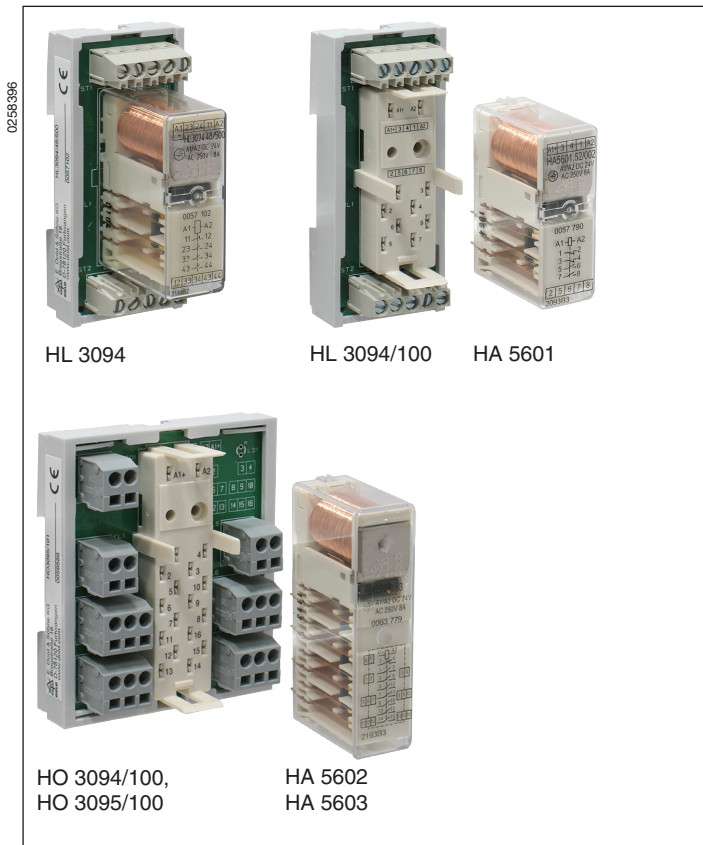


**SAFEMASTER**  
Interface Module  
HL 3094, HO 3094, HO 3095

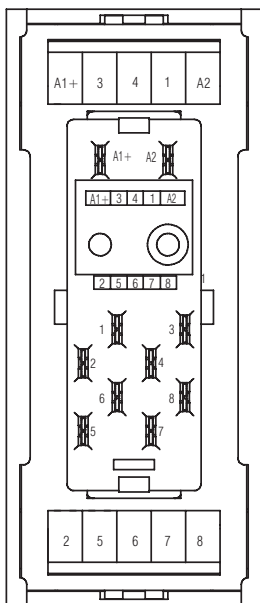


- According to DIN EN 61810-1, IEC 60 664-1, IEC/EN 60 947-5-1
- With forcibly guided contacts according to IEC 61810-3
- Low nominal consumption: 0.75 W / 1 W / 1.25 W
- Max. 8 output contacts
- Contact material AgNi + 0.2 µm Au
- High thermal current  $I_{th} = 8$  A
- Large temperature range: - 40 ... + 55°C
- Safety relay soldered on PCB
- Optional AgNi + 5 µm Au or AgSnO + 0.2 µm Au
- Optional with free-wheeling diode across A1/A2
- Plug in relay option  
HA 5601 on socket HL 3094/10\_  
HA 5602 on socket HO 3094/10\_  
HA 5603 on socket HO 3095/10\_
- DIN rail or screw mounting
- HL: 38 mm width  
HO: 73.3 mm width

