



Logic Unit

SRL 63-a

EN
English

Original Installation Instructions
818588-05

Contents

Page

Important Notes

Usage for the intended purpose	4
Safety note	4
Danger	4
LV (Low Voltage) Directive and EMC Electromagnetic Compatibility)	4
ATEX (Atmosphère Explosible)	4
Note on the Declaration of Conformity / Declaration by the Manufacturer CE	4

Explanatory Notes

Scope of supply	5
Description	5
Function	5, 6
Note	6

Technical Data

SRL 63-a	7
Name plate / marking	8
Dimensions	8

Installation

Installing the logic unit SRL 63-a	9
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Functional Elements

SRL 63-a	9
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Electrical Connection

Connecting the terminal strips	10
Note	10
Attention	10
Tools	10
Wiring diagram of logic unit for monitoring SRL 63-a	11

Basic Setting

Factory setting	12
-----------------------	----

Start-up, Operation, Alarms and Testing

SRL 63-a	12 – 14
Danger	14

Contents – continued –

Page

Troubleshooting

Fault finding list15

Decommissioning

SRL 63-a15

Disposal

SRL 63-a15

Important Notes

Usage for the intended purpose

The logic unit SRL 63-a may be used in steam boiler plants only in conjunction with external low-level alarms or high-level alarms for monitoring the separate flushing of the connecting lines to the measuring pot.

Any other use is deemed as not being in compliance with the intended purpose. The user shall be solely responsible for the associated risks. The manufacturer shall not be liable for any damage resulting from improper usage.

Safety note

The equipment fulfils a safety function and must only be installed and commissioned by qualified and competent staff.

Retrofitting and maintenance work must only be performed by qualified staff who – through adequate training – have achieved a recognised level of competence.



Danger

The terminal strip of the logic unit SRL 63-a is electrically live during operation!

This presents the danger of electric shock.

Before working on the terminal strips, always **cut off power supply!**

LV (Low Voltage) Directive and EMC (Electromagnetic Compatibility)

The equipment meets the requirements of the Low Voltage Directive 2014/35/EC and the EMC Directive 2014/30/EC.

ATEX (Atmosphère Explosible)

In accordance with the European Directive 2014/34/EC, the unit must **not** be used in potentially explosive areas.

Note on the Declaration of Conformity / Declaration by the Manufacturer C€

For details on the conformity of our equipment according to the European Directives see our Declaration of Conformity or our Declaration of Manufacturer.

The current Declaration of Conformity / Declaration of Manufacturer are available in the Internet under www.gestra/en/documents or can be requested from us.

Explanatory Notes

Scope of supply

SRL 63-a

- 1 Logic unit for monitoring, in a field case for wall mounting
- 1 Installation manual

Description

For the installation of low-level limiters of “high-integrity design” in measuring pots mounted outside of the boiler, it is imperative that the periodic purging of the connecting lines to the boiler be monitored properly.

To achieve this, the connecting lines are shut off one after the other at defined intervals and the measuring pot is drained.

The logic unit SRL 63 monitors compliance with the preset times and the sequence of valve operations; in addition, it bypasses the low-level limiter to ensure that the system is not shut down during purging.

The logic unit for monitoring the purging cycle consists of a compact PLC, a safety time-lag relay and a coupling relay. The design complies with EN 50156.

Function

Fig. 1 depicts a system with a level electrode in the boiler and the second electrode in an external measuring pot.

