (Art. No. 0068118)
HC 3096N/102 + OA 5611.48	HC 3096N/102 + OA 5611.52	HL 3096N/102 + OA 5612.18	HL 3096N/102 + OA 5612.50	HL 3096N/102 + OA 5612.54	HL 3096N/102 + OA 5612.60

HC 3096N/102: Plug in socket with free-wheeling diode and LED  
Article number: 0066018

HL 3096N/102: Plug in socket with free-wheeling diode and LED  
Article number: 0066334

**Connection Terminals**

Terminal designation	Signal description
A1+	L / +
A2	N / -
41, 42 / 61, 62	NC contact
All other contacts see relevant circuit diagram	NC contacts / or NO contacts

## Technical Data

### Input

<b>Nominal voltage <math>U_N</math>:</b>	DC 24 V
<b>Voltage range:</b>	0.8 ... 1.1 $U_N$
<b>Nominal consumption</b>	
HC 3096N/AD:	0.6 W
HL 3096N/AD:	0.8 W
HL 3096N.50/AD:	1.0 W

### Output

#### Contacts:

HC 3096N.52/AD, OA 5611.52:	2 NO and 2 NC contacts
HC 3096N.48/AD, OA 5611.48:	3 NO and 1 NC contacts
HL 3096N.18/AD, OA 5612.18:	3 NO and 3 NC contacts
HL 3096N.50/AD, OA 5612.50:	2 NO and 4 NC contacts
HL 3096N.54/AD, OA 5612.54:	4 NO and 2 NC contacts
HL 3096N.60/AD, OA 5612.60:	5 NO and 1 NC contacts

**Contact material:** AgNi + 0,2 $\mu$ m Au

**Contact type:** spring contact

**Operate time:** typical 20 ms

**Release time:** typical 6 ms

**Measured nominal voltage:** AC 250 V

**Thermal current  $I_{th}$**

HC 3096N/AD: 3 x 5 A

HL 3096N/AD: 5 x 5 A

#### Switching capacity

to AC 15

NO contact: 2 A / AC 230 V IEC/EN 60 947-5-1

NC contact: 1 A / AC 230 V IEC/EN 60 947-5-1

to DC 13

NO contact: 1 A / DC 24 V IEC/EN 60 947-5-1

NC contact: 1 A / DC 24 V IEC/EN 60 947-5-1

according to DC 13

NO contact: 4 A / 24 V at 0.1 Hz

NC contact: 4 A / 24 V at 0.1 Hz

#### Electrical life

HC 3096N/AD

to AC 230 V / 5 A  $\cos\phi = 1$ :  $\geq 2 \times 10^5$  switching cycles

HL 3096N/AD

at DC 24 V / 5 A ohmic:  $\geq 2 \times 10^5$  switching cycles

#### Permissible switching

**frequency:** 10 switching cycles / s

**Switching voltage min./max.:** AC/DC 10 V / AC/DC 250 V

**Switching current min./max.:** 10 mA / 5 A

**Switching power min./max.:** 0.1 VA / 2000 VA; 0.1 W / 200 W

#### Short circuit strength

**max. fuse rating:** 6 A gG / gL IEC/EN 60 947-5-1

**Mechanical life:**  $\geq 50 \times 10^6$  switching cycles

### General Data

**Operating mode:** Continuous operation

#### Temperature range:

Operation: - 40 ... + 55 °C

Storage: - 40 ... + 70 °C

**Relative air humidity:** 93 % at 40 °C

**Altitude:** < 2.000 m

#### Clearance and creepage distances

rated impulse voltage /

pollution degree

Input / output

HC/AD devices: 6 kV / 2 IEC 60 664-1

HL/AD devices: 4 kV / 2 IEC 60 664-1

output / output: 4 kV / 2 IEC 60 664-1

Overvoltage category: III

Insulation test voltage,

type test: 2,5 kV; 1 min

#### EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF-irradiation

80 MHz ... 1 GHz: 20 V / m IEC/EN 61 000-4-3

1 GHz ... 2,7 GHz: 10 V / m IEC/EN 61 000-4-3

Fast transient: 4 kV IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 1 kV IEC/EN 61 000-4-5