**Approvals and Markings**

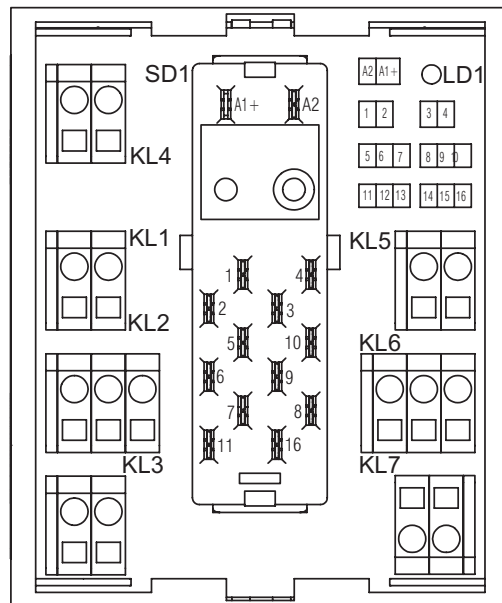


**Socket Labeling**



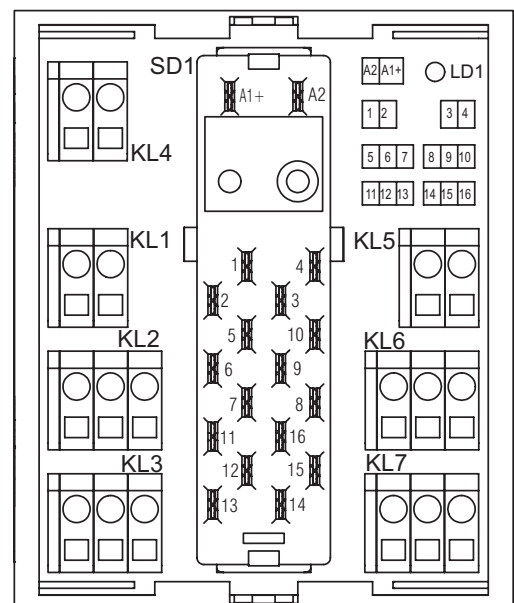
HL 3094/100, HL 3094/101

M2404\_c



HO 3094/100, HO 3094/101  
HO 3094/102, HO 3094/103

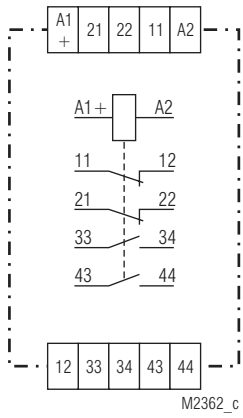
M3993\_a



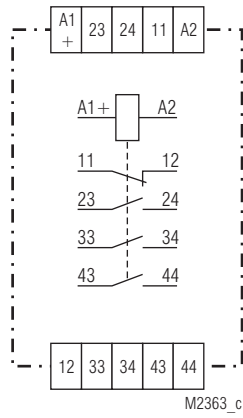
HO 3095/100, HO 3095/101  
HO 3095/102, HO 3095/103