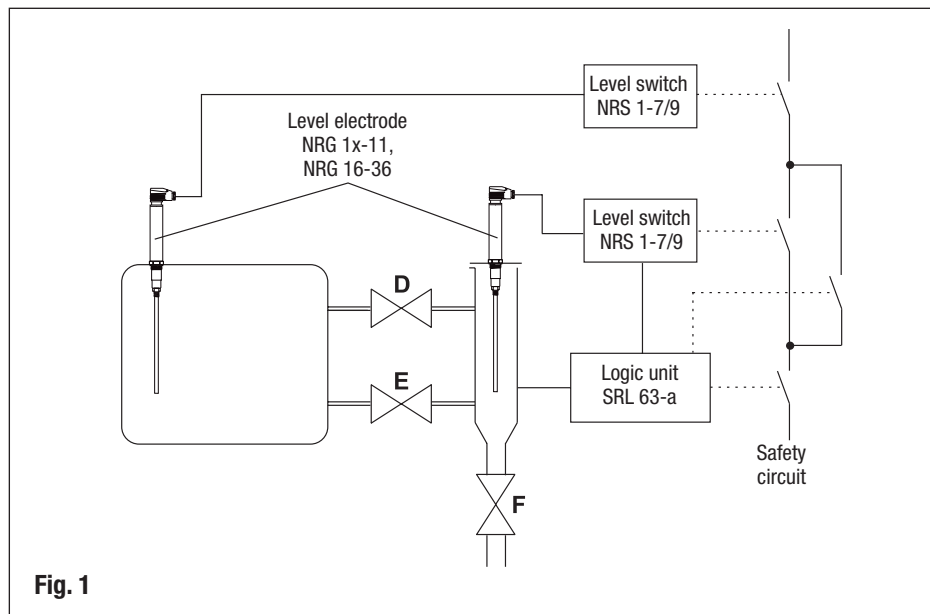


Fig. 1

Function – continued –

The logic unit monitors the following times:

- **Interval time:** This is the time interval at which, depending on the mode (24h / 72h operation), the connecting lines have to be purged.
- **Standby period:** The purging process must be initiated during this time. The standby period begins when the interval time has elapsed.
- **Purging time:** During this period, the purging process must be performed through actuation of the valves. Actuation of the valves is signalled by means of the limit switches; similarly, when the electrode of the low-level limiter is exposed, this is sensed through the output contact of the corresponding level switch. If a signal is not received within the purging time, the safety circuit is opened. Since a low-level limiter may be bypassed for a maximum of 5 minutes, monitoring of the purging time is a safety-relevant function.
- **Synchronisation:** By closing an interconnection valve (E or D) the interval time can be synchronized at any time: The purging time starts, and when it has elapsed the interval time is reset to its initial value (e. g. 24h / 72h etc.).

The interval time is started when the logic unit is switched on. The display of the PLC shows the full hours of the remaining time.

During operation, the standby period is started at the end of the interval time, which is immediately reset to its initial value (e.g. 24h, 72h etc.). The PLC then starts the purging time when an interconnection valve (E or D) leaves the end position "Open".

During the purging time, the output contact of the low-level limiter is bypassed. This bypass is triggered by the undelayed contact of the safety time-lag relay and limited to 5 minutes by the delayed contact of this relay.

Once all valves signal that they have reached their initial positions and the level switch of the low-level limiter senses that the level electrode is exposed, the purging process has ended and the bypassing of the low-level limiter is terminated.

In the event that the mains supply fails during the purging time, the bypassing of the low-level limiter is cancelled and the safety circuit is opened. If the mains supply is switched on again, the bypass remains deactivated and the safety circuit is only closed again after the purging process has been completed properly.

Expiry of the purging time and standby period, as well as deactivation of the safety circuit, are indicated by means of pilot lamps.



Note

The safety circuit is opened when the standby time or the purging time is exceeded, and it is only closed again when the purging process has been completed properly.

Technical Data

SRL 63-a

Inputs

- 5 volt-free contacts from the limit switches of the valves
- 1 volt-free contact from a second SRL which may be mounted at the same boiler (interlock)
- 1 volt-free contact from the low-level limiter

Outputs

- 2 volt-free change-over contacts each for bypassing/deactivating the safety circuit
- Thermal current I_{th} : 4 A, switching capacity acc. to AC-15: 3 A / 230 V a.c.
- 1 volt-free change-over contact as a signalling contact for a second logic unit
- Contactors must be interference-suppressed as per manufacturer's instructions (RC combination)
- 3 contacts for internal or external indication of status (pilot lamps)

Interval time

Adjusted at our works within the range 2 to 336 hours, in compliance with TRD 24/72 h

Standby period

Adjusted at our works within the range 15 minutes to 2 hours, in compliance with TRD 1 h

Purging time

Set at our works to 5 minutes

Indicators and adjustors

- 1 control panel at the PLC for triggering a test
- 3 pilot lamps for standby period / purging time, bypassing of the low-level limiter and deactivation of the safety circuit

Mains voltage

230 V +10 / -15 %, 50 – 60 Hz

Voltage of the safety circuit

230 V, 50 – 60 Hz, optional 24 V, 50 – 60 Hz

Power consumption

26 W

Protection

Enclosure: IP 65 to EN 60529

Permissible ambient temperature

Maximum 55 °C

Case

- Field case for wall mounting, with clear lid
- Case material: Polystyrene / polycarbonate, colour light gray

