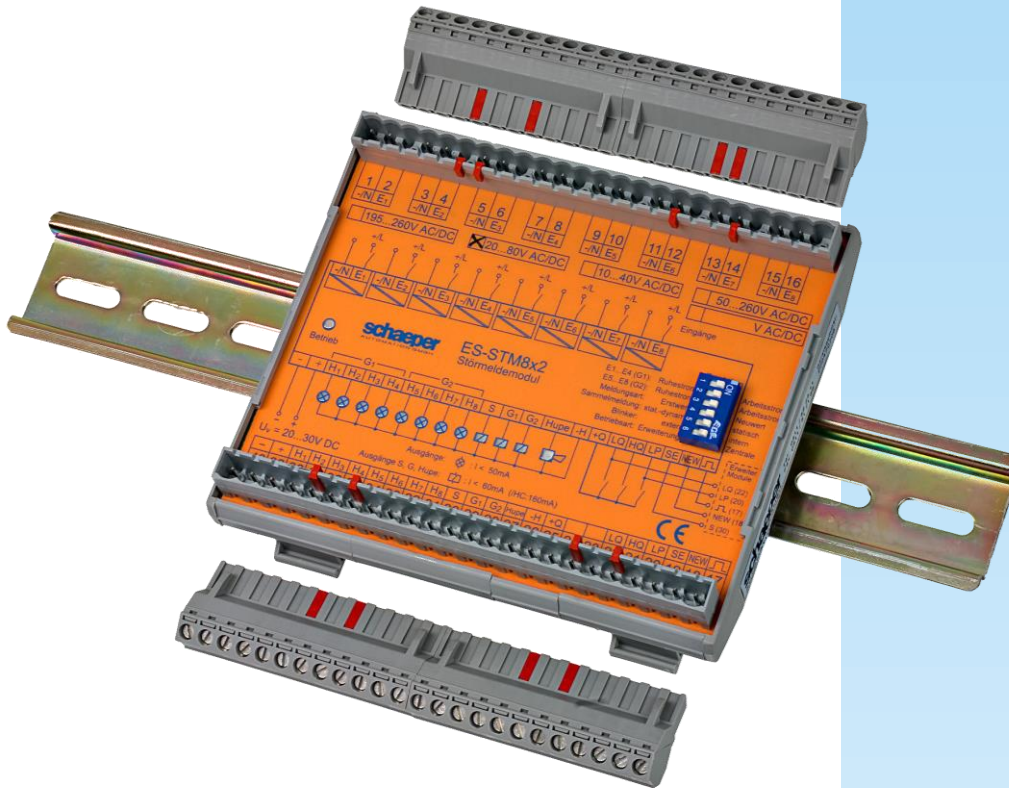


## ES-STM8x2

### Fault Signalling Module



### Features

- ☺ **New value** and **first-up** signalling according to DIN 19235
- ☺ 8 electrically isolated fault signal inputs for 10 to 260V AC/DC
- ☺ Electrical isolation between inputs and outputs
- ☺ Group alarms for groups of 4 fault signal inputs
- ☺ Normally open or normally closed contact mode for each group of 4 inputs
- ☺ Outputs: approx. 24V DC, for light bulbs with rated  $I \leq 50\text{mA}$  or relays with  $I \leq 60\text{mA}$   
Current limitation to approx. 80mA, **short-circuit-proof**
- ☺ High-current version for common, groups and horn output available
- ☺ LED-status display for all outputs
- ☺ Input for lamp test
- ☺ Input for external flasher
- ☺ Version for emergency and fire door signals available
- ☺ Versions with time delays available
- ☺ Connections with **detachable screw terminals**
- ☺ **Can be extended** up to a total of 480 fault signal inputs with 60 modules
- ☺ Identical modules for central unit and extension: simplified stocking
- ☺ Reverse polarity protection
- ☺ Very low assembly height

## Application

The fault signalling module *ES-STM8x2* is available in a number of versions to convert fault signals with voltages between 10...260V AC/DC into 24V DC to drive LED's or light bulbs (rated  $I \leq 50\text{mA}$ ). A supply voltage of 20 ... 30V DC is hereby required for the module.

