

Float switch type BA75-1

with controller SMFC1 as self monitoring water level limiter

Application and function

The SMFC1 (Self monitoring float control) in combination with the float switch BA75-1 is a failsafe self-monitoring low level limiter for steam generators according to TRD 602 or 604.

During the periodic and automatically controlled functional test the float device is lowered beneath LWL via a magnetic coil and the correct function of the LWL controller is tested.

Function BA75-1

The water level controller is a float actuated unit. The transmitter magnet connected with the float via the float rod actuates without direct contact the magnetic switch in the switch housing.

The float device is equipped with additional displacement elements to facilitate the buoyancy. These displacement elements move together with the transmitter magnet in a mercury filling.

The product according to PED directive 97/23/EEC annex VII (module B+D, Category IV), 89/336/EWG, 73/23/EWG has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD/AD2000/Wasserstand 100 or ASME Boiler.

Technical basic equipment BA75-1

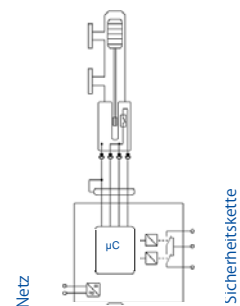
- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-K... (D-07-D-16324-0)
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Drain valve AV 520 (other drain valve on request)

Technical data

EG-component test	CE 0035-BN0107				
Allowable pressure	PS [bar]	80	100	160	200
Allowable temperature	TS [° C]	296	312	348	367
Darin valve	Type	AV520			
	Data sheet	D-09-D-16358-1			

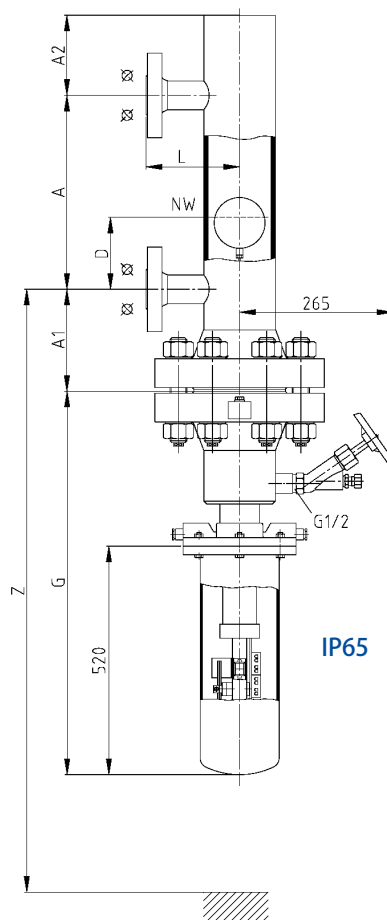
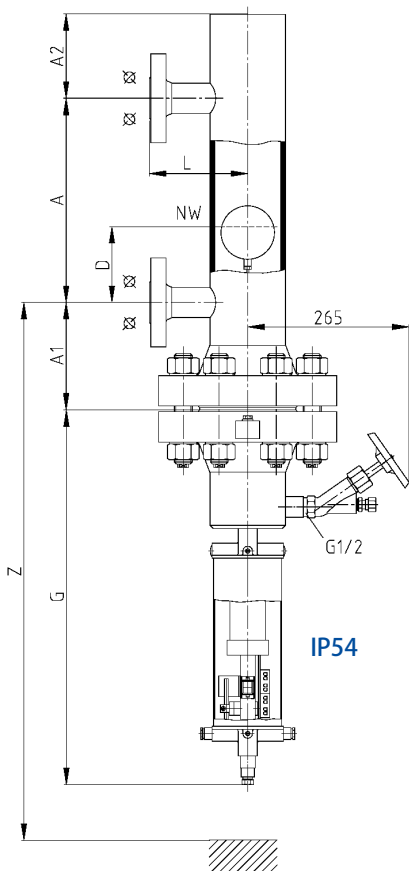


Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The level switches contains mercury. For this reason, the level switches are not suitable for use on boiler plants, where the steam comes directly in contact to foods or similar, or where the steam is used on air conditioning for humidifying

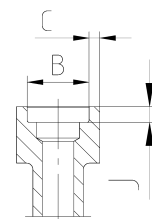
PS [bar]	A1 [mm]	A2 [mm]	G [mm]	Z [mm]
80	152	165	715	D+1040
100			765	D+1105
160	177		780	D+1180
200	213		820	D+1300

Magnetic switch M130-K... nach VDE 0660		
Magnetic coil	Power	400W
	Supply voltage	230Vdc
	Current consumption	2,6VA

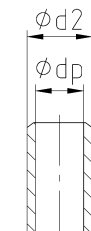


Process connection

Socket Welding



Welding end



Function SMFC1

The green LED "UB" is lit when the SMFC1 is connected to the mains and it indicates the general function of the controller.

Three special processes of failure detection are running continuously. The "1st level test", checking the proper behaviour of the output circuit, is performed every 40 ms.

The "2nd level test", checking the connection cable between the SMFC1 and the BA75-1 for breaks and short circuits, is performed every 240 seconds and additionally indicated by the yellow LED "TEST" being lit. A successful test is confirmed by a short flash of the red LED "STÖRUNG".

The "3rd level test", checking the proper function of the float device by lowering the float beneath LWL via a magnetic coil, is performed every 12 hours. Normally the lowering of the float is completed after a given time of 1 second. Because of dirt in the transmitter tube or damage of the float device, the lowering of the float can take more time. In this case the LED "STÖRUNG" is lit and the next test will be performed already in 30 seconds to remedy the failure. If this failure still remains, the safety contacts will be powered down after 15 minutes and a burner cut-off will be forced. This malfunction refers to a fatal failure of the BA75-1 and the SMFC1 locks internally. To unlock the controller, the SMFC1 has to disconnect temporary from the mains.

Under normal conditions, only the green LED "UB" is lit permanently and the yellow LED "TEST" is lit every 240 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.

If the limiter has either detected a failure or the float is on LWL for more than one second, the LED "STÖRUNG" is lit. After a total adjustable delay of 1 or 16 seconds, the relays of the safety contact are deactivated and the burner is cut-off. The preset for the time delay is 1 second. A circuit to keep the burner from restart is not implemented in the SMFC1 and shall be installed by the customer.

Working principle SMFC1

The increasing or decreasing water level in the steam boiler will move the float up or down. The transmitter magnet, which is mounted on the float rod is moved in the same way. If the water level reaches the LWL-mark the magnetic switch will be actuated by the transmitter magnet. This signal is processed by a μ -Controller



- SMFC1 is delivered in a plastic plug-in housing for installation in control panels.
- Attachment SMFC1: mounted on a 35 mm standard rail according to DIN EN 50022 or directly screwed to a chassis plate

EG-component test	CE0035-BN0107	
CE-mark	0035	
Power supply	230V \pm 15%/50-60 Hz ¹⁾	
Input	ca. 4,5VA	
Fuse	80 mA/T	
Protection acc. DIN EN 60529	IP40 ²⁾	
All. ambient temperature	0-60° C	
Max. operating data of potential free contacts		
Safety contact	Unblocking potential	max. 250Vac
	Current on contact	max. 4A ohmsch max. 0,75A induktiv cos φ 0,5

¹⁾ other values on request

²⁾ according to the German Standards VdTÜV-Wasserstand 100, 4.90 a protection of IP54 has to be maintained in the boiler area