Cable entry / electrical connection

5 cable glands, M 16, electrical connection via two terminal strips

Weight

Approx. 3.3 kg

Technical Data – continued –

Name plate / marking

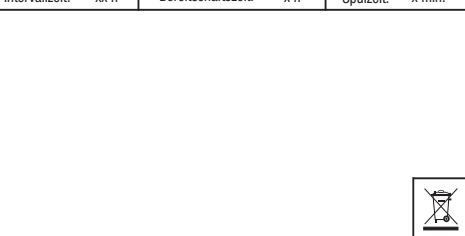
Safety note –		Betriebsanleitung beachten	Überwachungs- logik		SRL 63-a		– Designation	
		See installation instructions Voir instructions de montage	230 V 50 / 60 Hz	26 W	IP 65		– Mains voltage / – Power consumption / – Protection	
Safety circuit –	Spannungs Sicherheitsstromkreis xxx V xx		Tamb = 55 °C (131°F)				– Range of application	
	Intervallzeit: xx h	Bereitschaftszeit: x h	Spülzeit: x min.				– Times	
Fuse –							– Disposal	
Manufacturer –	 250 V ~ T 2,5 A							– CE marking
			VS.-Nr.: xx	Mat.Nr.: 392230				

Fig. 2

Data for spare parts inventories

Dimensions

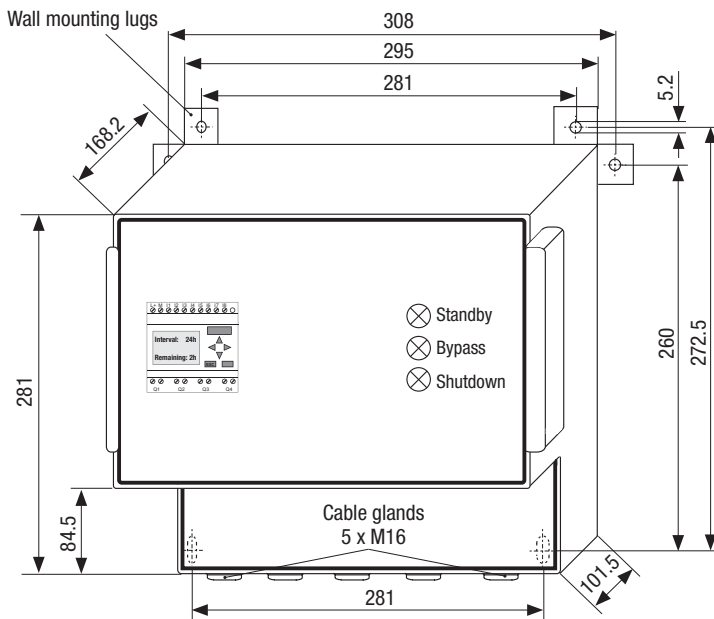


Fig. 3

Installation

Installing the logic unit SRL 63-a

The case of the logic unit is intended for wall mounting; it should be installed near the external measuring pot.

Functional Elements

SRL 63-a

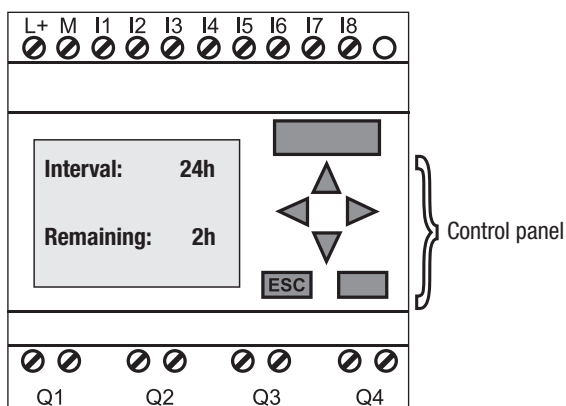


Fig. 4

Electrical Connection

Connecting the terminal strips

Connect the terminal strips as shown in the wiring diagram.

The measuring pot is provided with three shut-off valves. Valves D and E are each equipped with two limit switches, for the "OPEN" position (D1 / E1) and for the "CLOSED" position (D2 / E2).

The drain valve F is only fitted with one limit switch, for the "CLOSED" position.

For connecting the limit switch, we recommend a control cable, e.g. Ölflex 110H, 7 x 1 mm², length max. 100 m.

External pilot lamps can be connected to terminals 11 to 14.



Note

Check whether the mains voltage matches the voltage of the safety circuit. If this is not the case, it is necessary to use a logic unit with the correct voltage for the safety circuit.



Attention

If both low-level limiter electrodes of a boiler are installed in external measuring pots, simultaneous purging and bypassing of the low-level limiters is not admissible.

To prevent this happening, the two logic units **must** be interlocked by means of parallel connections between the terminals 16 to 20 of either unit.

In addition:

- To protect the relay contacts, fit the safety circuit with a fuse T 2.5 A (slow-blow) or 1A (TRD 604, 72 h operation).

Tools

- Screwdriver for slotted screws, size 2.5, fully insulated to VDE 0680-1.
- Cross-head screwdriver, size 2.