The fault signal inputs and the outputs are **electrically isolated**, as are the individual fault signal inputs. The individual inputs can thus be operated with **various line phases or control circuits**, for example.

The fault signal inputs can be switched over between normally open and normally closed contact mode in two groups of 4 inputs each.

The module can be switched over between **new value and first-up signalling**. The common alarm can be static-dynamic, i. e. saved and flashing until the lamps are acknowledged. Or it can be static, i. e. without saving and only with continuous signal.

The flashing frequency can be pre-set internally or fed in from an external flasher.

Central and extension modules are identical. The unit is simply switched over to the desired mode of operation on the front panel.

In addition, the unit has an input for the **lamp test (LP)**, i. e. no external diode circuitry is required for this function.

## Fault signal voltages

By using modules with a wide input voltage range of 50...260V AC/DC, different voltages and/or potentials can be converted to 24V DC lamp voltage for the messages. The illustration on page 5 shows a connection example.

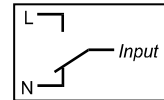
### Note:

In the case of modules with the wide input voltage ranges 50...260V, 20...80V and 10...40, inadmissible input coupling on open lines and thus unwanted signals may occur if the message lines are laid parallel close together with high a.c. voltage signals.

If this is the case, the lines should be laid to N with change-over contacts to avoid input couplings when the unit is "Off"..

Further remedial measures:

- Use d.c. voltage signals
- Use the ES-STM8x2/230 with a limited input voltage range 195 ... 260V AC/DC
- Use the lowest permissible input voltage for modules with the voltage ranges 50...260V, 20...80V and 10...40V



## Ordering: (Other voltages on request )

Fault signal inputs	Device type	
195 ... 260V AC/DC	ES-STM8x2/230	ES-STM8x2/ <b>HC</b> /230
20 ... 80V AC/DC	ES-STM8x2/24	ES-STM8x2/ <b>HC</b> /24
10 ... 40V AC/DC	ES-STM8x2/12	ES-STM8x2/ <b>HC</b> /12
50 ... 260V AC/DC (see <b>Note</b> -box above)	ES-STM8x2/W	ES-STM8x2/ <b>HC</b> /W
Outputs	Standard outputs	High-current outputs <b>S</b> , <b>G1</b> , <b>G2</b> , horn
switching off after short-circuit Automatic re-start after elimination of short-circuit	1 x light bulb 28V/ <b>50mA</b> or 1 x relay 24V/ <b>60mA</b>	2 x light bulb 28V/ <b>40mA</b> or 1 x relay 24V/ <b>160mA</b>

## Outputs

The current limitation for the outputs prevents the high starting currents with light bulbs and thus prolongs the service life of the lamps. The outputs are switched off after a short-circuit with a time delay so that no problems occur with the low cold resistance of bulbs. Once a short-circuit has been eliminated, the corresponding output is automatically activated again.

The lamp, relay and horn symbols on the front of the unit lit on when the output is active so that the status of every device can be easily monitored.

## Type of message

The modules can be switched over between new value and first-up signalling on their front. The diagram on page 4 shows the functional sequences of both modes of operation. A signal must be pending for at least 10ms (DC) or 20ms (AC) so that it is reliably detected.

### First-up signalling

If a number of fault signals occur in close succession, the first is shown by a flashing light and the subsequent ones with a continuous light. If a number of messages occur within the time resolution of the first-up triggering, these are all shown as flashing lights. The time resolution for DC messages is 6ms and for AC messages 20ms.

**Note:** If only a central module with no extensions is used the time resolution is 3ms (DC) or 15ms (AC).

If the first fault signal disappears before the lamp is acknowledged, the corresponding lamp continues to flash. Flashing lamps become steady lamps when acknowledged if the fault signal is still pending, if not they go out. Steady lights go out as soon as the corresponding fault signal is switched off.