M3992\_a

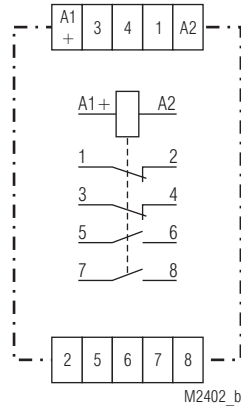
## Circuit Diagrams



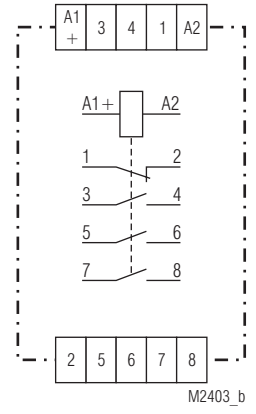
HL 3094.52



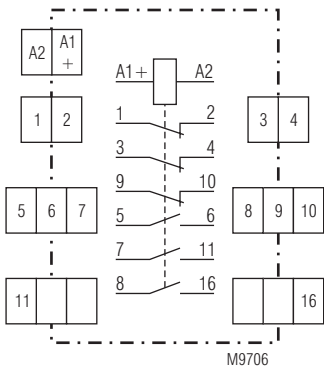
HL 3094.48



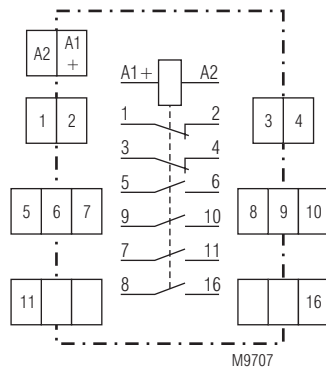
HA 5601.52



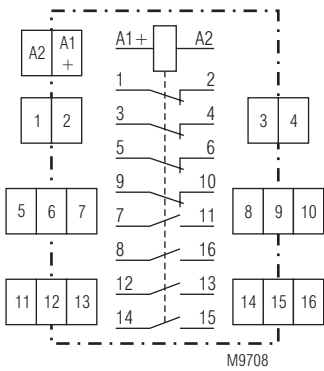
HA 5601.48



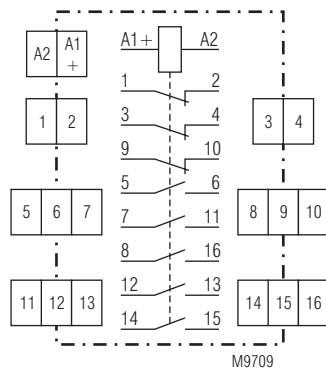
HA 5602.18



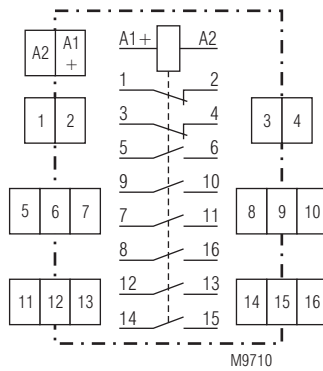
HA 5602.54



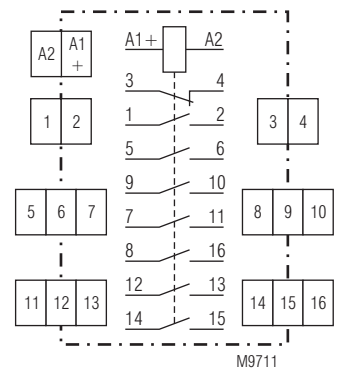
HA 5603.57



HA 5603.58



HA 5603.59



HA 5603.63

## Connection Terminals

Terminal designation	Signal description
A1+	L / +
A2	N / -
11, 12 / 1, 2	NC contact
All other contacts see relevant circuit diagram	NC contacts / or NO contacts

Technical Data	
<b>Input</b>	
<b>Nominal voltage <math>U_N</math>:</b>	DC 6, 12, 24, 48, 60, 110 V other voltages on request
<b>Voltage range:</b>	0.8 ... 1.1 $U_N$
<b>Nominal consumption:</b>	
HL 3094:	0.75 W
HO 3094:	1 W
HO 3095:	1.25 W
<b>Output</b>	
<b>Contacts</b>	
HL 3094.52, HA 5601.52:	2 NO, 2 NC contacts
HL 3094.48, HA 5601.48:	3 NO, 1 NC contacts
HO 3094.18, HA 5602.18:	3 NO, 3 NC contacts
HO 3094.54, HA 5602.54:	4 NO, 2 NC contacts
HO 3095.57, HA 5603.57:	4 NO, 4 NC contacts
HO 3095.58, HA 5603.58:	5 NO, 3 NC contacts
HO 3095.59, HA 5603.59:	6 NO, 2 NC contacts
HO 3095.63, HA 5603.63:	7 NO, 1 NC contacts
<b>Contact material:</b>	AgNi + 0.2 $\mu$ m Au
<b>Measured nominal voltage:</b>	AC 250 V
<b>Contact type:</b>	spring contact
<b>Operate time:</b>	$\leq 40$ ; typical 27 ms
<b>Release time:</b>	$\leq 10$ ; typical 5 ms
<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 60 947-5-1
NC contact:	2 A / AC 230 V IEC/EN 60 947-5-1
<b>Electrical life</b>	IEC/EN 60 947-5-1
at 1 s x On, 1 s Off	
at AC 230 V 5 A $\cos \varphi = 1$ :	$> 7 \times 10^5$ switching cycles / AgSnO $> 5 \times 10^5$ switching cycles / AgNi
at AC 230 V 8 A $\cos \varphi = 1$ :	$> 3 \times 10^5$ switching cycles / AgSnO $> 2 \times 10^5$ switching cycles / AgNi
to AC 15 at 1 A, AC 230 V:	$1.5 \times 10^6$ switching cycles
<b>Permissible switching frequency:</b>	10 switching cycles / s
<b>Switching voltage min./max.:</b>	AC/DC 10 V / DC 250 V, AC 400 V (100 mV / 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 / 7 VA for AgNi-contacts + 5 $\mu$ m Au) 0,1 W / 240 W (10 mW / 7 W for AgNi-contacts + 5 $\mu$ m Au)
<b>Short circuit strength max. fuse rating:</b>	6 A gG / gL IEC/EN 60 947-5-1
<b>Mechanical life:</b>	$> 30 \times 10^6$ switching cycles
<b>General Data</b>	
<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>	$< 2.000$ m
<b>Clearance and creepage distances</b>	
rated impulse voltage / pollution degree:	
Input / Output:	4 kV / 2 (basis insulation) IEC 60 664-1
Output / Output:	4 kV / 2 (basis insulation) IEC 60 664-1
Overvoltage category:	III
Insulation test voltage, type test:	2.5 kV; 1 min

