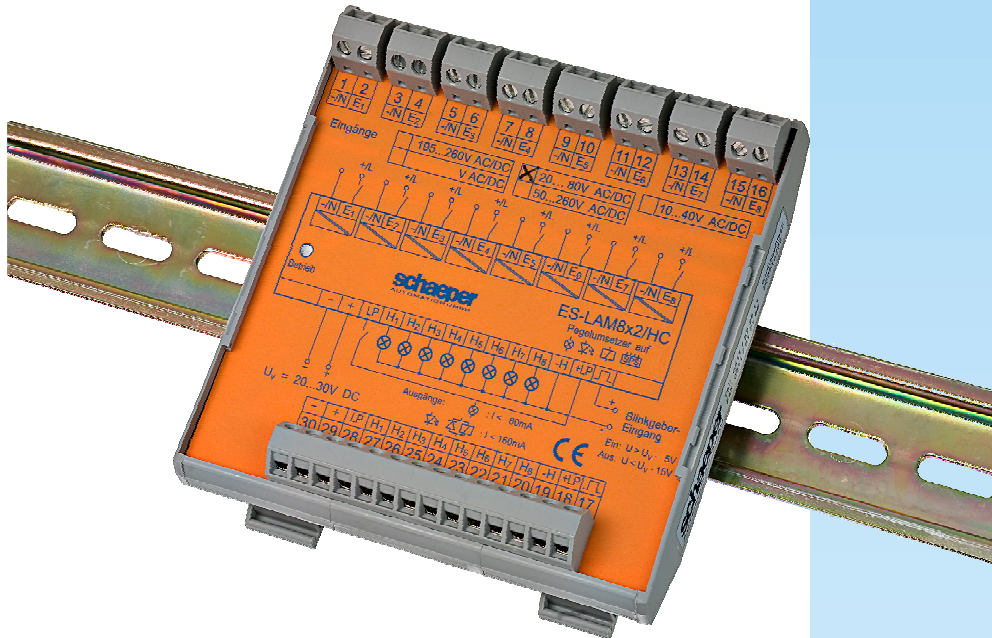


ES-LAM8x2

Voltage Level Converter



Application

The lamp/LED driver module *ES-LAM8x2* is available in numerous versions in order to convert signalling voltages of 10...260V AC/DC into 24V DC for the activation of incandescent lamps or LED's. For this, a supply voltage of 24V DC is needed for the module.

Series resistors for voltage reduction are no longer necessary, so that the power loss is considerably reduced and, as a significant improvement, there is **isolation** between the signalling voltage and the lamp voltage as well as between the single signal inputs. The single inputs can therefore be activated with respectively **different signalling voltages** and/or **voltage potentials**.

The current limitation of the outputs prevents the high starting currents with incandescent lamps and, in this way, increases the service life of the lamps. Shutting off the outputs with a short-circuit is activated with a time-delay so that no problems arise with the low initial resistance of incandescent lamps.

In addition, the unit has an input for lamp **testing** (LP), i.e. external diode circuitry is not necessary for this function.

With the operation of numerous modules, the inputs for lamp testing can be connected in parallel in order to maintain mutual lamp testing. The (-/N)-poles of the signalling voltages can also be connected in parallel whereby, however, the isolation of the corresponding inputs is lost.

Features

- ☉ 8 isolated inputs for 10 to 260V AC/DC
- ☉ Outputs: approx. 24V DC / current limitation to approx. 80mA shut-off with **short-circuit**
- ☉ Isolation between inputs and outputs
- ☉ Input for lamp testing
- ☉ Clock-cycle input for **blinking operation**
- ☉ Protection against reverse poling
- ☉ Space-saving

Signal voltage

With the use of modules with a wide input voltage range of 50...260V AC/DC, various voltages and/or voltage potentials for signalling can be converted to 24V DC lamp voltage. The figure on page 3 shows an example connection. The inputs *LP* for lamp testing can be connected in parallel if mutual lamp testing is desired for numerous modules.

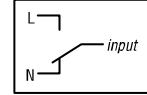
Note:

With modules with the wide input voltage ranges 50...260V, 20...80V or 10...40V a high alternating voltage in signal lines which are laid closely parallel to each other can lead to unwanted interference on „off“ state lines, resulting in unwanted signals.

If this should occur then, to avoid the interference, the lines should be connected to N with change-over contacts in the „off“ state.