The horn output is activated with the first fault signal and switched off with the horn acknowledgement. The next incoming fault signal re-activates the horn output.

### New value signalling

Every incoming fault signal is shown by the corresponding lamp flashing. If a fault signal disappears before the lamp is acknowledged, the corresponding lamp continues to flash. Flashing lamps become steady lamps when acknowledged if the fault message is still pending, if not they go out. Steady lights go out as soon as the corresponding fault signal is switched off.

The horn output is activated with the first fault signal and switched off with the horn acknowledgement. The next incoming fault signal re-activates the horn output.

## Common alarm

The type of common alarm is set with the function switch *Sammelmeldung (Common alarm)*.

### Static-dynamic

An incoming fault signal is shown by flashing common alarm output until the lamps are acknowledged. If all fault signals disappear before the lamps are acknowledged the common alarm output continues to flash. A flashing common alarm output becomes a steady output when the lamps are acknowledged if at least one fault signal is still pending, and if not it turns out. A steady output turns out as soon as the last fault signal is switched off.

### Static

Every fault signal is shown as a steady output. The common alarm output is switched off when the last fault signal is cleared.

## Group alarms

In order to split the fault signalling system into groups, each module has a group alarm output G1 for the inputs E1...E4 and a group alarm output G2 for the inputs E5...E8. An output is active as long as at least one fault signal in the corresponding group is pending. In order to form larger groups, the group outputs, including those from various modules, can be switched in parallel at random.

## Lamp test and acknowledgements

The inputs *LP* for the lamp test, *LQ* for the lamp acknowledgement and *HQ* for the horn acknowledgement must be controlled with  $+U_V$  (supply voltage). The inputs *LP* of a number of modules can be switched in parallel as required.

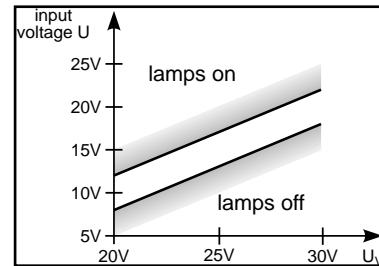
The module *ES-STM8x2* has an **Output +Q** which provides the voltage  $+U_V$  to control the inputs **LP**, **LQ** and **HQ**. Up to 60 inputs from further modules can be loaded to this output. The output is short-circuit-proof and can supply a max. current of 40mA.

You must make sure that all modules with a common control for these inputs also have a common negative potential for the supply voltage, i. e. terminals 40 of these modules must be connected to one another.

## Flasher

The unit has an internal flasher with a frequency of 2Hz. This flashing signal is provided at terminal 17 if the function switch *Blinker (flasher)* is set to *intern (internal)*.

If the fault signalling module is to be clocked with an external flasher the function switch *Blinker (flasher)* must be set to *extern (external)*. The flasher must be connected to terminals 17 and 26 or 40. The lamps turn on with an input voltage of  $U > U_v - 7V$  and remain off with an input voltage of  $U < U_v - 13V$  (see Figure on right). This input is also protected against reverse polarity.



**Note:** With an external flasher function and open flasher input all clocking/flashing outputs remain inactive!

## Extension

Up to 60 modules can be connected together for larger fault signalling systems so that a total of 480 fault signals can be processed. The connection example on page 5 shows how the modules are connected.