Wiring diagram of logic unit for monitoring SRL 63-a

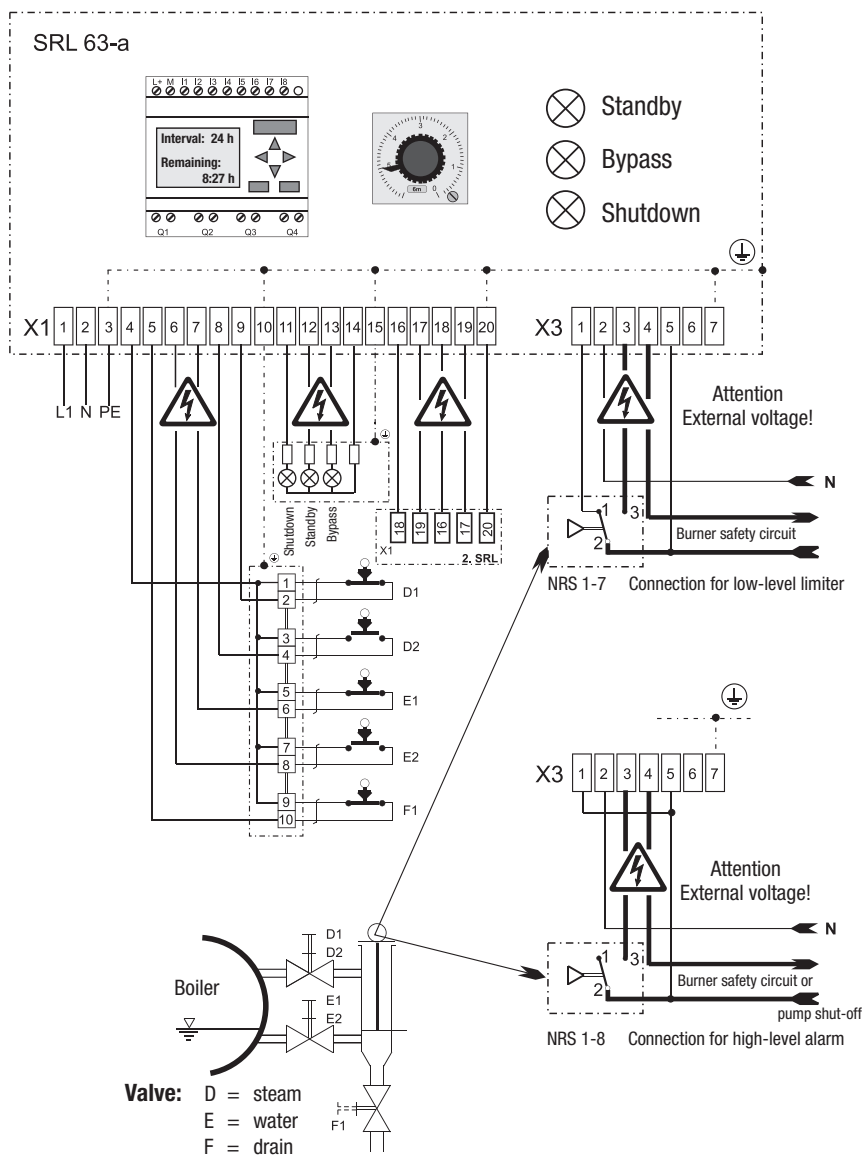


Fig. 5

Shown switch position of valve limit switch: Valves in normal operating position.
Low-level alarm (electrode exposed), high level (electrode submerged).

Basic Setting

Factory setting

Logic unit SRL 63-a

The logic unit for monitoring is delivered with the following factory settings:

- Interval time: 24 hours
- Standby period: 1 hour
- Purging time: 5 minutes
- Voltage of safety circuit: 230 V AC