between wire and ground: 2 kV IEC/EN 61 000-4-5

HF-wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55 011

## Technical Data

### Degree of protection

Housing: IP 40 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

**Housing:** Thermoplastic

**Vibration resistance:** Amplitude 0.35 mm

Frequency 10 ... 55 Hz, IEC/EN 60 068-2-6

**Climate resistance:** Humid heat IEC/EN 60 068-2-30

**Terminal designation:** EN 60 947-1

**Wire connection:** 0.5 ... 2.5 mm<sup>2</sup> solid

0.5 ... 2.5 mm<sup>2</sup> flexible

**Wire fixing:** Captive slotted screw

**Fixing torque:** 0,5 Nm

**Mounting:** DIN rail IEC/EN 60 715

### Weight

HC 3096N/AD: approx. 71 g

HL 3096N/AD: approx. 90 g

## Dimensions

### Width x height x depth

HC 3096N/AD: 18 x 106 x 65 mm

HL 3096N/AD: 36 x 106 x 65 mm

## UL Data

**Nominal voltage  $U_N$ :** DC 24 V

### Switching capacity:

Ambient temperature 60 °C: Pilot duty B300

5 A 250Vac G. P.

5 A 24Vdc

0.4 A 250Vac resistive

**Wire connection:** 60°C / 75°C copper conductors only

AWG 24 - 12 torque value 4.4 lb-in



Technical data that is not stated in the UL-Data, can be found in the technical data section.