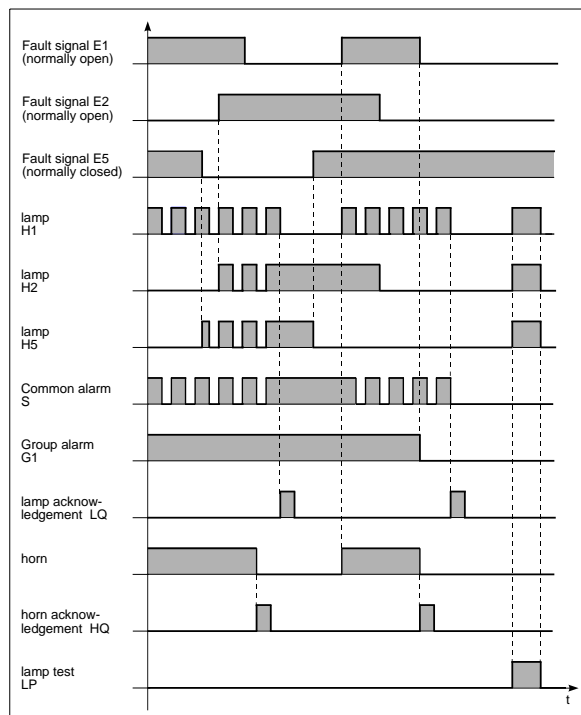
One module must have the function of a central unit to which the common alarm indicator and the horn are connected. The function switch *Betriebsart (Operating mode)* must be set to *Zentrale (Central unit)* on this module. Use the *Blinker (flasher)* switch to select whether the internal flashing frequency is to be used or an external flasher.

For all other modules set the *Betriebsart (Operating mode)* switch to *Erweiterung (extension)* and the *Blinker (flasher)* switch to *extern (external)*.

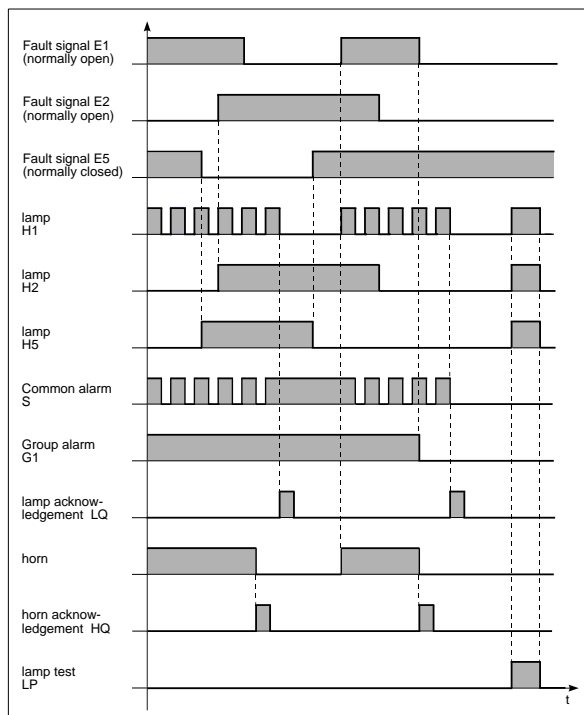
Connect the terminals LQ, LP, NEW and  $\perp$  on all modules in parallel like a bus. The terminals S of the extension modules are also connected in parallel and then connected to terminal SE of the central unit.