Start-up, Operation, Alarms and Testing

SRL 63-a

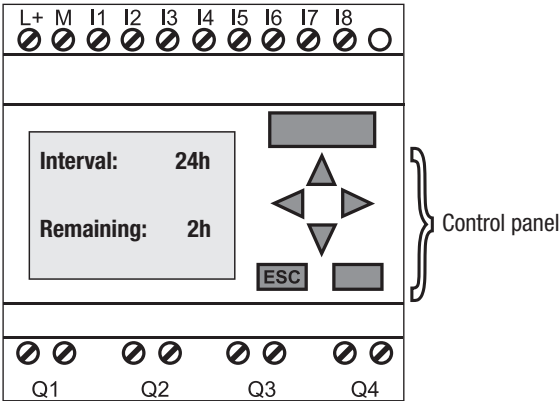


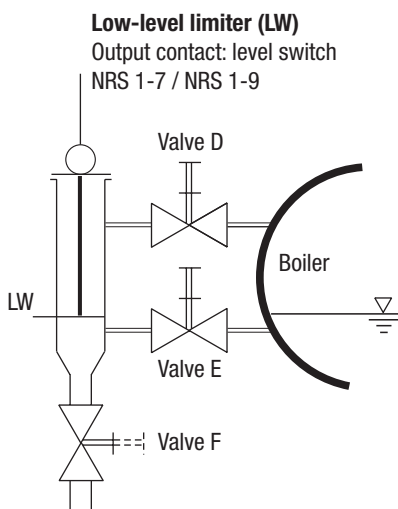
Fig. 6

Start-up		
Switch on the mains voltage.	Interval time starts running.	Remaining time is indicated.

Restarting the interval time		
Perform the purging process (see “Operation”).	Green pilot lamp “Standby” flashes; yellow pilot lamp “Bypass” is alight.	Purging time is running. Low-level limiter is bypassed.

Operation		
Interval time is running.	No pilot lamp is alight.	Trouble-free operation
Interval time expires and begins again.	Green pilot lamp “Standby” is alight.	Standby period is running.
Perform the purging process as shown on the PLC display.	Green pilot lamp “Standby” flashes; yellow pilot lamp “Bypass” is alight.	Purging time is running. Low-level limiter is bypassed.

Purging Steam boiler	Purging Hot-water installation
Purging Val D OPEN Val E CLOSED Val F CLOSED	Purging Val D CLOSED Val E CLOSED Val F CLOSED
Purging Val D OPEN Val E CLOSED Val F OPEN	Purging Val D CLOSED Val E CLOSED Val F OPEN Opening vent valve*)
Purging Waiting for LW alarm ...37 sec.	
Purging Val D CLOSED Val E CLOSED Val F OPEN	Purging Val D CLOSED Val E CLOSED Val F CLOSED
Purging Val D CLOSED Val E OPEN Val F OPEN	Purging Val D OPEN Val E OPEN Val F CLOSED Closing vent valve*)
Purging **) Val D OPEN Val E OPEN Val F CLOSED	Purging Waiting for normal level



*) Vent valve at measuring pot, if mounted.

**) First close valve F then slowly open valve D.

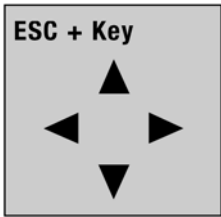
Status on the PLC display in chronological order

End of purging process	Green and yellow pilot lamps (Standby / Bypass) are extinguished.	Bypassing of low-level limiter is cancelled.
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SRL 63-a – continued –

Alarm		
Standby period has expired without purging process.	Red pilot lamp “Shutdown” is illuminated.	Safety circuit interrupted.
Purging process not completed in the specified purging time (5 min.).		
For logic unit 1 and 2, the purging process is started simultaneously.		
The safety circuit is only closed after completion of the purging process (for sequence, see “Operation”).		

Testing the deactivation of the safety circuit		
Press the button ▼, then press ◀ until the picture with the cursor buttons is shown on the PLC display. Now press ESC and ▲ simultaneously (see picture below).	The purging time is started.	When the purging time has ended, the safety circuit is interrupted and then closed again after 5 seconds.
Press the ▲ button.	The display of Fig. 6 is shown again.	



Cursor picture in the PLC display



Danger

The terminal strips of the logic unit SRL 63-a are electrically live during operation! This presents the danger of electric shock.
Before working on the terminal strips (assembly, disassembly, connecting the cables), always **cut off power supply!**
An external voltage is present at terminal strips X1 (terminals 16 to 20) and X3 (terminals 1 to 5).

Troubleshooting

Fault finding list

Faulty program execution, safety circuit interrupted

Fault: PLC display reports that a limit switch is defective.

Remedy: Exchange the faulty limit switch.

Fault: PLC, safety time-lag relay or coupling relay is defective.

Remedy: Exchange the entire logic unit.

Fault: The mains voltage has failed during the purging time, the bypassing of the low-level limiter has been cancelled, and the safety circuit is interrupted.

Remedy: Switch on the mains voltage and resume the purging process.

Decommissioning

SRL 63-a

Cut off the power supply to the logic unit, undo all the electrical connections and pull the cables out of the glands. Remove the logic unit.

Disposal

SRL 63-a

Remove and dismantle the logic unit, and separate the waste materials according to the material specification. Electronic components (PC boards) must be disposed of in the correct manner! For the disposal of the control device, observe the pertinent statutory regulations concerning waste disposal.

For your notes

For your notes



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