Technical Data	
<b>EMC</b>	
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation	
80 MHz ... 1 GHz:	10 V / m IEC/EN 61 000-4-3
1 GHz ... 2,7 GHz:	10 V / m IEC/EN 61 000-4-3
Fast transients:	4 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	2 kV IEC/EN 61 000-4-5
between wire and ground:	4 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
<b>Degree of protection</b>	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
<b>Housing:</b>	Thermoplastic
<b>Vibration resistance:</b>	Amplitude 0.35 mm IEC/EN 60 068-2-6 frequency 10 ... 55 Hz
<b>Climate resistance:</b>	Humid heat IEC/EN 60 068-2-30
<b>Terminal designation:</b>	EN 60 947-1
<b>Wire connection:</b>	0.14 ... 4 mm <sup>2</sup> solide 0.14 ... 2.5 mm <sup>2</sup> flexible
<b>Wire fixing</b>	
HL 3094:	box terminals
HO 3094, HO 3095:	cage clamp terminals
<b>Fixing torque:</b>	0.4 Nm
<b>Mounting:</b>	DIN rail mounting (IEC/EN 60715) or screw mounting M4, 90 mm hole pattern, with additional clip available as accessory
<b>Weight:</b>	
HL 3094 (incl. relay):	approx. 120 g
HL 3094/100:	approx. 58 g
HO 3094 (incl. relay):	approx. 173 g
HO 3095 (incl. relay):	approx. 183 g
HO 3094/100, HO 3095/100:	approx. 93 g
HA 5601:	approx. 78 g
HA 5602:	approx. 85 g
HA 5603:	approx. 95 g
<b>Dimensions</b>	
<b>Width x height x depth</b>	
Interface module HL 3094:	37.8 x 88 x 55.2 mm
Interface module HO 3094:	73.8 x 88 x 51.9 mm
Interface module HO 3095:	73.8 x 88 x 51.9 mm
Socket HL 3094 with safety relay HA 5601:	
	37.8 x 88 x 65.5 mm
Socket HO 3094 with safety relay HA 5602:	
	73.8 x 88 x 59.9 mm
Socket HO 3095 with safety relay HA 5603:	
	73.8 x 88 x 59.9 mm

#### Classification to DIN EN 50155

<b>Vibration and shock resistance:</b>	Category 1, Class B IEC/EN 61 373
<b>Ambient temperature:</b>	T1 compliant T2, T3 and TX with operational limitations
<b>Voltage range:</b>	0.7 ... 1.25 $U_N$ with operational limitations
<b>Protective coating of the PCB:</b>	No

## Standard Type

HL 3094.52 DC 24 V

Article number: 0047426

• 2 NO, 2 NC contacts

• Contact material: AgNi + 0.2 µm Au

• Nominal voltage  $U_N$ : DC 24 V

• Width: 38 mm

## Variants

Interface module:

H\_ 309\_ /100: Socket

H\_ 309\_ /101: Socket with free-wheeling diode

H\_ 309\_ /102: Socket with free-wheeling diode + LED

H\_ 309\_ /103: Socket with LED

Safety relay

HA 5601.\_., HA 5602.\_.,

HA 5603.\_.: Contact material AgNi + 0.2 µm Au

HA 5601.\_./001,

HA 5602.\_./001

HA 5603.\_./001: Contact material AgNi + 5 µm Au

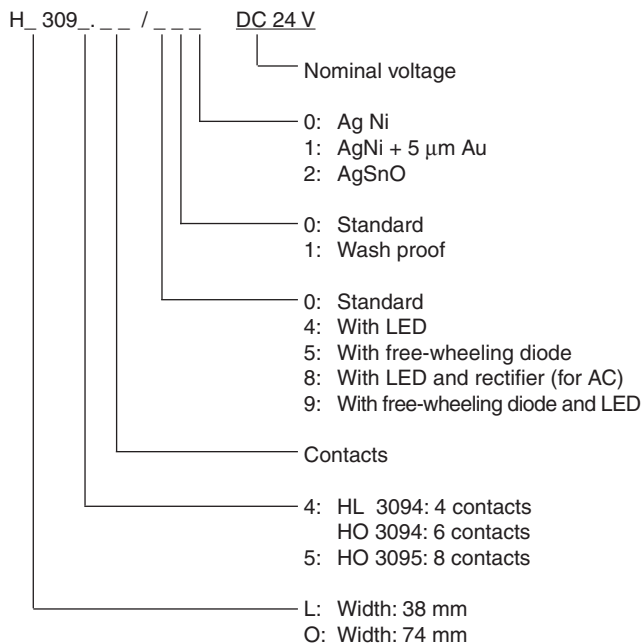
HA 5601.\_./002,

HA 5602.\_./002,

HA 5603.\_./002: Contact material AgSnO + 0.2 µm Au

other variants on request

## Ordering example for variants



## Accessories

ET 4086-0-2: Additional clip for screw mounting  
Article number: 0046578