

High water level limiter SMHC1

Application and function

The SMHC1 is a failsafe high water level limiter for use with the level probe type EL 040 or EL 21-2.

It was developed according to DIN EN 50156-1 and the German rule "Wasserstand 100".

The integrated Self-Monitoring-Control System (SMC) is capable of detecting every failure in the moment of its occurrence what will result in an immediate power down of the safety contact and a subsequent burner cut-off.

The product according to PED directive 97/23/EEC annex VII (Module B+D, category II) has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD, AD2000 and "Wasserstand 100".

Function SMHC1

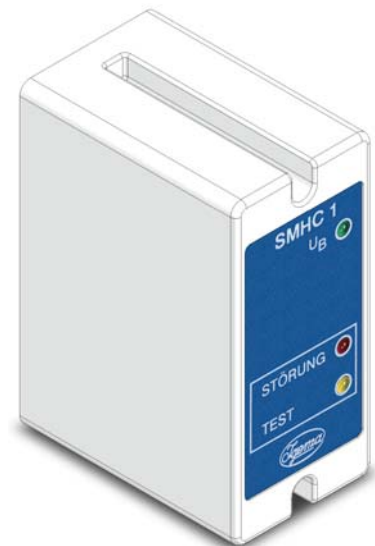
The green LED "**UB**" is lit when the SMHC1 is connected to the mains supply and it indicates the general function of the limiter. Two special processes of failure detection are running continuously. The first process, checking the proper behaviour of the output circuit, which is responsible for the safety contacts, is performed every 40 ms. The second process, simulating a low water level, is performed every 120 seconds and additionally indicated by the yellow LED "**TEST**" being lit.

This main test takes about 0.8 seconds. A successful test is indicated by a short flash of the red LED "**STÖRUNG**". In the case of an unsuccessful test the acknowledging flash is missing and the next main test will be performed already within the next 30 seconds.

After 30 repetitions of this fast test cycle with unsuccessful results, the safety contacts will be powered down and a burner cut-off will be forced. The SMHC1 has an internal fuse (4 A/T) to protect the relay's contacts.

Under normal conditions, only the green LED "**UB**" is lit permanently and the yellow LED "**TEST**" is lit every 120 seconds for about 0.8 seconds followed by a short flash of the red LED "**STÖRUNG**". The safety contact is kept energised to maintain the burner protection circuit and the contact "Indication" is open. If the limiter has either detected a failure or the probe's tip is exposed for more than one second, the LED "**STÖRUNG**" is lit and the contact "Indication" is closed. After a total adjustable delay of 4, 8, 12, 16 seconds, the relays of the safety contact are deactivated and the burner is cut-off. The time delay is preset on 4 seconds.

A circuit to keep the burner from restart is not implemented in the SMHC1 and shall be installed by the customer.



Technical basic equipment

- SMLC1 is delivered in a plastic plug-in housing for installation in control panels
- Fixation on standard rail 35 mm according to DIN EN 50022 or directly screwed to chassis plate

Technical data

Component mark	TÜV ID : 00000006512
CE-mark	0035
Power supply	230V ± 15% / 50-60 Hz
Input	ca. 4,5 VA
Fuse	80 mA/T
Protection as per DIN EN 60529	IP40 ¹⁾
All. ambient temperature	0-60° C

¹⁾ according to the German regulations VdTÜV-Wasserstand 100, 4.90
a protection of IP54 has to be maintained in the boiler area

Max. operating data of potential free contacts		
HWL-alarm	Voltage	max. 250 Vac
	Current	max. 4 A ohmsch
		max. 0,75 A induktiv φ 0,5
Auxiliary relay	Voltage	max. 250 Vac
	Current	max. 8 A ohmsch
		max. 0,75 A induktiv φ 0,5
Electrical conductivity of the liquid	$5 \mu\text{S}/\text{cm} \leq \rho \leq 10.000 \mu\text{S}/\text{cm}$	
	$0,5 \mu\text{S}/\text{cm} \leq \rho \leq 2.000 \mu\text{S}/\text{cm}$	
Length of connection line	max. 100 m at 5 – 10.000 $\mu\text{S}/\text{cm}$	
	max. 30 m at 0,5 – 2.000 $\mu\text{S}/\text{cm}$	