## Classification to DIN EN 50155

### Vibration and

**shock resistance:** Category 1, Class B IEC/EN 61 373

**Ambient temperature:** T1 and T2 compliant

T3 and TX with operational limitations

**Voltage range:** 0.7 ... 1.25  $U_N$  with operational limitations

**Protective coating of the PCB:** No

## Standard Types

HC 3096N.48/AD900/61 DC 24 V

Article number: 0068111

• 3 NO, 1 NC contact

• AgNi + 0.2  $\mu$ m Au

• Width: 18 mm

HL 3096N.54/AD900/61 DC 24 V

Artikelnummer: 0068117

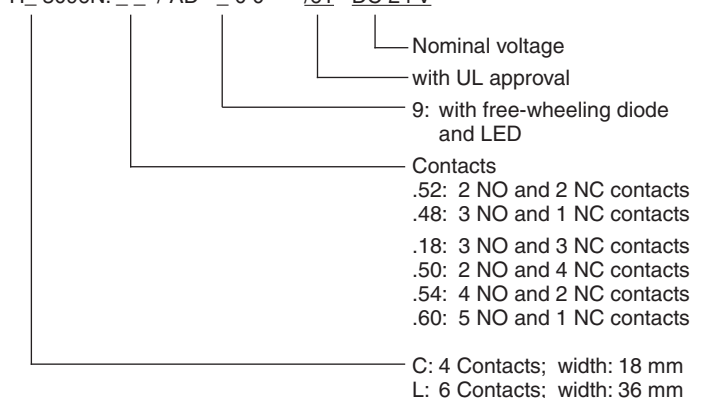
• 4 NO, 2 NC contact

• AgNi + 0.2  $\mu$ m Au

• Width: 36 mm

## Ordering Example

H\_ 3096N. \_\_ / AD \_ 0 0 /61 DC 24 V



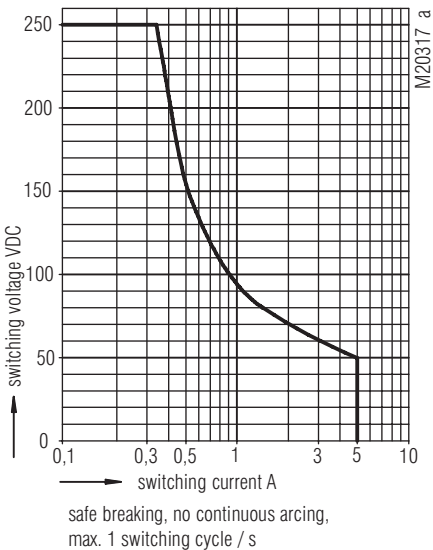
### Variants

- HC 3096N/102: Plug in socket with free-wheeling diode and LED  
Article number: 0066018
- HL 3096N/102: Plug in socket with free-wheeling diode and LED  
Article number: 0066334

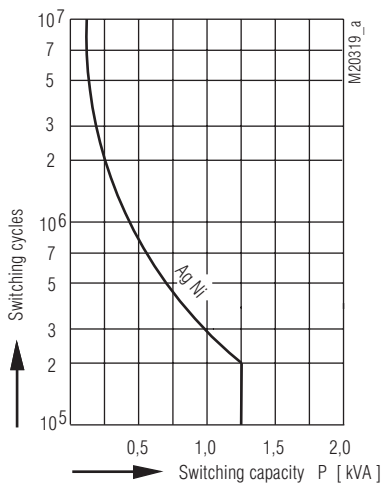
### Accessories

- OA 5611.48  
Article number: 0068113
- OA 5611.52  
Article number: 0068114
- OA 5612.18  
Article number: 0068119
- OA 5612.50  
Article number: 0068120
- OA 5612.54  
Article number: 0068121
- OA 5612.60  
Article number: 0068122

### Characteristic



### Arc limit curve



### Arc limit curve under resistive load

### Connection example for HC 3096N/102/61

Relay: OA 5611.52 ≅ 2 NO contacts and 2 NC contacts (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	NC contact	31, 32
		4	NC contact	41, 42

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

### Connection example for HL 3096N/102/61

Relay: OA 5612.18 ≅ 3 NO contacts and 3 NC contacts (Standard)

A1+	A2	Contact	Contact-type	Connection
{ 11 13 12 14 }	{ 21 23 22 24 }	1	NO contact	13, 14
		2	NO contact	23, 24
{ 41 43 42 44 }	{ 31 33 32 34 }	3	NO contact	33, 34
		4	NC contact	41, 42
{ 51 53 52 54 }	{ 61 63 62 64 }	5	NC contact	51, 52
		6	NC contact	61, 62

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



### Safety Notes



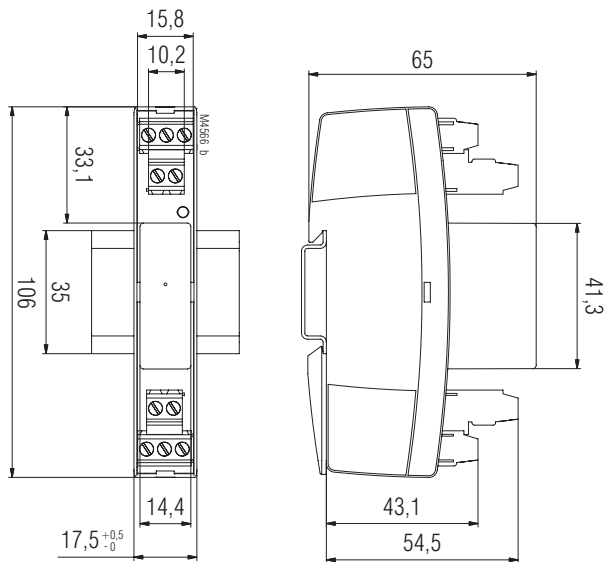
**Dangerous voltage.**  
Electric shock will result in death or serious injury.