## Functional sequence

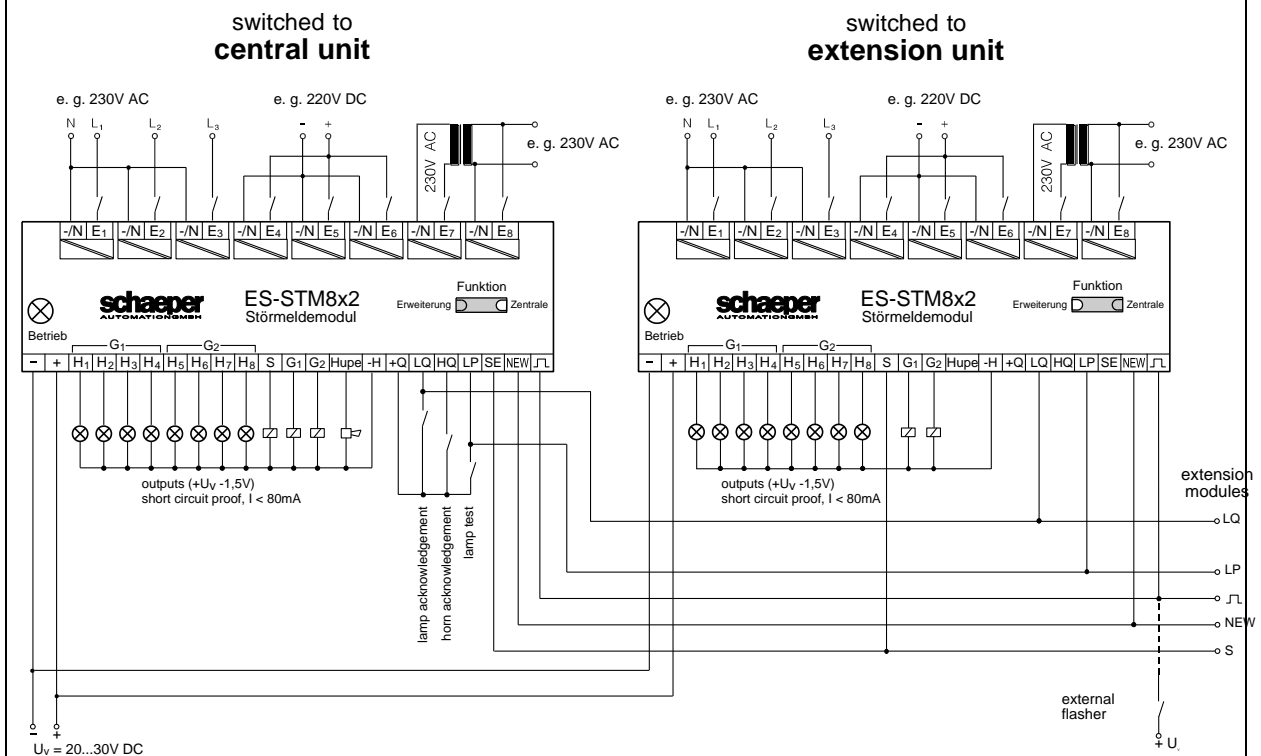
### New-value signalling



### First-up signalling

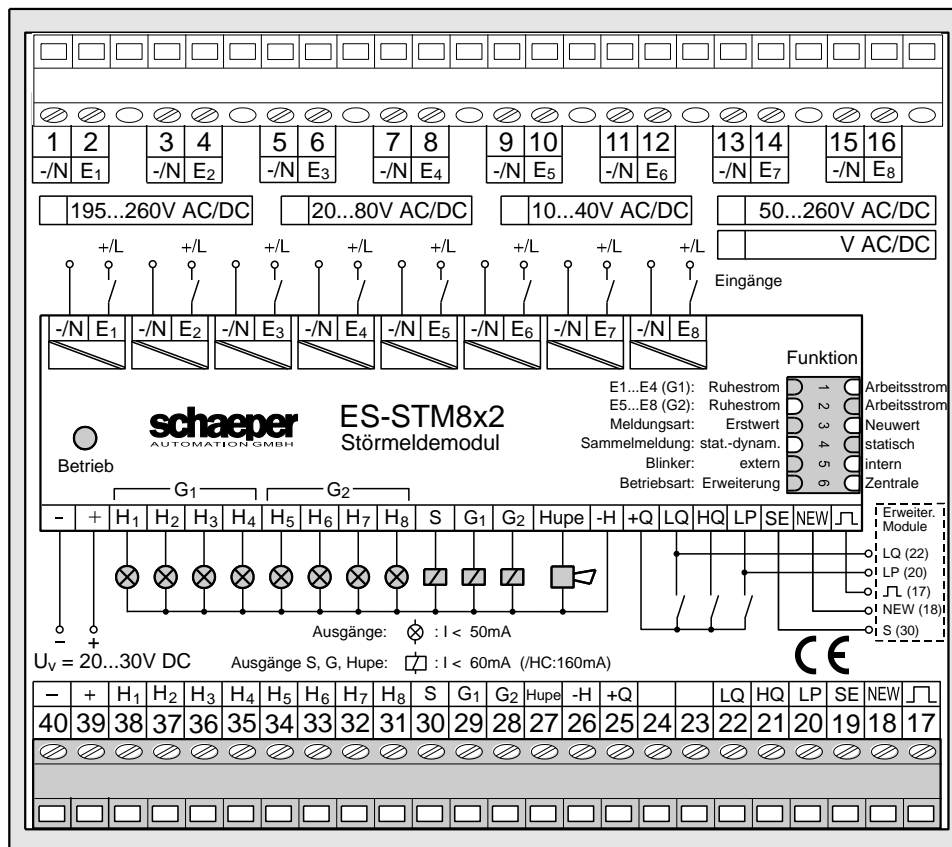


### Connection example



### Front view (approx. original size)

## ES-STM8x2



## Technical data

### Signal inputs E:

Terminals (1) to (16)

unit type ES-STM8x2	/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)

### Min. signal duration:

10ms for DC signals, 20ms for AC signals

### Supply voltage:

 $U_v = 20 \dots 30V$  DC, reverse polarity protection, Residual ripple <5%

Terminals +(39) and -(40)

**Power loss** approx. 0.4W (no output active,  $U_v = 30V$  DC)approx. 1.5W (8 outputs active,  $U_v = 30V$  DC)

### Outputs H, S, G, Hupe:

Terminals (27) to (38)

 $U \approx U_v - 1,5V$ 

each output (values in brackets for high-current outputs. S, G, Horn):

- current limited to approx. 80mA (210mA)
- if light bulbs are connected:  $I_N \leq 50mA$  (80mA)
- turn-off after short-circuit > approx. 60ms (14ms)
- automatic **restart** after elimination of short-circuit

### First-up signalling time resolution:

6ms for DC signals

20ms for AC signals

### Inputs LP, LQ, HQ:

Terminals (20) to (22)

 $U > 16V$ ,  $I < 0.6mA$ : Lamp test/Acknowledge on, $U < 10V$ ,  $I < 0.6mA$ : Lamp test/Acknowledge off

reverse polarity protection

### Output +Q:

Terminal (25)

only to control inputs LP, LQ and HQ, short-circuit-proof loadable with inputs from max. 60 modules (max. 40mA)