Further preventative measures:

- Use of direct voltage signals
- Use of ES-LAM../230 with limited input voltage range 195 ... 260V AC/DC
- Use of the lowest permissible input voltage for modules with the voltage ranges 50...260V, 20...80V and 10...40V



Unit versions: (Other voltages on request)

Signal inputs	Device type	
195 ... 260V AC/DC	ES-LAM06/230	ES-LAM06/ HC /230
20 ... 80V AC/DC	ES-LAM06/24	ES-LAM06/ HC /24
10 ... 40V AC/DC	ES-LAM06/12	ES-LAM06/ HC /12
50 ... 260V AC/DC (see note above)	ES-LAM06/W	ES-LAM06/ HC /W
outputs	standard outputs	high current outputs
shut-off with short circuit restart: reapply the signal voltage	1 x incand. lamp 28V/ 50mA or 3 x LED 24/28V, 20mA	2 x incand. lamp 28V/ 40mA or 1 x incand. lamp 28V/ 40mA + 6 x LED 24/28V, 20mA or 8 x LED 24/28V, 20mA

Lamp test

The inputs *LP* for lamp test (terminal 28) must be driven with $+U_V$ (supply voltage). The inputs *LP* of several modules can be connected in parallel if required.

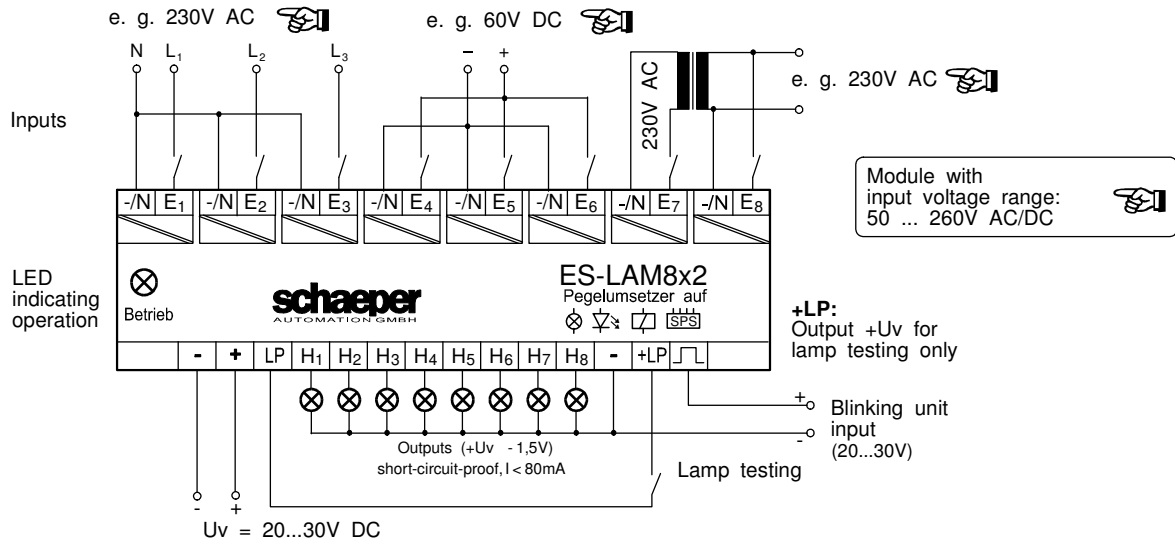
The module *ES-LAM8x2* has an output $+LP$, which provides a voltage $+U_V$ for driving the lamp test. Up to 40 *LP* inputs from other modules can be connected to this output. The output should not be used for any other purpose, because the permissible current load is approx. 40 mA.

Care must be taken that all modules whose lamp test is driven from a common source also have a common $-$ -potential for the supply voltage, i.e. the terminal 30 of these modules must be connected together.