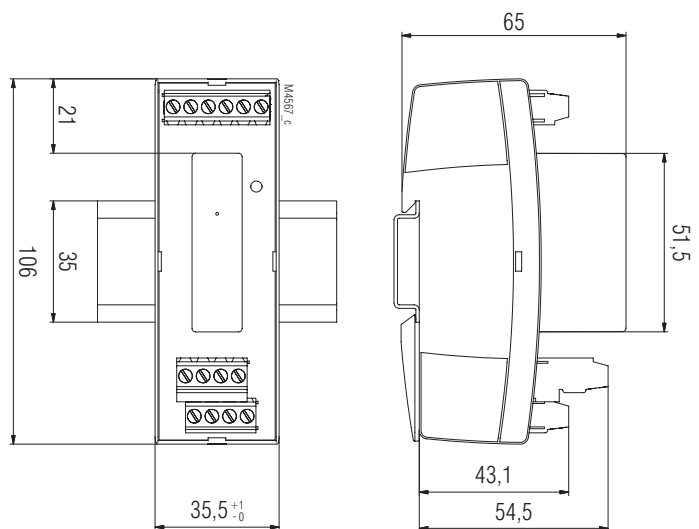
Disconnect all power supplies before servicing equipment.

- 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

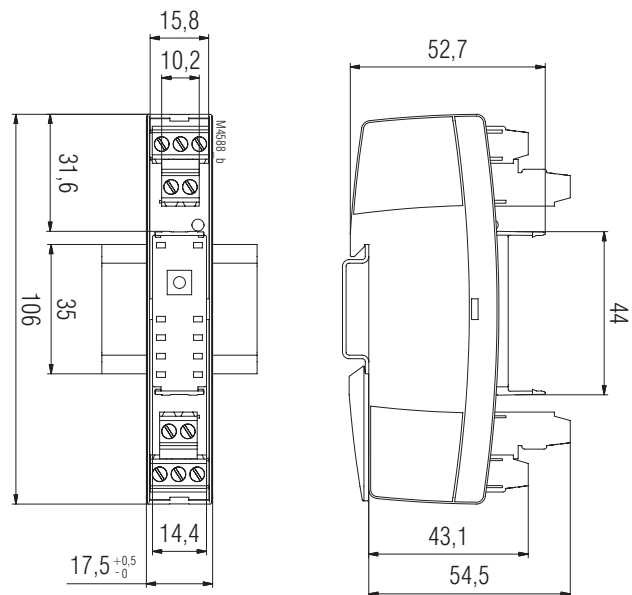


HC 3096N/AD

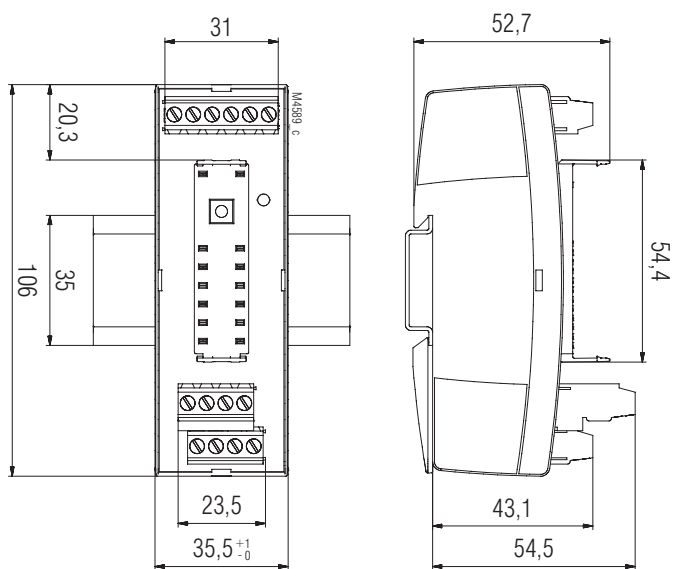


HL 3096N/AD

Dimensions with plug in socket



HC 3096N/102



HL 3096N/102