### Flasher input $\square$ :

Terminal (17)

(see diagram P. 4)

if operated with external flasher:

 $U > U_v - 7V$  ( $I < 0.6mA$ ): Lamps on $U < U_v - 13V$  ( $I < 0.6mA$ ): Lamps off

### Isolation voltage:

3.75kV AC (between various message inputs and between message inputs and outputs/supply voltage)

### EMC Directive:

*Emission:* Fulfils requirements of EN 50081-1, 1993 (Residential, commercial) and EN 55022*Immunity:* Fulfils requirements of EN 61000-2-6:1999 (industrial environment) and EN 61000-4-2, -3, -4, -5, -6

The DC supply voltage input (term. 39, 40) has to be protected by a suitable external over-voltage limiter, if connected to wires of more than 10m in length.

### Low Voltage Directive:



*Safety:* Fulfils requirements of EN 50178:1997  
Conditions of use: degree of pollution 1 or 2 according to DIN VDE 0110, Part 1, 1989

For signal voltages above 25VAC / 60VDC the device has to be mounted inside a case which can only be opened using a tool or a key in order to protect against undesired touching of the terminals.

### Ambient temperature:

-20 ... +50 °C, no condensation (operation)  
-20 ... +85 °C (storage)

### Housing:

L = 127mm, W = 111mm, H = 55mm  
with snap lock for DIN EN mounting rails  and 

### Connection terminals:

Detachable screw terminals 1 x 1.5mm<sup>2</sup> single and fine wire (interchange-proof)

### Burning behaviour:

Housing and terminals (Polyamide 6.6): acc. to UL94: V2  
acc. to VDE : hardly flammable

### Weight:

approx. 180g