Flashing operation

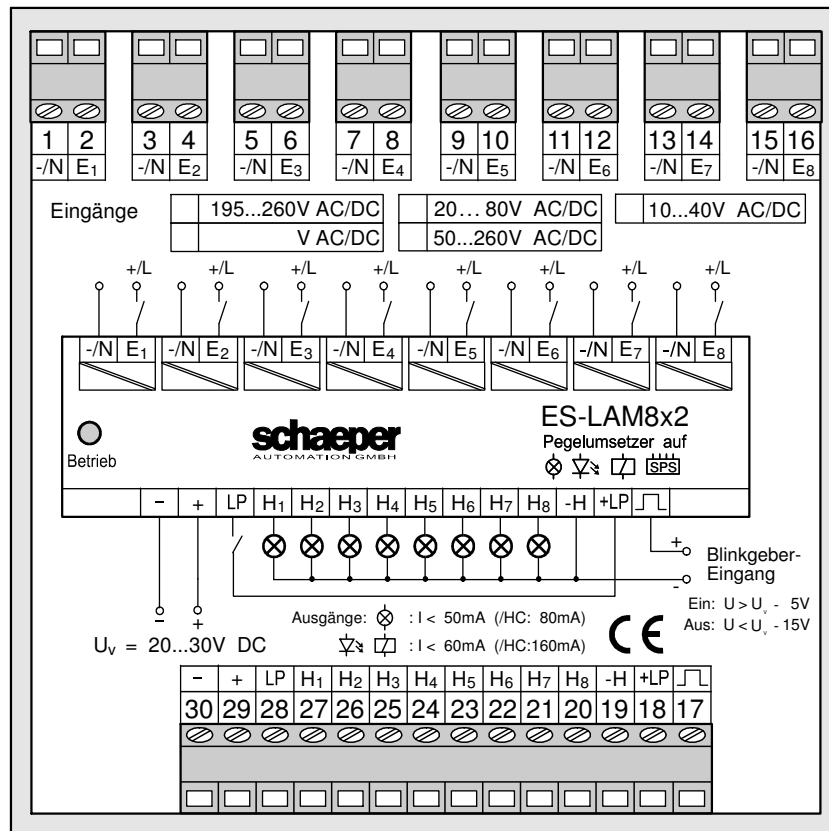
The flasher unit input can be used in order to represent incoming signals by means of blinking lamps. For this, a clock generator must be connected to terminals 17 and 19. With an input voltage of 20...30V, the lamps light up, while with an input voltage of $<8V$, they remain dark. This input is also protected against reverse poling. The flasher unit input can also be activated with a potential-free contact or an open-collector transistor.

Connection Example



Frontal View (approx. original size)

ES-LAM8x2



Technical data

Signal inputs *E*:

Terminals (1) to (16)

unit type ES-LAM8x2	/230	/24	/12	/W
input voltage [V AC/DC]	195 - 260	20 - 80	10 - 40	50 - 260
V_{OFF} [V AC]	<120	<10	<5	<15
V_{ON} [V AC]	>195	>20	>10	>50
V_{MAX} [V AC/DC]	260	80	40	260

V_{OFF} : Voltage at signal input *E* for certainly switched off output *H*

V_{ON} : Voltage at signal input *E* for certainly switched on output *H*

input current max. 6mA (other voltages on request)

Supply voltage:

Terminals +(29) and -(30)

$U_V = 20 \dots 30V$ DC

Ripple <5%

Power loss approx. 0,3W (no output active, $U_V = 30V$ DC)
approx. 1,5W (8 output active, $U_V = 30V$ DC)

Outputs *H*:

Terminals (20) to (27)

(s. table p. 2)

$U \approx U_V - 1.5V$ (reverse polarity proof)

each output (values in brackets for high current outputs):

- current limited to approx. 80 mA (210mA)
 - when connected to incand. lamps: $I_N \leq 50$ mA (80mA)
 - shut-off with short circuit > approx. 60 ms (14ms)
- restart: reapply the signal voltage

Input *LP*:

Terminal (28)

$U > 0.7U_V$: lamp-test on, < 1.5 mA

$U < 0.3U_V$: lamp-test off, < 1.5 mA

Output *+LP*:

Terminal (18)

only for driving lamp-test,
can be loaded with max. 40 inputs *LP* (approx. 40 mA)
short-circuit-proof

Blinking unit input:

Terminal (17)

20...30V : lamps on ($I < 2mA$)

< 8V : lamps off ($I < 4mA$)

Isolation voltage:

3.75kV AC (between various signal inputs as well as between signal inputs and outputs/supply voltage)

Ambient temperature:

0 ... +50 °C, no condensation (operation)

-20 ... +85 °C (storage)

EMC-Directive:





Emission: According to EN 50081-1, 1993
(Residential, commercial) and EN 55022

Immunity: According to EN 50082-2, 1995
(Industrial environment) and EN 61000-4-2, -3, -4, -6

Low Voltage Directive:

Safety: According to DIN VDE 0106, Teil1, 1982
and VBG 4, 1979
Operating conditions: Level of pollution 1 or 2
according to DIN VDE 0110, Teil 1, 1989

Housing:

L = 110mm, W = 111mm, H = 35mm
with snap-on fastening for DIN EN mounting rails  and 

Terminals:

Screw-terminals 1 x 1.5mm² single and fine core

Burning behaviour:

Housing and terminals: according to UL94: V-2
barely flammable and self-extinguishing according to VDE

Weight:

approx. 166g